

THE BIG ONE: HOW DO WE ENSURE A ROBUST FEDERAL RESPONSE TO A CATASTROPHIC EARTHQUAKE IN THE LOS ANGELES REGION?

(109-48)

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ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS AND
EMERGENCY MANAGEMENT
OF THE
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TRANSPORTATION AND
INFRASTRUCTURE
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THE BIG ONE: HOW DO WE ENSURE A ROBUST FEDERAL RESPONSE TO A CATASTROPHIC EARTHQUAKE IN THE LOS ANGELES REGION?

Thursday, February 23, 2006

HOUSE OF REPRESENTATIVES SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS AND EMERGENCY MANAGEMENT, COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, WASHINGTON, D.C.

The Subcommittee met, pursuant to call, at 9:00 a.m., in the Whittier City Council Chambers, 13230 Penn Street, Whittier, California, Hon. Bill Shuster [Chairman of the Subcommittee] presiding.

Mr. SHUSTER. The Subcommittee will come to order. I want to start off by first welcoming everyone here today and thanks for the California hospitality. Coming from Pennsylvania the weather was not quite as nice. Actually about 35 degrees colder than it is here so I appreciate that greatly.

I want to thank Mr. Miller for inviting the Subcommittee here today to Whittier. Can you hear me? It sounds like it cut off. Can you hear me? There it is again. Okay. Thanks to Mr. Miller for inviting us here to Whittier to hold this hearing today. Mr. Miller has been a strong leader for the Committee and we appreciate that. Because of the great risk California faces from both natural disasters and terrorism, you have ensured that we focus on California as we look to improve state and local readiness and capabilities.

I know you have a strong interest in preventing a disorganized federal response to a catastrophic earthquake in California and we welcome your participation in today's hearing. Again, thanks for having us here today. I would like unanimous consent that Mr. Miller be permitted to sit with the Subcommittee at today's hearing, offer testimony, and ask questions. Without objection so ordered.

I would also like to thank our witnesses for being here today. We are meeting this morning to receive state and local input for improving the emergency management capabilities and readiness at the federal, state, and local levels. Hurricane Katrina revealed problems in the emergency management system at all levels of government that have to be addressed. You have a role in guiding the efforts to fix those problems.

Unfortunately this hasn't always been a collaborative process. Too often the federal government has failed to take into account your views. There has never been a greater need for your profes-

sional advice and expertise. We have to get this right and we need your help to do it.

Like hurricane Katrina a catastrophic earthquake in southern California could paralyze the region, destroy the infrastructure, and leave tens of thousands homeless. With over 300 faults southern California is at risk for a catastrophic earthquake.

Models of a 7.5 earthquake in Los Angeles basin predict over 18,000 dead, a quarter of a trillion dollars in losses, and 300,000 left homeless. These predictions dwarf losses from 1994 North Ridge Earthquake and without reforms in the current emergency management system we will have another uncoordinated federal response like that in the Gulf Coast.

I was on the House Select Committee that investigated the response to Hurricane Katrina, and our key findings of the federal failure were that the plan was flawed and the execution was ineffective. There was confusion over who had the authority to make decisions.

Response capabilities were efficient. In some places, it took a week before the federal government even arrived. Is southern California prepared to be on its own for a week, even though conventional wisdom says you only need to be prepared for 72 hours?

The House Select Committee report found that the federal response to Hurricane Katrina was slowed because key decisions were made late, ineffectively, or not at all. Today, these key decisions about how and when to engage federal response assets are no longer in FEMA. They are with the Department of Homeland Security (DHS).

Also, DHS and FEMA responded to Katrina with a business as usual attitude. Business as usual means sitting back and waiting for the state to request assistance, instead of proactively getting supplies into the field prior to a formal request. Business as usual does not work in a catastrophic disaster.

Following a catastrophic earthquake, the state and local governments may need federal assistance before there is a clear operating picture. If federal assistance is needed immediately to save lives and prevent suffering, should the federal government wait for the state to follow protocol? Can southern Californians wait for help while the federal government demands that the state follows bureaucratic procedures? We cannot afford to get it wrong again.

Additionally, the report found that the government failed to effectively execute response plans and authorities. This failure can be attributed to an inadequate professional disaster work force. At the time Katrina struck, FEMA had 500 vacancies. This is a small agency within a big department. They cannot afford to be without that many people. Without the right number of the right people, this will never work.

If we are to successfully respond to a catastrophic earthquake, we must enhance state and local emergency management capacity. One of the important lessons of Katrina is that the federal government's ability to respond to a catastrophic disaster is often dependent upon the quality of the state and local disaster system.

Disaster management is a shared responsibility and state and local governments need to be able to handle most disasters on their own and be prepared to integrate federal assistance into their oper-

ations during larger events. Despite spending about \$3 billion dollars a year on first responder grants since September 11th, it is very difficult to see where those dollars resulted in improved capabilities or readiness in our response to Hurricane Katrina.

The report found that inadequate capabilities and readiness resulted in the federal response being overwhelmed in critical areas such as logistics, communications, situational awareness, and command and control. It is truly staggering that we have spent so much on preparedness and have so little to show for it. We have to do better.

These are systemic failures. Clearly the system needs to be reformed. We are here today to hear about the specific challenges you face and your recommendations for reform at the federal level. At the end of the day, if the federal government fails to reform itself, then the state and local governments will have to face the next catastrophic disaster and its consequences largely alone for the first week or longer. I look forward to hearing your testimony today.

I would like to turn to Mr. Miller now if you have a statement.

Mr. MILLER. Thank you. Welcome to Whittier. Chairman Shuster, we are quite a way from where you live but it is a lot warmer here. It was not so last week so we are experiencing some good weather. Our geography we have in California is different than we have in a lot of other states. We are here today to determine where we are in the preparation and planning process to be sure that we are prepared for the unthinkable.

While state and local government planning is crucial, disaster preparedness federal coordination is essential to ensure the system can work. We would like to understand how the federal government can best employ the resources that would be needed in the aftermath of an earthquake in southern California. Specifically, how can we ensure adequate resources can flow to the areas in the need of rescue assistance, debris renewal, and emergency medical care. These are the questions that today's hearing will help us to understand.

You messed my pages up. I have one arm. You will have to forgive me. This is the first day that I have worn a shirt, slacks, and even put on a tie since I had shoulder surgery. I am right handed. Try doing everything with your left hand and you will get your pages out of order, too, I guarantee.

Mr. SHUSTER. You are better than most with one hand.

Mr. MILLER. I am not sure about that. It is fitting today that we convene this hearing at Whittier, California, the site of the Whittier Narrows Earthquake of 1987. When we discuss this about the proper location to have this I looked at the entire region and I thought Whittier really experienced firsthand what can happen with a 5.9 earthquake. We had eight people die. We had \$400 million in damages and that is incredible for a city this size. I was raised in Whittier and that was quite an impact on our community.

While the Whittier Earthquake was devastating to the region, the big one that we might have one day would be catastrophic. Whittier gave us the opportunity to test our preparations for a larger regional disaster. It also taught us what improvements were necessary to our plans and improvement to infrastructure and the services that were needed after an earthquake.

I am pleased that Mrs. Hayashi of Whittier is here with us today to share her perspective from the local level about what is needed from the federal government to assist in a catastrophic disaster. Mrs. Hayashi is an expert when it comes to earthquake and emergency preparedness and can help us to understand the ways that the federal government got it right, the ways that we need to improve in what has happened since to better coordinate the efforts in the future.

Most importantly, Mrs. Hayashi can shed light on what the federal resources are needed within the local community after a sudden earthquake. While not an earthquake, the devastating event this past August on the Gulf Coast provided another unfortunate wake-up call to all of us whom I would hope the catastrophic event might never happen in southern California.

In the days that followed the hurricane we also witnessed what could happen when local, state, and federal officials are not adequately prepared to do what is appropriate to coordinate the disaster needs. Not only must we mobilize to make sure our emergency plans are in place but we must also learn from the mistakes that we have made in the past to ensure that they are corrected in the future.

Learning from these past disasters is essential in ensuring that adequate and complete coverage of what is needed by the local communities takes place. We hope we never have the major earthquake we talk about having but if it does happen, how can we coordinate it in a way that the federal government can work with local, state, and federal government. Together we can create a body that will deal with the needs of the local and I am here today to basically understand what our local needs are. Thank you very much.

Mr. SHUSTER. Thank you very much, Mr. Miller. What is the population of Whittier? I would imagine it is probably vastly different. 85,000? When you grew up here it was probably significantly—

Mr. MILLER. There were about 12 of us here.

Mr. SHUSTER. Again, thank you, Mr. Miller, for having us out here today. I first want to ask unanimous consent that all our witnesses' full statements be included in the record. Without objection so ordered. Since your written testimony has been made part of the record, the Subcommittee request that you limit your summary to five minutes. We have two panels today of witnesses. On the first panel we have one witness, Dr. Lucy Jones with The U.S. Geological Survey.

Dr. Jones is going to provide a presentation that will demonstrate the likely consequences of a catastrophic earthquake in the Los Angeles region. Just as the consequences of a category 4 storm hitting New Orleans are well known, I believe it is important that we fully understand what we could face here in a moment's notice. Following Dr. Jones' testimony we will open for questions.

Dr. Jones, welcome again. Thank you for being here and you may proceed.

**TESTIMONY OF DR. LUCILE M. JONES, SCIENTIST-IN-CHARGE,
SOUTHERN CALIFORNIA, U.S. GEOLOGICAL SURVEY, U.S. DE-
PARTMENT OF THE INTERIOR.**

Dr. JONES. Thank you, Mr. Chairman, and Mr. Miller, for having me.

Mr. SHUSTER. Dr. Jones, let me just say you can take more than five minutes. I am sure we are going to take more than five minutes trying to understand.

Dr. JONES. Okay. That is quite reassuring because I had prepared a longer presentation than that. We need to get this where you can hear me.

Mr. SHUSTER. There are all kinds of mics up here.

Dr. JONES. Yeah, there I am. This is a great opportunity. I am being told to scare you and given free reign to tell you the worse. I am doing this actually from an interesting perspective. You are talking about federal versus state. I am a federal employee but with a regional responsibility.

The U.S. Geological Survey under the National Earthquake Hazard Reduction Program does the science of earthquakes across the nation and we do this through regional operations so I am responsible for southern California because although that is only just one part of one of 50 states, it is half of the nation's earthquake risk so it is a very significant problem that we are facing in the region.

I want to start with very briefly just to remind you what an earthquake is. An earthquake happens because of sudden slip across the fault that releases shaking as one of the its effects so that we actually have both phenomena that we need to look at, how the ground is disrupted, like this picture we are showing on the right from the KoBay Earthquake in Japan in 1995 and then also the shaking that is released from it. Both of those will be causing significant effects on our infrastructure. They need to be taken into account as we get ready for this.

Another point to remember is although you have been hearing that earthquakes happen at epicenters for a long time it is not true. They begin at a hypocenter but they happen over a surface. A good analogy for an earthquake is actually snapping your fingers. When you snap your fingers you put two surfaces in frictional contact. Because they are pushed together they can't move so you push hard enough and overcome the friction and it slips suddenly and released energy in the form of a sound wave that makes the air vibrate.

When we slip on that fault, we release energy in the form of sound and sheer waves that make the ground vibrate but you can't snap your fingers at a point. It requires a surface in contact and, in fact, the bigger the surface is, the bigger the earthquake. The one thing that really controls how big an earthquake will be is how long the fault is that moves in that event.

You may not have recognized that the United States had almost a magnitude 8 just a little over three years ago. It was up in the Alaska wilderness and did very little damage because of its isolated location. I want to show you this which is how we look at damage from an earthquake. You can see these colors are showing you how intense the shaking is.

In this case we have a fault that was over 200 miles long and you can see there was an area of many tens of thousands of square miles that recede at shaking. But in that location there were very few people anywhere nearby. If we were to move this to California, you can see that same shaking area projected onto a map of California we would be affecting millions of people at a very high level of shaking.

The level that we here received in the Whittier Narrows Earthquake is shown in orange on this figure. We never got to intensity 9. That is not magnitude, that is intensity that is shown with the red colors in this region. We had the yellow to orange in a very, very small area in the Whittier Narrows Earthquake. By comparison when we get to these really big earthquakes we are going to go to a very different class of disaster.

What controls what the shaking is going to be is three things. The bigger the earthquake, you release more energy and you have more energy at every site. Your distance from the fault, the shaking dies off with distance quite rapidly. In fact, the one piece of good news in California—the bad news is we have a lot of faults. The good news is they break up the crust and make it a poor transmitter of energy.

You are going to hear tomorrow about how the New Madrid Earthquake could affect the area in Missouri where the crust is old and cold and hard and a magnitude 7.5 moved furniture in the White House. It is felt over a very, very large area. By comparison here in California it dies off more rapidly.

You can have local soils that amplify the shaking. If you are in soft ground the waves slow down and to carry the same amount of energy they have to get bigger. We have been able to map out where in California. One of the efforts of the U.S. Geological Survey is to look at where we have this effect and we have been able to put the whole picture together and the upper map here is showing you where we have relative amplification of shaking whatever the earthquake is.

You can see here in the basin areas wherever it is flat, wherever you avoid the wildfires, you have an amplification of shaking. Again, you will hear that tomorrow along the Mississippi River. It is a very major issue as well.

As I said, this is a national problem but here in southern California we are responsible for half of the nation's risk. It is a combination of over 300 faults, as the Chairman said, combined with 20 million people. You put it together and we have just got the greatest exposure that we are going to have.

The reason we have so many faults here in southern California is that we have a plate boundary. The San Andreas fault is the boundary between very large sections of the earth's crust. The North American plate runs from the San Andreas fault all the way out to Iceland. The Pacific plate runs from the San Andreas fault out to Japan. These two very large pieces of the earth's crust are moving with respect to each other and they come together right here in California along the San Andreas fault.

We aren't stopping plate tectonics. There is no way we are going to stop this movement of just about two inches a year. That is about the rate that your fingernails grow. If you didn't cut your fin-

gernails for 200 years you would have a pretty big offset and that is what has built up on the San Andreas fault.

We compounded in southern California by putting a kink in the San Andreas. You can see the bend in the fault here. Try to imagine taking two pieces of glass and hitting them up against each other. They are going to shatter and then you will sweep the pieces around the corner. Well, southern California is shattering along this network of faults and we are sweeping around the corner. The end result is a mosaic of faults, several 100.

This is a picture that we put together with the southern California Earthquake Center, a group of academics that we fund through the USGS that you see this whole network of faults. All the little dots are the earthquakes we have recorded over 300,000 earthquakes in the last 20 years within the region. Every one of these is capable of a significant earthquake. Remember the length of the fault gives you the size of the earthquake. Some of these are very, very long.

When I try to tell you how bad the worse one could be, it is very limiting to try and pick only one event out of this whole network of possibilities so I am going to show you two. One is going to be the San Andreas. That is our biggest earthquake. It is long enough to produce a magnitude 8. It is also our most common earthquake. That fault is moving very fast. They average 200 years apart and it has been 300 years since the last one in southern California.

Then we are going to look at what happens if you put one in right under this area. Let us start with the San Andreas. I said intensity 8 was the level that we had at Whittier at Whittier Narrows and we are looking up to intensity 10 on this big earthquake. You can see it will cover a very large area.

This is a relatively simple level of modeling that we can do that looks at just how big the earthquake is and what our soil conditions are. It gives us a pretty bad picture. What is really significant about the San Andreas Earthquake is actually going to be its affect to the infrastructure.

Like Katrina we are going to have a situation where you can't drive away from the disaster. In Whittier Narrows or in North Ridge you could get in your car and drive for five minutes and buy a hamburger and a bottle of water. In this earthquake you are not going to be able to drive out of it because all of southern California is going to be involved.

We are also going to have a disruption to the infrastructure. On the left I have a picture of what happened to a dirt road during an earthquake in Landers in 1992. Here is a picture of what happened to a railway in Turkey. This is going to happen to all of the freeways and railways coming into Los Angeles. If you go in and look at the structure that we have, every railroad coming into southern California crosses the San Andreas fault.

Every major freeway except highway 101 to San Francisco crosses the San Andreas fault. We are going to have those levels of disruption, that 20 feet of offset in the road.

Also all of our gas pipelines, 90 percent of our electricity transmission, all of our outside water. Every one of those infrastructure systems cross the San Andreas and will be disrupted when this earthquake happens.

Here is actually a photo. We have done a very detailed imaging of the San Andreas fault and you can see here I-15 crossing the San Andreas fault which is shown by the yellow line. Now imagine that you have moved one side with respect to the other. You can see that we are going to have a disruption to our freeways.

This is all something that could be addressed before the earthquake. We could look at the way we are building our freeways to not have the big berms on the side that will be cutting off the roads when the offset happens. I will say the Metropolitan Water District has been extraordinary in their efforts to take this into account. The water systems have considered this in great detail. All of our water storage is on this side of the San Andreas fault. We have not done this so much with the gas pipelines or with the transportation systems.

Now, let me look at what is going to happen when we actually have the earthquake. I have got this movie going here. One of the things that has happened in the last five years is the scientists have developed new capabilities for really modeling what is going on during the earthquake, a very exciting time within the field. We are able to make models of just how the ground is going to move.

This got started quickly on me and you see I stopped. Time since the beginning of the earthquake 132 seconds. This earthquake is going to be lasting for several minutes just because the fault is so long. You can see the level of ground motion going on. You can see out on the San Andreas it has already stopped moving.

In Los Angeles in the San Fernando Valley because of our basins we are going to set up residences. We are able to model these now with science. This has not yet been taken into account on things like our building codes. This is one of the directions that the U.S. Geological Survey is really interested in going is being able to take these new advances in the science and turn it into an end-to-end model.

Let us not just do the geology of the seismology. Let us take it through into the engineering, into the economics, into the emergency response. We have been in talks with the State Office of Emergency Services of how to try and do a really big picture modeling that will take this whole thing into account. We have a lot more that we can tell you. One of the things we have done is we have taken the data from the earthquake in Alaska and put it into buildings.

This is a model of what would happen to buildings in the San Fernando Valley if we had a 7.9 on the San Andreas fault. The upper building that just came down is the one that is designed to pre-1994 codes. The redesign that was put in is in the bottom building and they stand up. This is new to be able to get this capability of modeling and we really do want to take it through to the complete picture.

The other type of earthquake we could look at that gets pretty bad is to put one into the LA basin. There are a lot more people and older buildings. Our biggest single issue is that our building codes are not retroactive. Most of the city was not built to the most modern building code. It was built to much older standards and it becomes the responsibility of individual builders to upgrade. There is our single largest element of risk.

If we had this earthquake, again we do this sort of simple model of where the earthquake is. This is the study that you referred to. It ends up telling us that we are looking at a quarter of a trillion dollars in losses and potentially the majority of buildings. Many zip codes have the majority of buildings destroyed by the event. This estimate came up with 450,000 homeless people being created by this earthquake.

Again, though, we have the capability of doing more advanced modeling on this. The southern California Earthquake Center has just put together a new simulation of what will happen during this earthquake. We will watch it go by and watch how the ground really starts moving. It starts moving right near here and then propagates out across the Los Angeles basin.

I will tell you that when I watched what happened in Katrina, we all learned different lessons. What I learned as a lesson is that all of the science by itself isn't doing any good. It is the science applied that is going to make a difference. I had heard all about what would happen in Katrina just like I have done this modeling of what is going to happen here in Los Angeles. What we need to do is make sure that this information goes into our planning and we get a better cooperation between the scientists and the emergency managers.

I would say I think that we do remarkably well at that here in southern California. I know all of the emergency managers that are coming to speak here. But we could take this further and get this used in a lot more effective way.

To summarize what the major impacts are likely to be, we are talking about disruption to our infrastructure. Extremely concerned about mid-rise construction built between the 1950s and 1970s. Major building code change happened because of the San Fernando earthquake but a lot of Los Angeles was built before that earthquake happened.

We don't know what is going to happen to the high rises because we have never put a modern building through a major earthquake. And our dam systems. A lot of those are quite old and that is where we could start getting the compounded problems. The other lesson from Katrina is you go from disaster to catastrophe with the secondary failures. If the levees had stayed intact, it wouldn't have been so bad. We have that potential here as well. The big secondary failures are fires if we have the earthquake during a Santa Ana condition. We have fires like this without any earthquake at all. Now let us have an earthquake and 1,000 ignition sources. That to me is the true nightmare scenario.

I am going to finish with one of the things that the U.S. Geological Survey wants to do about this. As I have repeatedly said, science alone can't stop the losses. If you look at the combined picture, the possibility of interactions here in southern California, you know, we joke about our four seasons of wildfires, earthquakes, flood, and landslides. The reality is those four disasters are major issues.

We need to come together with the community to use this to make a decision so the USGS is proposing in Fiscal Year '07 to begin an approach where we have an integrated project bringing together the four disasters looking at a variety of different science

topics in terms of analyzing the San Andreas fault, looking at a landslide warning system that we partner with the National Weather Service. But the most important part is that we are going to have a new process where we guide the research directions with the input from our emergency managers and other community partners.

We are going to be bringing together the different hazards that we study within the U.S. Geological Survey and with the community partners so that we are going to do it in a way that they are actually wanting us to do. We are bringing it together because we have—it would be much more efficient. We often use the same data. We serve the same customers and we all have the same goals that we are trying to get a safer southern California.

And just with one last piece, there is a lot that we already know. There is a lot that we can share. There is more that we can do in the future. One of the things that we are excited about is the possibility of actually getting the information that an earthquake is underway before the earthquake shaking arrives at the more distant locations.

You notice the San Andreas fault is outside the city and we have the potential that once the earthquake begins the waves will start traveling out and reach our seismic station so we can know that the earthquake has begun before the shaking gets to the city. If we can transmit that information quickly enough through a satellite system, we can get this over, process the data and actually get out a warning before the waves arrive. Because of the geometry here in southern California, we have the potential for about a half-minute warning.

You don't make decisions in a half a minute but you do have the potential for things like automatically stopping train systems, moving elevators to the nearest floor so that people aren't trapped in an elevator, ringing an alarm in an operating room so the surgeon is taking the scalpel outside of your shoulder. It isn't physically in your body when the shaking comes down.

Mr. MILLER. That's a good example.

Dr. JONES. So there is a lot of places where science can help us and it is our goal to try to get that used because I know how bad it can be and they knew in Katrina as well. Thank you.

Mr. SHUSTER. Thank you. Wow. I am glad I am going back to Pennsylvania.

Dr. JONES. Some of us still live here.

Mr. SHUSTER. The first question I have for you, you can get a 30-second warning but in your modeling of the predictability, how far out can you—is that at all possible that you can say it looks like it is going to happen or it may happen?

Dr. JONES. At this point there are a lot of pieces that we can predict. I said this has been an exciting time. There have been a lot of developments in understand the physics of earthquakes. At this point we have no way at all in saying there will be an earthquake 3:00 on Friday afternoon.

However, we are starting to develop recognized patterns within it. In fact, there is a new center that is called the Keck Collaboratory for the Study of Earthquake Predictability, a new grant from the Keck Foundation to our partners at the southern

California Earthquake Center to try and actually do this. I think one of the most exciting things is we finally have the tools to test predictions. People have been able to claim predictions without actually being successful. We can't do it now but it is an exciting time and there is a lot of research going on that have the scientists pretty excited.

Mr. SHUSTER. When you see the plates starting to move, you can't with any certainty or any—

Dr. JONES. There is no certainty. What we can do is say that one earthquake makes another earthquake more likely. Actually we have a webpage that gives you the probability of an earthquake shaking in the next 24 hours. What that shows you is what we know from a long-term geology which we do know very well and that is not uniform and the probability that one earthquake will trigger another which is a very common phenomenon. Half the damage in Whittier Narrows actually happened from the largest after shock. We can do that and we are hoping to take that further but at this point we cannot.

Mr. SHUSTER. And you said 24 hours you can predict?

Dr. JONES. It is not that I can predict in 24 hours. When one earthquake happens others become more likely and I can quantify how likely that becomes and I can choose to express it on any time period I want and we are doing a 24-hour map because that is the most likely time for one earthquake to trigger another one.

Mr. SHUSTER. Right.

Dr. JONES. But it is a decay with time. We have a little bit. We are sort of on the edge of moving into things but right now there is no prediction.

Mr. SHUSTER. You also mentioned you can't drive away from this accident, this earthquake we are talking about.

Dr. JONES. I think that is the thing that most people don't understand is that a big earthquake affects so much larger an area. At North Ridge the fault was 10 miles across and in this earthquake it is going to be 200 miles. It is such a different scale of disaster. We have not seen it in the last 100 hundreds. 100 years ago we have the 1906 earthquake that destroyed San Francisco and it did eliminate a major city of the United States.

Mr. SHUSTER. What was the magnitude?

Dr. JONES. That was 7.9.

Mr. SHUSTER. And this one we are talking about would be 7.5?

Dr. JONES. 7.9. It's very similar and it is a different scale than the earthquakes we have had in between.

Mr. SHUSTER. How frequently are you having the 5's and the 6's?

Dr. JONES. We average a magnitude of 5 about three times a year somewhere in California. Most of the time they aren't near people. We have had an earthquake that causes a billion dollars worth of damage in modern terms about once every 10 to 15 years. We lose about a billion dollars every 10 to 15 years and then we have a half-a-trillion dollar earthquake once every 100 years.

Mr. SHUSTER. You talked about the railroads and highways and pipelines cross the San Andreas fault. Can you predict the ones that are most susceptible to damage or are they just all?

Dr. JONES. That fault crossing issue, because the San Andreas moves so much more rapidly than the others, we can address that

specific issue and we should. We could go in and build beforehand ways that would make it easy to recover after the event. They have done this on the water systems. We could do it on the roads. The Department of Transportation in California has invested over \$6 billion since the Loma Prieta earthquake in strengthening freeway bridges.

Mr. SHUSTER. When was that?

Dr. JONES. 1989. In the last 16 years they have spent over \$6 billion. The state keeps track of this. State investment and earthquake mitigation has just hit \$20 billion since 1990 so California invests major resources in trying to reduce those losses. We are a lot better off than if we hadn't done them.

Mr. SHUSTER. You said about the buildings, they are not being retrofitted or is it cost prohibitive to retrofit these buildings? I would think it would be.

Dr. JONES. There is no cost incentive. The way the system works right now if a building owner said, "I want to do the responsible thing. I want to invest my building" there is no tax credits. There is no increase in rent because there is no way of communicating to your tenants. I am also on the California Seismic Safety Commission so I have gotten involved in policy decisions.

One of the things that we have discussed there is imagine if you had a rating system so that when you go to rent office space you can be told that, "This building is an A-rated building. This is what more likely to be up and functioning and you can recover your business after the earthquake happens. Versus this one which hasn't done any retrofitting and it is a C-rated building and we think the probability is that it is going to be shut for a month for a month after the big earthquake."

Then the person who had invested in the retrofitting would be able to get a return on his investment by charging more rent. I would be willing to pay more to be sure of it being up and running after the earthquake.

Right now we don't have any way of communicating the extra safety you have achieved and, therefore, the market can't work because the information isn't there.

Mr. SHUSTER. Thank you.

Mr. Miller.

Mr. MILLER. There are a lot of questions. I have lived here all my life virtually and I have seen many different types of earthquakes. Maybe you can explain this. I have seen the ones where you would just get a banging jolt. I have seen some that you would get just vibrations. Others that you would get shaking from one side to the other. Other ones you would get a roll. You can actually see it roll. There was one in the '80s where you could see the ground rolling. It was really weird. Could you explain the differences and which are more dangerous?

Dr. JONES. A lot of what you are talking about is a combination of how big the earthquake was and how far away you are from the earthquake. When an earthquake happens you release energy in a lot of different frequency bands. If you are very nearby you feel them all and the one you notice is the jolt. If you are a long ways away the high frequency has died off just like if you hear a boombox going down the street, you can only hear the bass notes.

Those low notes, low frequencies transmit farther. If you are a long ways away from a big earthquake, all that is left is the rolling motion. How dangerous it is actually depends on what building you are in because the buildings respond to these different frequencies. One of the scary things about the really big earthquake is it is going to have a huge amount of that rolling motion.

By the way, you get more low frequency on a bigger fault just like you get more low frequency out of a cello instead of a violin. You get all those low frequencies and they now travel a long ways away. Really big buildings are going to be vibrating in response to them. We don't know all about how that is going to respond. That is why that model that just came out of Cal Tech of the buildings showing those big buildings coming down, it is because there is way more low frequency in there than we had previously modeled.

It is not going to affect a small building. Your single-family home is just going to ride that out, but the really big building is going to respond to it. What you are feeling with those different sensations is different parts of the frequency band. Bigger earthquakes give you more long periods and those long periods travel for a farther distance and you get different combinations at different distances from different sizes.

Mr. MILLER. You commented on retrofit. I guess that raises some red flags. New standards need to be adopted so we can build accordingly but we required hospitals in California to retrofit a few years ago. All it did was force some hospitals out of business and other ones where they say they will have to go out of business because you have market rate on anything. There is a market rate on health care. There is a market rate on renting an office, a building. Whatever you're leasing you can only get X amount.

When you start rating them, then all you are impacting is market rate where they drag down what somebody should receive as a yield for rents and such. How might that really negatively impact the market place because it is cost prohibitive in many cases to go out and be able to spend the kind of money you need to spend on a major building to retrofit.

Dr. JONES. I think that—

Mr. MILLER. I believe in standards being changed but when you go back to cause ratings of existing, I think you are having a major impact on the market that is not going to be resolved.

Dr. JONES. Well, the main thing that I would see is that information is always of value so people could choose and say, okay, and you definitely couldn't say this building is going to fall down. The only thing you could say is that this building has a higher standard. This is information that you can find if you go and dig it out. If you go to rent a building and you go to the building department, you can find out what were the standards to which it was built.

Mr. MILLER. People don't do that.

Dr. JONES. People don't do that.

Mr. MILLER. But if you walk into an office building and say this has an A rating, market is \$230 per square foot. This has a D rating and might be a \$1.40 a square foot. That is what we are doing is driving down what they can lease and the cost of retrofitting some of these buildings that are only 20 or 25 years old is to such a degree that sometimes you are better off just taking the building

down and starting over. That is what hospitals are finding out that aren't that old.

Dr. JONES. Right.

Mr. MILLER. They said it would cost more to retrofit than it would to bulldoze the building and build a brand new one. That is my concern about ratings. I can see being proactive and saying we need to go out in the future and change standards. Those standards you are going to change gradually because of the cost and the technology available to deal with the impact. I think ratings we should look at cautiously. The main question I have, though we talk about what impact we might face in California, we have inadequate water storage.

I mean, if you look at the four reservoirs that are proposed in California, they are all in northern California. We need one to two more in the region. MWD's main line crosses over the San Andreas. The main line we have on the California aqueduct also crosses in numerous locations. A major earthquake is going to shut both of those down and those are not going to be put back up and running in a week or two when that happens.

What impact are we going to face not only on our water but on our major dams in the area? Proto is an example. If that lets go and these other dams let go, we have some huge problems. What do you see as an impact in California just on our water quality?

Dr. JONES. I think water is one of the largest issues we are faced with in an earthquake. You also forgot the LA aqueduct that comes down from Owens Valley. That also comes through Collin pass. All of our outside water systems do cross the San Andreas and will be offset.

When the California aqueduct was built so that when it hits the San Andreas fault it actually then runs along it for a while so that after the offset they could just sort of come in and paste together back the ends and get it functioning again so it has been designed to be able to get back up and running quickly afterwards. As I said, all of the major water storages on this side of the San Andreas are by design.

I understood that we had six months water supply stored on this side of the San Andreas fault at the present level of usage. This is one of the other really significant issues that you look at is that the population of California is growing dramatically and to what degree are these foresightful activities that were taken earlier have been able to catch up with the growth and population.

Mr. MILLER. But getting the water to these areas is a problem. I know MWD is trying to get a major 15-foot line down to South Orange County because I know they don't have the ability to transfer the water. Every one of our aqueducts has major transmission lines that are going to also be disrupted. It's scary what could happen if this whole system goes down in our region.

I mean, if you look at not only the slides but the area I live in has major liquification problems. When this starts shaking this all turns into oatmeal. Everything just starts to slide and ooze and reach water level basically. I have too many questions.

Mr. SHUSTER. I will ask for another round.

Mr. MILLER. Okay.

Mr. SHUSTER. You talked about the unstable soil. Is that a widespread problem or is that localized? Can you say?

Dr. JONES. There are two levels of concern on soils. One is the straight amplification. That is a simple thing where just whatever the speed of the seismic wave is, if you come into a slower rock the wave has to get bigger to carry the same amount of energy when it is slowed down. That is where we have about a factor of 5 under here and we have mapped it out for the California area.

There is a separate issue of liquefaction which is where you have loose sandy soil that compacts during shaking and if there is water in the spaces where it is compacting, the water pressure goes up because it can't flow away in the time of an earthquake and it becomes temporarily quicksand. Quicksand does a notably poor job of supporting buildings.

We tend to see buildings falling over when that happens. Again, the state of California has mapped out the liquefaction susceptibility. In the actual earthquake it will depend on what the water table is. It's the one good side to droughts. It lowers the water table.

Mr. SHUSTER. And that's what happens when the water table rises into the soil.

Dr. JONES. Well, the soil compacts and that forces the water pressure up so if there is water there—if there was no water there you could compact the soil and it wouldn't make a difference. If you really compact the soil you damage the buildings above it. We can map it out.

One of the proposals actually under this new program is to do what we call microzonation mapping, to take the information we have about the shaking distribution or the soil distribution or the soil distribution and turn that into a microzonation map. Again, that has implications of what is going to be the effect on property values. We have now said this is a more susceptible region and that is a political issue that would need to be addressed if we really came up with the detailed maps. We could and have not yet.

Mr. SHUSTER. How much interaction do you have with FEMA and the federal level when you are talking about issues like this.

Dr. JONES. We have had less communication in the last five years. The headquarters is in San Francisco and I know the earthquake specialist very well, FEMA's headquarters. In southern California we tend to work more directly with the state and the locals. The city and the county are the ones that have the primary responsibility and we do a lot of work with them on getting the detailed maps.

Mr. SHUSTER. That's a concern I have. If you have an earthquake of this magnitude, the state and locals are going to be overwhelmed and it's going to take the folks coming in, FEMA coming in coordinating Nevada and Utah the surrounding states to come in and help so it is important that there is interaction.

Dr. JONES. I can say in North Ridge FEMA set up a disaster field center in Pasadena and we had a scientist permanently staffed there to provide the communication between the scientists and FEMA. We maintain staffing in their field office for six months.

Mr. SHUSTER. You mentioned that the fires were probably the greatest concern.

Dr. JONES. Yes.

Mr. SHUSTER. Mr. Miller was talking about water and he said if you have an earthquake and you have all these fires, it is going to use up the water a lot quicker.

Dr. JONES. It would. The other problem would be the actual distribution of the water. A lot of the water pipes are old and we saw in North Ridge it doesn't liquefy if there is no water in the soil but the soil still collapses and that damaged a lot of pipes in North Ridge. There is rather a famous picture with a water fountain with a fire fountain in the middle because the gas pipeline and the water pipeline broke at the same time. That is also going to impair our ability to fight the fires.

Mr. SHUSTER. What is your level of concern with the dams in the region?

Dr. JONES. The newer dams I feel pretty good about. I mean, we have had strong standards in California for a long time but the idea that we change the building codes and go forward has been the philosophy for the last seven years. Especially the newer construction now is built to very high standards. There are older structures especially in the San Gabriel mountains that potentially have flood plains coming down here that could definitely be addressed in a systematic study.

Mr. SHUSTER. Is there potential for—I don't know if you are familiar with the Johnstown Flood in Pennsylvania in 1889.

Dr. JONES. Oh, yeah.

Mr. SHUSTER. Is there the potential for that type of—you have the earthquake, a dam breaks, and then you have massive loss of life because of—are the dams out there big enough?

Dr. JONES. Yeah. There was a significant concern. Actually we came very close to that in 1971. That San Fernando earthquake damaged a dam in the San Fernando Valley with 50,000 people in the flood plain below it. It was close. It had been 6.9 instead of 6.7 the estimates are that it would have gone.

Mr. SHUSTER. I have one more question and then I'll turn it over to Mr. Miller again for questions if he has any. Are most of your dams out here constructed of concrete or earthen dams or a little bit of both? You don't know?

Dr. JONES. I am a geologist, not an engineer. I know we have both but I am not sure of the relative distribution.

Mr. SHUSTER. Okay.

Mr. MILLER. I see Councilman Greg Norton back in the room. I would like to thank you for your hospitality. I hope I am sitting your chair and wearing it out.

Mr. NORTON. You are a little far right but that is all right.

Mr. MILLER. Story of my life. We talked about the water. Have you done any extensive surveys on that?

Dr. JONES. No. Definitely not personally because—

Mr. MILLER. Maybe that is our next panel.

Dr. JONES. I am not sure that anyone has quite done—this is where I was saying that we had been talking with OES about trying to bring the pieces together. One of our goals was to try to do a real end-to-end scenario. Let us take it all the way through and consider all of these aspects and that will show us where are the relative weaknesses.

Again, that cost effectiveness issue. Maybe we are focusing on parts that are very expensive and aren't going to get us as much return and we don't really know because we haven't tried to look at the complete picture. There have been individual studies done on the water issue. MWD has done a lot of work. What we were talking about is trying to do it as a community.

I can proselytize really easily here. The other Katrina lesson that I took home was that it was a systemic failure that took us to the different level. That is the problem that we do face here. It is one thing to say, "Okay, here is the water." What if the water causes more fires? Or you want the electricity to be up and running. Edison can't sell to customers that aren't up and functioning but if they aren't up and functioning, these other businesses can't recover so there aren't isolated problems.

It is how the system fits together that is really going to determine how we respond to this. I think that is one thing that this community has seen because we, unfortunately, have a lot of experience working together. We have had plenty of earthquakes and other disasters but it means that we have the connections and the relationships to get out there and start doing this broader picture approach.

A lot of us have gotten together and said this is really what we need to do is go from the beginning all the way through the economics and through everything and see where the relative weaknesses are. Until we do that I don't think we know. We can recognize lots of potential problems. Which one is going to be our worse we don't know.

Mr. MILLER. You mentioned electricity and such. I know Edison and LA County Water and Power, most of their major transmission lines are very close to the San Andreas fault. I mean, it is amazingly close. What kind of destruction to you see in that?

Dr. JONES. I am not sure. There are several variables that come in there. One is the level of how much we can do between now and then. I mean, there are a lot of transmission and major installations near the San Andreas fault and something like 90 percent of the electricity for Los Angeles has to cross the San Andreas fault somewhere to get in here.

I have also seen towers literally offset by three meters of offset during an earthquake still up and functioning and transmitting energy. There have been some very good engineering solutions applied. I am not sure where the level of disruption is going to be on that. I think also a lot depends on whether or not we trigger secondary fires because electrical systems are also quite susceptible to the fire damage. It is just going to be really bad luck if we have it during a Santa Ana condition. That is when it is going to go awful.

Mr. MILLER. If we have the big one we are just in serious trouble. That is all we can say at this point. Every major resource, transportation, utility, all our infrastructure basically is going to be impacted in a major way. We have talked about water, transmission lines, but all our communities' major water mains are going to blow. House connections are going to pull apart.

It is going to be unbelievable to try to get water anywhere, to try to get transportation, goods and services moving. We are going to

be in a similar situation as Katrina. How do you get goods and services in the area when our overpasses and our bridges and highways are torn apart? How do you get into the communities?

Dr. JONES. I believe there are engineering solutions that could be done ahead of time to reduce the losses. It is not a technical decision. It really is a social decision on what is worth spending beforehand to reduce the losses after. We do have the information about probably what the damages are right now. We have the information of how likely these are to happen over the next 50 years. Then we have to make a decision on what we are willing to spend beforehand. We could do it. There are lots of technical solutions that could be added that haven't yet been done.

Mr. MILLER. Thank you very much. Appreciate it.

Mr. SHUSTER. Thank you, Dr. Jones.

Dr. JONES. Thank you.

Mr. SHUSTER. One last question. I guess the final question is it is not a matter of if it happens, but when it happens.

Dr. JONES. It is absolutely when. It may not happen in our lifetime but it is absolutely when. We aren't stopping plate tectonics.

Mr. SHUSTER. Thank you again and appreciate it. You are very informative and we appreciate you being here today.

Dr. JONES. Thank you.

Mr. SHUSTER. Now I will call our second panel which is comprised of a number of state and local officials who individually have responsibility for disasters of all types here in California. Why don't you come up and we will take a couple-minute break here while they get seated and stand in recess for just a couple minutes.

[Whereupon, the Subcommittee recessed to reconvene the same day.]

Mr. SHUSTER. The Committee will come to order. Joining us today we have Mr. Henry Renteria, Director of the California Office of Emergency Services. Mr. Ellis Stanley is the Emergency Manager for the City of Los Angeles. Ms. Ann-Marie Hayashi, Emergency Services Assistant for the City of Whittier. Did I get it right?

Ms. HAYASHI. Hayashi.

Mr. SHUSTER. Hayashi. I am sorry. Since your written testimony has been made a part of the record, the Subcommittee requests that all witnesses limit their oral testimony to five minutes. There will be time for questions after all the witnesses have offered their prepared remarks. We will start with Mr. Renteria. Thank you for being here today. You may proceed.

TESTIMONY OF HENRY RENTERIA, DIRECTOR, CALIFORNIA OFFICE OF EMERGENCY SERVICES; ELLIS M. STANLEY, SR., CEM, CITY OF LOS ANGELES EMERGENCY PREPAREDNESS DEPARTMENT; ANN-MARIE HAYASHI, CITY OF WHITTIER EMERGENCY SERVICES

Mr. RENTERIA. Thank you, Chairman Shuster. Good morning and good morning to the members of the Subcommittee. Thank you for the opportunity to be here today to address you on this very important topic.

Let me start off by since you are in southern California we arranged for good weather so I am going to give you a movie now. We will start with a very short video that talks about our emer-

gency management system in California which I think will set the stage for our other speakers also.

[Whereupon, a video was presented.]

Mr. RENTERIA. Okay. The last time I showed this video at another hearing, one of the Committee members asked me when he saw the levels of response up there, field, local operational area and state, they noticed that the federal government was not on there and there is a reason for that. The way our system is designed here in California and in my 30 years of experience as an emergency manager, FEMA, the federal government, has never been a response agency.

It has been a recovery agency. It has been an agency that comes in to support state and local government after the event happens. So having said that, one of the things that I think this Committee can help us with is embedding FEMA into the response mode if, in fact, that is the direction they are going to go because that is one of the things that I think they have been criticized about but, at the same time, they are not a response agency.

Response happens at the local level. The local government, city, county, special district, and the state are the ones that first respond to an event. The federal government, even though we do use federal assets, national guard, other federal agencies that may be in the area, we cannot look upon the federal government as a response agency in the immediate aftermath of an event. I think that needs to be kept in mind.

Having said that, we have learned a lot of major lessons in the history of disasters that we have had in California. California is no stranger to disasters. In my 19 years as Emergency Manager for the City of Oakland I had eight Presidentially declared disasters in Oakland and Alameda County including the 1991 fire storm, the '89 Loma Prieta earthquake, and several winter storms and other fires in that area.

California has learned from its disasters. I have always said that experience is not what happens to you. Experience is what you do with what happens to you. We have taken the lessons learned from our events and incorporated them to prepare for the next one.

I also want to point out that one of the problems we have in responding to disasters and preparing for them, and I think I can say this for other states in the United States also, is that we are very prepared for what I call high-frequency and high-risk events. Things that happen all the time that we are ready to respond to.

For example, wild land urban fires, regular fires that firefighters respond to, hazardous materials incidents, transportation accidents. Even moderate earthquakes I think we do very well because they happen to us all the time. We train for them but we also respond to them. By responding to them we get that hands-on experience.

What we are not ready for is what I call the high-risk, low-frequency events and that Katrina was a high-risk, low-frequency event. The earthquake Dr. Jones just described to you, again, is a high-risk, low-frequency event. We haven't experienced those things yet so major lessons are coming out of that. You can train for those types of things but until you have actually gone through one it is not the same.

What we have learned from these events, especially with Katrina, things that are coming out now, we can also apply to lessons that we have learned. We still have issues and problems across the country and also in California with issues of evacuation. The evacuation of large populations is a problem. We have never done that before. Even if we do evacuate large populations, where are we going to put them? Mass care and sheltering of those populations.

We have a problem with special needs populations. The elderly, the frail, the poor, the non-English speaking. Those are all major problems we need to face right now. Alerting and warning, ability to get rapid, concise information, confirmed rapid concise information to not only our first responders but also to the public. We need to look at our alerting and warning systems and how we incorporate those all the way from the state level down to the local level.

And constant public education. We do a lot of public education for people to understand the hazard that they live with. We all move to areas where there are hazards. I don't care where you live in the United States you are subject to some kind of hazard. The object is, again, to educate people about your surroundings, educate people about what you can do to prepare for that type of hazard and, more importantly, survive.

Ten years ago we adopted the California Standardized Emergency Management System which you just saw in the video. CSEMS has been proven to work. We have used it over the last 10 years. It is a system that was born out of the Incident Command System of the Fire Service. ICS is a perfect model to use when you have multiple agencies responding to an event that requires multi-agency command, centralized decision making, and the utilization of many resources from different areas.

We learned some major lessons in the 1991 fire storm. Like I said, that happened during my watch. One thing I have always said is never burn down an elected official's home because it's going to result in legislation. That's what happened with CSEMS. One of our elected official's home burned down and the next thing we knew we had that legislation but it has been a God send for us in California because it has now organized and provided an emergency management system that can be used not only at the local level but all the way up through the state.

And also, as the video mentioned, just in this last year the National Incident Management System has been adopted by the U.S. Department of Homeland Security. NIMS was patterned after CSEMS so that is a high compliment to the state of California that the federal government used that system.

Mutual aid is also a major component of CSEMS and NIMS. Our mutual aid system has been in place in California for several decades and has proven again that our fire and law services, which utilize the system more than anyone else, has shown how that system works and neighbor helping neighbor. The ability for one city to ask request from another city or the county or even the state to allow resources to be sent to the impacted area.

One thing I do want to point out is that California is very resource rich. We have a lot of first responders, a lot of resources in

California. A catastrophic event like a southern California earthquake, yes, we would need help from other outside sources but the first wave of assistance would come from northern California from our fire departments and police departments up in the north. They would be the quickest to respond.

In this past administration Governor Schwarzenegger signed legislation for the state of California to be entered into the Emergency Management Assistant Compact, EMAC. EMAC is a mutual aid system for state helping state. California now is part of that system. Forty-nine of the 50 states are part of that.

That allows us to request assistance from Nevada, Arizona, or Texas if we needed to. We utilized the system in Katrina. California sent 6,500 personnel to the Gulf Coast to support the response and recovery efforts. By having EMAC as part of the state system that increases our ability to prepare.

Training obviously is something that cannot be taken lightly. You train until you get it right and then you train again. Training is the backbone of our system to respond but, again, training and actual response also work hand in hand. The ability to continue to have these types of training and also to have all-hazards approach to training, not just a specialized type of approach, will help our disciplines across the board. The consequences of a disaster regardless of whether it's an earthquake, a terrorist event, a flood, the consequences are the same. People's lives are impacted. People get killed. People are hurt. Property is destroyed.

Communication. It has been said enough but communication is the key to what we do here. Not only radio communication, the ability for first responders to talk to each other and talk to the central command post, but also the ability for emergency managers to communicate with each other, for elected officials to get up to date information on what is happening so they can respond to their constituents. Communication is a major key of what we do and major component of our systems.

We do have problems that have been identified in the arena of interoperability. We are working closely with our local governments to develop some systems that will support the state of California but I think this is a problem that is widespread throughout the country. We do need to address this issue of interoperability. We have identified some solutions at the local level. There are some real success stories in California, San Diego, here in the Los Angeles area.

Also in the Bay area some local governments have joined together in a mutual cooperation and identified some systems that we call the Gateway Project. Gateways are the black boxes that you have heard about where radio systems can literally be plugged in in order for responders to talk to each other. We need to spread that not only state wide but also throughout the nation.

I talked a little bit about resource acquisition. Of course needing to identify where the resources are in a timely and efficient manner is imperative. It is one thing to know where resources are but how quickly can they be deployed and how quickly can they be sent and arrive where they need to be. Databases need to be kept updated which are crucial to the type of work that we do. If we did have warning of an impending event such as a Katrina, resources

then can be deployed and prestaged in areas where they can best first respond.

I also need to talk about people. Not only do people become victims of disasters but people also are the true first responders. When something happens in that first few seconds and minutes after the event, it is neighbor helping neighbor. It is people helping each other and the more skills that they have and the more awareness that they have the more lives that are going to be saved.

When Loma Prieta hit in the Bay area and that freeway collapsed, the first people who were crawling all over that collapsed structure were people from the neighborhood. It was a noble and proud and courageous effort but it was also not a very wise effort because they didn't have the training to do what needed to be done and they were putting themselves in more harm's way.

Programs have been put in place to help train citizens and employees to be more prepared and we need to concentrate and put more emphasis on that type of training and that type of assistance because our neighbors and our co-workers are really the true responders.

Some lessons learned. While we plan for the next disaster, we can't always just look at the last disaster, although there are some very valuable lessons there. There are things like you saw today in Dr. Jones' presentation. There is new information coming out every day. Earthquake science to me is a work in progress and we have made a lot of progress in it.

Hearing Dr. Jones brings to mind from the first time I heard her that earthquakes don't kill people, buildings do and infrastructures do. The more you know about your surroundings and the more we do to invest in the mitigation of these types of events, the better off we are all going to be.

Let me close by also just pointing out that since September 11th I think this country has invested quite a lot of time, energy, and money into preparing us for terrorism. I applaud that effort but we also need to be reminded that we haven't really invested that much in all-hazards planning. The amount of money that has been allocated for preparedness for terrorism, I think, has also hurt us a little bit, not a little bit but a lot, in dealing with the natural hazards and disasters that happen all the time.

Since September 11th there have been no terrorist events in California. There have been six presidentially declared disasters since September 11th. What do we need to do now? Well, mitigation is another arena that I think you can help us in. There is a saying that for every dollar you spend on mitigation you save three dollars in recovery cost. That has been a proven fact.

The efforts that our local emergency managers are having to deal with to deal with the emphasis of where the resources are going to come from to continue their programs is important to keep in mind. While the state continues to work with our local emergency managers and the local governments to make sure that a system like CSEMS is in place, it gives us the reassurance that some of the things you saw in Katrina I really doubt would happen in California because of the systems we have in place.

Are we as prepared to deal with anything? No. There are things that we still need to be prepared for. The lessons coming out of

Katrina are going to just improve our plans and preparedness and allow us the ability to be better prepared in the future. So, again, I have a lot of confidence in our system. I have a lot of confidence in our first responders and in our emergency managers and state. They do have a proven system that works.

With that I'll close and entertain any questions if you have any.

Mr. SHUSTER. Thank you very much. Appreciate that extensive and thorough testimony. Your reputation precedes you. You are one of the best in the country in emergency management. Thank you for being here also.

Mr. RENTERIA. Thank you.

Mr. SHUSTER. Mr. Stanley, you may proceed.

Mr. STANLEY. Thank you, Mr. Shuster, and welcome to southern California, and Mr. Miller. I am glad to be here. My name is Ellis Stanley. I am the General Manager for the Emergency Preparedness Department for the City of Los Angeles. I have over 30 years of experience in emergency management starting on the eastern coast, Mr. Shuster, dealing with little things like fixing facilities, hurricanes, chemical issues, etc.

I move from North Carolina to Georgia working in Atlanta with major events and things like Olympics, etc. Now I am here in the second largest city in the country. That is only important from the standpoint that it is all about disasters being local. It has to do with development partnerships no matter what size that jurisdiction is and being able to build a cultural preparedness at the local level and that permeates up.

That is emphasized, as Mr. Renteria said, best, I think, in California with the CSEMS and now with NIMS which is mimicking that CSEMS process that we had to say that we can work, our tools will interact, our training is overlaid, etc. It is important that we have that type of partnership and relationship.

Mr. Renteria really hit on the basis of the emergency preparedness philosophy and all those things. What I would like to do is just talk with you about a few of the things that we have just done locally in the past two weeks. Last week we had a major exercise with the City of Los Angeles with Burbank, the two airports, looking at how we could deal with emergencies that may occur at those airports.

Why that is important is now we look at things, as Henry indicated, from an operational area perspective, from an urban area perspective. Last year we had a MetroLink train derailment. Disasters have an odd way of just not reading our plans at all. This train had the audacity to have an accident right on the border of two cities. It was a seamless response.

Glendale and the City of Los Angeles came together and responded. What happened equally is those outside agencies, those public and private hospitals, those 15 hospitals that were folded into the process seamlessly to be able to take those patients and to resolve that incident. Fortunately, only 11 people lost their lives but it could have been hundreds of people in that situation. It is important that we not only look at what is in our boundaries but also look at what is next to us.

To that end we do an emergency management workshop every day—every year. I wish we could do it every day. We do it every

year. The workshop we take 150, 170 people off site. Usually it is up at Lake Arrowhead. This past year we had the 17 contiguous cities to Los Angeles to have them in our training, in our planning, in our exercising so that we understand what capabilities we have, what gaps we have, and how those capabilities and gaps can be shared and how the gaps can be filled. It is important that we do that.

Many of the smallest cities cannot man or spend the money for an urban search and rescue team. The city and county of Los Angeles can so it is important that we understand how and when those resources will be called upon. It is important that we have a very strong mutual aid.

Also yesterday, as a matter of fact, we had an executive level training that was conducted by Naval Graduate School. It's from the high sheriff to the department heads to sit around the table and look at what is missing, if we have a scenario how are we capable of dealing with it.

One of the issues we are also dealing with this week is pandemics. We understand whether it is a biohazard created by men or whether it is something like the bird flu we have to be able to do those things that we have a capability to handle. For example, it is very little that we as a city can do about producing the necessary vaccines for this particular bird flu but we can deal with the need to be able to determine how we are going to prophylax our people and we do that through exercises, etc.

My last comment, since I have got the red light, is that the private sector is another one of those partners in preparedness that we do a lot of work with. In our emergency operation center we actually have a seat in there for the private sector. They provide 85 percent of the critical infrastructure resources in this country. It is important that we have a way to plug them into the process both beforehand, during, and after the fact.

I will be glad to answer any questions at this time.

Mr. SHUSTER. Thank you, Mr. Stanley. Just one point to clarify. The City of Los Angeles, how much does it make up of the County of Los Angeles?

Mr. STANLEY. Approximately a third. There are about 4 million people, 500 square miles in the City of Los Angeles. The County of Los Angeles is 4,200 square miles, 10 million people.

Mr. SHUSTER. Are we in the County of Los Angeles?

Mr. STANLEY. We are in the County of Los Angeles.

Mr. SHUSTER. All right.

Ms. Hayashi.

Ms. HAYASHI. I would like to welcome you to Whittier and thank you for inviting me to testify today on behalf of the City. I was asked to testify about what the federal government could have done better to assist the City of Whittier after the 1987 Whittier Narrows Earthquake. A little background on the earthquake: there were actually two large earthquakes, as you have already heard.

The first on Thursday, Oct. 1st (magnitude 5.9), and then a large aftershock on Sunday, Oct. 4th (magnitude 5.5). It felt like two totally separate earthquakes. That is how strong the aftershock was. Together, the two quakes caused \$78 million in damages to Whittier houses and businesses.

In order to arrive at some recommendations as to how the federal government could have provided better assistance to the city after the earthquake, I'd like to give a short background on Whittier's emergency preparedness activities prior to the earthquake. The assignment of emergency services coordinator had been given to the then-human resources director, who took the extra assignment very seriously and designed various full-scale disaster exercises for City employees and other agencies.

There was no statewide standardized emergency management system yet. CSEMS did not exist at the time, but Whittier and other California cities had been required by the state to adopt Emergency Services Ordinances and prepare emergency plans.

Compared to New Orleans with its different levels of government such as wards and townships, Whittier's governmental structure is simple. We have one City Council and it is supported by the commissions and committees. By declaring a local emergency within four hours after the quake, our City Council was able to initiate the process for making financial grants and loans and other resources available to the citizens of our community. There were several key issues, such as the need for many more building inspectors. The City was fortunate in many ways:

- 1) The state had registered volunteers to assist with building inspections;
- 2) The earthquake happened right after the annual convention of the International Conference of Building Officials, so the connections our building staff had made at the convention were fresh and resulted in many building officials offering assistance;
- 3) Also we have many large cities nearby and they also sent their building inspectors to supplement our small crew.

Most important of all, there was not the widespread regional damage that Hurricane Katrina caused, so we had local resources available that would have been tied up in a regional disaster. Adequate staffing was never an issue.

City Hall and Police Department employees all reported for work, and the police were able to immediately cordon off the devastated Uptown area. City clean-up was facilitated by the fact that most of our residents were able to remain in their homes and therefore were able to do their own cleanup and even volunteer to assist others.

So what did the federal government do in 1987, and could things have been improved? The Whittier City Council and employees understood that disasters happen at the local level, so that's the level at which we need to be prepared. Key people who were in positions of responsibility at the time of the Whittier Narrows Earthquake agree that Whittier was not waiting for the federal government's assistance; we had no expectations for, and were not dependent upon, immediate federal response. Our former Building and Safety Director said, "There was no lack of assistance from FEMA, but we contacted FEMA only for advice, for example, on reimbursement parameters."

FEMA, state OES and the Small Business Administration did set up financial aid facilities in town, but the strongest recommendation for improvement I encountered was that the Disaster Assistance Center should have been set up sooner (it was set up ten days

after the first earthquake, and only after much communication from City officials to our congressman as to the urgency of the matter.) Other comments include:

1) FEMA should have sent at least a few representatives immediately after the earthquake to observe the damage and send first-hand comments back to D.C. The geographic distance between Whittier and D.C. was quite great so, therefore, FEMA was removed from the event and had a different perspective of the destruction that had occurred;

2) The Disaster Assistance Center was limited in terms of the type and levels of aid it could offer. Many senior citizens on fixed incomes did not qualify for the loans and grants available because of the compressed repayment periods on the loans and the very high minimum payment amounts;

3) There was poor coordination between funding sources such as insurance companies and governmental assistance; and

4) Earthquake victims found the forms difficult to complete and desired more assistance from either volunteers or professionals. I would like to add that the FEMA representatives who did come to Whittier were very professional and extremely helpful.

As devastating as the Whittier Narrows Earthquake was for Whittier, the damage was intense in an area much smaller than the area affected by Hurricane Katrina. A more comparable situation would be an earthquake with widespread regional destruction, such as most of southern California. We would most assuredly be looking for more state and federal assistance in that situation, with all local resources stretched extremely thin.

Such a regional earthquake would also cause widespread damage to major components of regional infrastructure, something that did not happen in 1987. One thing that this points to, the difference between what happened then and what can happen here is the importance of perhaps our final recommendation and that is coordinated training and exercises for what Mr. Renteria describes as the very high-impact and low-frequency events. We do practice frequently at the local level coordinating at the operational area level and it would be a good idea to extend that beyond and be better prepared for regional events.

As mentioned earlier, even though shelters were necessary, the vast majority of Whittier residents were able to remain in their homes, return to their jobs, and clean up the rubble. They were able to volunteer in numbers to assist their fellow citizens. All this is unlike what happened in the immediate aftermath of Hurricane Katrina, and would not necessarily be the case in a more massive, involved California earthquake.

I would like to thank the Subcommittee for inviting the City to testify, and thank your staff for their help. I am happy to answer any questions you have, or help find the answers for you at any time.

Mr. SHUSTER. Thank you very much. Appreciate it.

I have a couple of questions. First I want to say just how important it is to be in California because when you look at emergency management across the nation, the two states that the federal government should be looking to is California and Florida because you have extensive experience. Not only extensive experience but suc-

cessful extensive experience. You have the resources and I think you have the structure in place.

My first question is, if you would, the three of you, and it appears we have tremendous experience with the three of you over a period of time, can you look back over the last 10 years and grade FEMA 10 years ago, five years ago, and the last two years to give me a sense of where you think FEMA has gone over that period. So 10 years, five years. Ten years ago would be the middle of the '90s, five years would be pre-9/11, and then the last two years when FEMA has gone into DHS. Give me a sense of where you think it has gone.

Mr. RENTERIA. I will be glad to start. My experience with FEMA started in 1985 when I first came on into the field of emergency management. I still feel that their role has not changed. They are not a response agency and I think that is unfair to tag them as such.

On the other hand, I think FEMA's high point, their high-water mark, was in the '90s when they took on the role of mitigation. I think when FEMA really grasped mitigation by the collar and said, "We are going to do something in this country about that," I think that was the high point in my experience in dealing with FEMA. They were always a responsive agency when it came to dealing with the recovery efforts. The relationship that you set up with them beforehand also helped through their regional offices.

Again, I think their high mark was the mitigation program. I will point specifically to Project Impact. Project Impact was one of those programs that put actual dollars into preparing the community for the next event. Also as a result of that, there are now, and you are still funding, the hazard mitigation planning grants.

After a disaster there is a percentage of the total cost that are set aside for mitigation programs. That has been a God send to us. We can show you specific examples throughout the state of how mitigation money has been used to prevent another disaster from happening. That was the high point.

I think the down turn has been in these last few disasters where the focus has been on FEMA as a response agency. "Why weren't you there? Why didn't you have the troops on the ground? Why didn't you have the resources there?" That is really a local responsibility. By local I mean the cities, the counties, and the state. It is our responsibility to deal and prepare for those types of things. Do we need FEMA to be part of that team? Absolutely. I really would urge us to look at how FEMA can be put into the response mode if that is the direction they are going to take.

One of the disadvantages that FEMA has is they are not all things to all people everywhere at the same time. There is an assumption made that FEMA has these warehouses somewhere full of supplies. That is not the case. There needs to be a coordinated effort to provide those resources where needed.

Also I will caution let us not go back to the Cold War era where we started stockpiling basements of schools with supplies that had no plan for replenishing those supplies. They got outdated. In fact, we are still digging some of that stuff up and throwing it away because that was a program that was failed from the very beginning.

Again, what can we do about that? One of the things we are doing in the State of California, and Ellis has been working very closely with us on this, is developing public/private partnerships, bringing the private sector into this mold and having them be part of the solution and not part of the problem.

Companies and businesses that are housed in California have resources as you saw in Katrina. Pre-existing agreements with private industry I think would help us get resources quicker. Can FEMA help us with that? I think there are some issues there that the federal government has to address and we will go through FEMA to address them. I am sorry that I ran over but I think those are some of the things that are more exciting.

Mr. SHUSTER. Mr. Stanley.

Mr. STANLEY. I have fortunately, or unfortunately, have been around at the birthing of FEMA in 1979 by President Carter and I have seen FEMA grow. I have seen it at the best of times and I have seen it at the worst of times. I have seen it back when Hugo and they kind of fell on their face in that response to a hurricane and they did a much, much better job with Andrew when that was a major catastrophic event on the eastern coast.

I have seen it with generals at its head. I have seen it with other political appointees at its head. I have never seen it better than when it had an emergency manager at its head to be able to run that organization as a professional organization with competency in the areas of emergency management.

It is said that where you stand is determined by where you sit. It sat at the cabinet level and was able to with very strong, strong relationships with the President and the cabinet able to implement and get things done in a way that bought pride to the citizens and pride to the government in that response. At the worst of times I think we have all seen that in our recent times when it fumbled the ball. I think it comes down to about having strong competent leadership no matter where it sits in the organization.

Mr. SHUSTER. Ms. Hayashi.

Ms. HAYASHI. Well, I don't have the breadth of experience and exposure to FEMA that my colleagues have so if you did compare FEMA's response to the Whittier Earthquake and then its very recent response to the January and February storms of last year, I would say that the comments hold that I made in terms of the Whittier Earthquake. FEMA was slow to respond with a disaster assistance center and because we had so many of our residents experiencing damage to their homes and some of them displaced there was a great need for that.

With the more recent federally declared disasters, and there were two of them, I can't fault FEMA at all. They were here in a very short period of time. It is a little different. We didn't have people displaced from their homes but they were here in full force, extensive field visits, working on project worksheets in a very timely manner.

The Hazard Mitigation Program Mr. Renteria mentioned was a great plus because you don't want to necessarily put things back the way they were pre-disaster. Often times there are many better ways to construct something and hazard mitigation projects recognize that and fund that so we are appreciative of that effort.

Mr. SHUSTER. I am going to turn it over to Mr. Miller for questions. Before I do that, I want to make a statement. As we are going to move through Congress legislation, and I don't know what it is going to look like at the end whether you take FEMA out or leave FEMA in DHS, but that whole structure is going to change, it is absolutely critical that you folks at the local and state level are communicating with us because as things happen in Washington sometimes, Congress has one thought, the administration another and we get into this headbutting.

It is so important to hear from you for you and to engage your members of Congress and talk to them about what your experience has been and what you would like to see because FEMA should not be—we are not going create a national fire company that sits around waiting. We have to depend on first responders locally and at the state level to do that but they need to be involved at all levels whether it is preparedness, response, recovery, or mitigation.

I would urge you to engage your members of Congress. Mr. Miller comes from a background and has been here in Whittier and has seen it firsthand but I don't think most members of Congress have that experience. I know I didn't, until I sat on this Committee, really develop a better understanding. So I would encourage you to engage fully in this debate.

Mr. Miller.

Mr. MILLER. Thank you. I have attended numerous hearings in Washington on Katrina. Not on the Transportation Committee but on services we have HUD, Housing, and such. Your testimony is refreshing and I have to say I agree with it. There has been a lot of fingerpointing that has gone on. I agree with your statement that the feds are to assist and locals are to be the first responders.

We witness that here in California time and time again. Two years ago we had the major fire that started in Lava Creek in the San Bernardino County and went all the way through LA County. I watched all the local agencies of the state get involved and do a wonderful job. The federal government came in and assisted. We just recently had a fire in the Cleveland National Forest in my district.

It was amazing all the local fire agencies. It is like a brotherhood out there, fire and policemen. They just all cooperate from city to city and county to county. I called out to the fire agencies and said, "Can we assist you?" They said, "We are doing just fine. The local resources are all we need."

There was a huge disconnect in Katrina between the local and state government. Some of your states that we witnessed that testified said, "We are in charge. We are in control. We are dealing with it. We are going to need some help in infrastructure getting the water systems back, our highways back in place, electrical services, those type of basic needs."

The federal government comes in after the fact, as you so stated, and assists but this mutual aid that we have in California works very, very well. I wish more states would use what we do here as a pilot program for their states because it does work. Then the federal government has never moved rapidly on anything.

The only thing we really do well is fight wars and some people argue we don't even do that well anymore. We are a huge elephant.

We don't move like the local government does or state government. We are responsible for a much larger area and to set up, like you said, local agencies and warehouses just doesn't work. Everything is antiquated before it is even utilized.

I guess, Mr. Renteria, my question is how do you feel the federal government fits into California's emergency management plan in response? How do you see them fitting in?

Mr. RENTERIA. Well, again, I view them as a partner in the recovery and also a partner in resource providing, providing resources to us that we may not have in California and those are federal resources. Before we can even get to that stage, I need to know what they have. I need to know what they have to deploy, where it is, and assist them in the process for how to request it.

Because we do have systems in California that makes that type of request almost seamless through our mutual aid system and through our ability to respond to neighbor helping neighbor, I would like to set something up like that with the federal government, too, without expecting everything and all things from them. I know the limitations everybody has. To make them come to the table to sit with us as we do with our locals, FEMA should be at the table with us when we are planning our plans here, responding to things here. It seems like for whatever reason that has not happened in the last few years.

Mr. MILLER. So you don't think the feds are integrated in California's disaster response at this point the way they should be?

Mr. RENTERIA. The way they should be. Correct. I think they need to be brought into the fold.

Mr. SHUSTER. Mr. Stanley.

Mr. STANLEY. I would like to answer that. We have actually two federal governments in our scenario here. Dr. Jones, for example, is with the federal government but you wouldn't know it. She is local. She lives in this area and she is part of this process. We have local FBI. We have local DHS with the Secret Service, with the Coast Guard. They are part of our local planning response, exercise training.

We run into troubles when the other federal come into town out of the Beltway. That is the different federal that we have. On a day-to-day basis it is a very seamless response. That mutual aid that we are talking about is horizontal and vertical. The exercise I talked about yesterday had sitting around the table FBI. We had Secret Service. We had U.S. Coast Guard. We had all of the players, the State Highway Patrol, etc. It is a different relationship when you kind of come in on the white horse out of the beltway and then there is a different saluting mechanism, if you will.

Mr. MILLER. They don't understand your local needs.

Mr. STANLEY. They are not plugged in effectively with the local needs. We do have catastrophic response plans. We know that we could be overwhelmed. The scenario in which we dealt with was dealing with 100,000 casualties. Now post-Katrina that may have been too optimistic. I mean, we probably should have looked at something different.

Mr. MILLER. Ms. Hayashi, what sort of things do you recommend we do in the future to speed up the process or make it more efficient for the locals?

Ms. HAYASHI. Well, to speed up the process, and I know it would take a while to mobilize such a large organization, but to send out for example, a scout team for lack of a better word. People from FEMA who are then connected with their colleagues in D.C. who would get back first hand reports that they would understand and it would be credible.

I mean, we had a lot of communication but somehow I think just because of the geographic distance it just didn't ring home. Perhaps if one FEMA to another if they are speaking and some are here, they would be able to more quickly put together an effective response team.

Mr. MILLER. I want to thank you because there is a lot that you have demonstrated to us today that we need to do and a lot of information that I have learned from your testimony to take back to Washington that I think is very viable. We have had too many, in my opinion, just come back to Washington and point favors that we weren't there first, we didn't have what we needed on the field. They forgot to look at the locals who are responsible.

I think local government is the best government. You are right there with people. You know the local needs. You know what you are going to face, what you have to deal with. Washington is 3,000 miles away. The best they can do is glean from what we tell them. That is why I thank Chairman Shuster for coming out here today. This is refreshing. It is good information we need.

It is information I think that we can give to our colleagues that hopefully it will transfer to their state and local governments so you can be prepared, understand who is responsible, understand that the federal government is there to assist and provide what you do need. After the main first response that is when we have the ability to come in and assist you with the resources that we have and get you back on track. I appreciate your testimony.

Mr. SHUSTER. One more question. The Katrina committee came out and looked at the response five days before and five to seven days after. The findings appear to support five general reform principles and I'm going to tick them off quickly and just get your general impression. Catastrophic disasters require early presidential involvement to engage federal resources, one.

Large disasters require DOD support. Again, we are talking about a catastrophe like Katrina, a 7 or 8 earthquake here in California would be what we are talking about. Third, the disaster preparedness functions need to be closely integrated and managed with response functions.

FEMA's essential response capabilities must be restored and enhanced, the professional workforce, logistics, things you mentioned here today. And the tension between the nation's hazards emergency management system and terrorism preparedness needs to be resolved. I'll go over those points if you didn't get them all. The first one is requiring early presidential involvement.

Mr. Renteria, when there is a disaster in California do you have the Governor's ear? I mean, do you have direct access to him?

Mr. RENTERIA. Back to what Ellis said earlier about the structure of FEMA. In California I sit on the cabinet. I am a cabinet member. I was hired by the Governor. He is my supervisor and I directly report to him. Whenever there is an event, to be honest

with you, he calls me. He hears about something and he is on the phone saying, "What's happening? Give me an update."

The first question out of his mouth is, "Is this a declared event? Do I need to declare an emergency?" He is in tune with that process and that is my recommendation that I would make to him based on information that I am getting from the locals. They are in constant communication with our state operation center so, yes, that is important. The Governor can declare a local state emergency and then that request is forwarded to FEMA, or the President, rather, for a federal declaration.

A lot of that depends on information, too. I mean, please bear in mind I hear loud and clear that we need to be quick and rapid in our response and getting declaration made but the last thing we want to do is be premature, too. It doesn't hurt to make a declaration 24 hours after or 48 hours after. I mean, that is not going to hurt our response. We are going to respond regardless of whether it is a declared emergency or not.

Obviously we don't want to wait 10 days after an event before we have something happening. The matter of hours doesn't make any difference because locals will respond immediately. We will be in touch immediately. The State of California also has a California State Warning Center.

It is a 24-hour dispatch communication center that is linked to every single 911 center in the state. We have rapid real time information. Who are we getting it from? From the local first responders. And, quite honestly, from CNN and Fox News also. We need to remember that they are part of this equation. The media is our best friend and our worst enemy in a disaster.

They need to be brought to the table, too, because they have a lot more resources than we do and they are on the scene first and they need to be responsible in their reporting because they have, has Katrina showed, a lot of misinformation that went out there that was unfairly criticized of the federal, state, and local government that never was true.

Mr. SHUSTER. Mr. Stanley.

Mr. STANLEY. I concur with what Henry has said. I would like to go where no one has gone today yet and that is to talk about that money issue. When you talk about all of those five points and you talk about—and you ask yourself the question have we invested sufficiently in our emergency management program in this country, one of things you can't look back at when FEMA was at the best of times is the EMPG, the Emergency Management Performance Grant.

Why don't we have an emergency manager in every jurisdiction in the country? Is it that difficult to do? Two years ago when Mr. Renteria's organization did a survey, I think there was a \$267 million gap in the needs and what was available. Now we have got a \$13 million cut in those EMPG monies.

Which way are we going? How are we going to get there? We saw in Katrina the ones that you indicated that were doing a great job had that relationship, had those resources, had that training and was able to implement their plans. Those communities that did not I think we saw the difference there.

Mr. SHUSTER. Ms. Hayashi.

Ms. HAYASHI. I have nothing to add.

Mr. SHUSTER. I think you make an important point about the funding, the EMPG funds. I think most of that was redirected to terrorism. I saw you shaking your head when I said the fifth point about the tension between terrorism preparedness and emergency management. What I have learned talking to emergency managers is a response to terrorism or a natural disaster, about 80 or 90 percent of it is the same. It is just that some of the equipment has to be different.

Mr. RENTERIA. I just want to tag onto Ellis' statement. Math is not my greatest strength so bear with me. I am just guessing. Last year, 2005, federal money was given to California for terrorism preparedness equated to \$7.86 per capita. EMPG money 39 cents. There is a difference. We need to be investing wisely. Again, how many terrorist events have we had? I'm not saying that we shouldn't be prepared for terrorists.

It is a real scenario but it is just an additional scenario in our emergency management structure. It is a human cause disaster. Regardless of whether you are from this country or another country it is a human cause disaster and it has the same consequences but we are not investing wisely the funding that is coming down now to help us prepare. Yet, the biggest frustration that I have at the state level is when I look at locals, local governments do not have the support they need to be better prepared and disasters start at the local level.

Mr. STANLEY. Mr. Shuster, if we use something as simple as pandemic right now and we compare the bio from the pandemic or the bio from a terrorist event, locally we know that is not geared to a city. That is a regional or national event, but there are things locals need to be doing. We need to be bringing the schools together.

If kids have to stay home, is there a distance learning program in place? How does that impact the private sector? What are they going to do if a percentage of employees are not at work? If we look at 40 percent of our own employees that can't come in, those are things that we need to be doing and we have control of.

Going back to Dr. Jones when you are talking about the hospitals, we can't do anything about the retrofit of the hospitals because it keeps getting pushed back by the lobbyists, etc., but we can look at do we have field hospitals that we can move in place when we lose a hospital that we can make sure we are keeping—those are things that can be going on on a day-to-day basis.

Those are real world actions that can be taken if we have the people and the resources in place to do those and we shouldn't have to wait for somebody to come in from federal government. We know these situations and these predictable surprises as it were. We know what they are and we know that we have the capabilities and the resources to be dealing with that now.

Mr. SHUSTER. Well, I really want to thank you very much for being here in front of us today. This discussion really adds to our knowledge as we move forward. I'll make my plea one more time. Make sure you are engaged with members of Congress because there are a lot of members of Congress out there and I have heard some of them say DOD should take over emergency management.

That is the wrong answer. I can stand up there and Gary can stand up there and we can make the case for doing this or that but really if you are in California or if you are in Arkansas or the local or state emergency management people are talking about what they want to see.

I have been around enough emergency management folks that we don't always see eye to eye on the exact structure of how FEMA should look or DHS but I think there are some core principles there that if you are out engaged and you are educating your member of Congress, we are going to have a lot better chance when we do something with FEMA whether it is within or without DHS it is going to be much better for you folks because I couldn't agree more with Mr. Miller.

Even at the local response is where it has to take place and that is where it starts, moves up to the state and to the feds and the federal government should be there as a support mechanism for you.

One other point I just wanted to make. I was told that you had mentioned for every dollar of mitigation it is three dollars in return. We saw a report that said for every dollar it is four dollars in return. What do they say? An ounce of prevention is worth a pound of cure. Again, thank you all very much for being here.

I want to ask unanimous consent that the record of today's hearing remain open until such time as all the witnesses have provided answers to any questions that may be submitted in writing and unanimous consent that during such time as the record remains open additional comments offered by individuals or groups may be included in the record of today's hearing. Without objection so ordered. Again, thank you all very, very much for being here.

[Whereupon, at 11:00 a.m. the Subcommittee was adjourned.]

**City of Whittier Emergency Services Assistant Ann-Marie Hayashi
Testimony before the Subcommittee on Economic Development,
Public Buildings and Emergency Management
Thursday, February 23, 2006
Whittier City Council Chambers, 13230 Penn Street, Whittier, CA**

Good morning, my name is Ann-Marie Hayashi. I'd like to welcome you to Whittier and thank you for inviting me to testify today on behalf of the City. I was asked to testify about what the federal government could have done better to assist the City of Whittier after the 1987 Whittier Narrows Earthquake.

A little background on the earthquake: there were actually two large earthquakes, the first on Thursday, Oct. 1st (magnitude 5.9), and a large aftershock on Sunday, Oct. 4th (magnitude 5.5). Together, the two quakes caused \$78 million in damages to Whittier houses and businesses.

In order to arrive at some recommendations as to how the federal government could have provided better assistance to the City of Whittier after the earthquake, I'd like to give a short background on Whittier's emergency preparedness activities prior to the earthquake. The assignment of emergency services coordinator had been given to the then-human resources director, who took the extra assignment very seriously and designed various full-scale disaster exercises for City employees and other agencies. There was no statewide standardized emergency management system yet, but Whittier and other California cities had been required by the state to adopt Emergency Services Ordinances and prepare emergency plans.

Compared to New Orleans with its different levels of government such as wards and townships, Whittier's governmental structure is simple – one City Council governs the City, assisted by supporting commissions and committees. By declaring a local emergency within four hours after the quake, our City Council was able to initiate the process for making financial grants and loans and other resources available to the citizens of our community.

There were several key issues, such as the need for many more building inspectors. The City was fortunate in many ways: 1) the state had registered volunteers to assist with building inspections, 2) the earthquake happened right after the annual convention of the International Conference of Building Officials, so the connections our building staff had made at the convention were fresh and resulted in many building officials offering assistance, 3) we have many large cities nearby and they also sent their building inspectors to supplement our small crew. Most important of all, there was not the widespread regional damage that Hurricane Katrina caused, so we had local resources available that would have been tied up in a regional disaster.

Adequate staffing was never an issue. City Hall and Police Department employees all reported for work, and the police were able to immediately cordon off the devastated Uptown area. City clean-up was facilitated by the fact that most of our residents were able to remain in their homes and therefore were able to do their own cleanup and even volunteer to assist others.

So what did the federal government do in 1987, and could things have been improved? The Whittier City Council and employees understood that disasters happen at the local level, so that's the level at which we need to be prepared. Key people who were in positions of responsibility at the time of the Whittier Narrows Earthquake agree that Whittier was not waiting for the federal government's assistance; we had no expectations for, and were not dependent upon, immediate federal response. Our former Building and Safety Director said, "There was no lack of assistance from FEMA, but we contacted FEMA only for advice, for example, on reimbursement parameters."

FEMA, state OES and the Small Business Administration did set up financial aid facilities in town, but the strongest recommendation for improvement I encountered was that the Disaster Assistance Center should have been set up sooner (it was set up ten days after the first earthquake, and only after much communication from City officials to our congressman as to the urgency of the matter.)

Other comments include:

- 1) FEMA should have sent at least a few representatives immediately after the earthquake to observe the damage and send firsthand comments back to D.C. The geographic distance meant that FEMA was very removed from the event and had a different perspective of the destruction that had occurred;

- 2) The Disaster Assistance Center was limited in terms of the type and levels of aid it could offer. Many senior citizens on fixed incomes did not qualify because of the compressed repayment periods and high minimum payment amounts;
- 3) There was poor coordination between funding sources (insurance companies and governmental assistance); and
- 4) Earthquake victims found the forms difficult to complete and desired more assistance from either volunteers or professionals. I would like to add that the FEMA representatives who did come to Whittier were very professional and extremely helpful.

As devastating as the Whittier Narrows Earthquake was for Whittier, the damage was intense in an area much smaller than the area affected by Hurricane Katrina. A more comparable situation would be an earthquake with widespread regional destruction, such as most of southern California. We would most assuredly be looking for more state and federal assistance in that situation, with all local resources stretched extremely thin. Such a regional earthquake would also cause widespread damage to major components of regional infrastructure, something that did not occur in 1987.

As mentioned earlier, even though shelters were necessary, the vast majority of Whittier residents were able to remain in their homes, return to their jobs, and clean up the rubble. They were able to volunteer in numbers to assist their fellow citizens.

All this is unlike what happened in the immediate aftermath of Hurricane Katrina, and would not necessarily be the case in a more massive, involved California earthquake.

I would like to thank the Members of the Subcommittee for inviting the City to testify, and thank your staff for their help. I am happy to answer any questions you have, or help find the answers for you at any time.

STATEMENT OF
DR. LUCILE M. JONES
SCIENTIST-IN-CHARGE, SOUTHERN CALIFORNIA
U.S. GEOLOGICAL SURVEY
U.S. DEPARTMENT OF THE INTERIOR
BEFORE THE
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND
EMERGENCY MANAGEMENT
U.S. HOUSE OF REPRESENTATIVES
FEBRUARY 23, 2006

Mr. Chairman and Members of the Subcommittee, thank you for this opportunity to discuss the likelihood and potential effects of a worst case, catastrophic earthquake in the Los Angeles area.

The United States is subject to a variety of natural hazards including earthquakes, tsunamis, landslides, flooding, volcanic eruption, hurricanes, and wildfires. These hazards can result in considerable human suffering and billions of dollars in property and economic losses. The occurrence of these hazardous events is inevitable; however, the extent of damage and loss of life can be reduced. Accurate, scientifically based geologic hazards assessments and real-time warning systems that define the nature and degree of risk or potential damage are the foundation for preventive planning; social, economic, and engineering adaptations; and more effective post-event emergency response that are essential to hazard mitigation. At the U.S. Geological Survey (USGS), we strive to deliver the information and tools that emergency managers, public officials and the public need to prevent natural hazards from becoming disasters. The USGS has the lead Federal responsibility under the Stafford Act (P.L. 93-288) to provide notification – including forecasts and warnings where possible – for earthquakes, volcanoes and

landslides. The USGS is a partner in the National Earthquake Hazard Reduction Program (NEHRP), working with the Federal Emergency Management Agency (FEMA), National Institute of Standards and Technology, National Science Foundation, and state and local government.

The USGS Earthquake Hazards Program provides the scientific information and knowledge necessary to reduce deaths, injuries, and economic losses from earthquakes by providing timely notifications of earthquake locations, size, and potential damage; regional and national assessments of earthquake hazards; and increased understanding of the cause of earthquakes and their effects. National and regional scale seismic hazard maps depict earthquake shaking hazards and are used for creating and updating the seismic design provisions of building codes used in the United States.

Of all natural hazards facing the United States, earthquakes have the greatest potential for inflicting casualties, damage, and economic loss. Although damaging earthquakes are infrequent, their consequences can be immense.

Describing a single worst case catastrophic earthquake event limits a full understanding of the earthquake risk. Southern California is home to more than 300 faults capable of producing damaging earthquakes, more than any other metropolitan area in the United States. To illustrate the range of possibilities, two events are described here: a magnitude 8 event on the San Andreas fault, and a smaller, magnitude 7 to 7.5 event on a

thrust fault near downtown Los Angeles. The geologic record tells us that both events are inevitable; the only question is: when will the events occur?

A magnitude 7 to 7.5 earthquake on the Puente Hills, Santa Monica, or Hollywood faults in the Los Angeles basin will produce the greatest damage to buildings because the event would occur in an area near many older structures. A model from a FEMA study of expected losses from a Puente Hills fault earthquake predicts a loss of 18,000 lives, 300,000 displaced persons in need of housing, and financial losses of a quarter trillion dollars.

Because there are several large faults in the Los Angeles basin, one event of this type occurs every 500-1000 years. Smaller earthquakes on these faults such as the 6.7 magnitude 1994 Northridge earthquake will happen an average of more than twice per century. The Northridge earthquake resulted in 57 dead and \$40 billion in losses. Earthquakes in the range of 7.0 – 7.5 will damage a large number of buildings in Los Angeles and displace hundreds of thousands of people from their homes. Severe business disruption would continue for months following the event.

A different type of disaster will be caused by the great magnitude 8 earthquake on the San Andreas fault that repeats every one to two hundred years. Earthquakes this large involve movement of 20 or more feet along at least 250 miles of the fault. Thus, every structure crossing the fault, including freeways, pipelines, power lines, and railways will be pulled apart by the fault. This would lead to significant disruption to the distribution

system for necessities such as water, power, and food. Repairs to infrastructure could take months.

East of Los Angeles, the San Andreas fault dangerously traverses rapidly growing areas of the Inland Empire (San Bernardino-Riverside). In a great earthquake (magnitude 8.0 or greater) along the San Andreas fault, northern Los Angeles County and the Palm Springs area will likely be the hardest hit. Because there is a greater density of older structures in these areas, many buildings will completely collapse, potentially killing thousands. All southern California communities will be subjected to some level of damage; aid for emergency response will have to come from much farther away and will take much longer to arrive.

The level of damage in Los Angeles will likely be higher than current models predict. Existing building codes have been designed largely based on the ground shaking generated by moderate earthquakes. A recent California Institute of Technology study concluded that the energy produced in a magnitude 8 earthquake on the San Andreas fault could cause one or more high-rise buildings in downtown Los Angeles to collapse.

Just as the collapse of the levees in New Orleans turned a disaster into a catastrophe, the secondary effects of an earthquake can also be more calamitous than the earthquake event itself. Any of the major earthquakes that will strike the Southern California region could trigger a range of secondary effects depending upon the exact fault, weakened infrastructure nearby, and the weather. The potential secondary effects include:

- **Fires.** Fires have always been a major problem after earthquakes. Ruptured gas lines and failed water delivery systems combine to make firefighting very difficult. Fires destroyed much of San Francisco in 1906, and contributed to the loss of 100,000 lives in the great Tokyo earthquake of 1923. If an earthquake strikes Los Angeles during a time of hot, dry winds such as when the wildfires of 2003 occurred, firestorms could erupt throughout the City.
- **Landslides.** Landslides are another common result of earthquakes. If the earthquake happens during heavy winter rains, landslides could be widespread. One landslide triggered by an earthquake in the Soviet Union in 1957 covered a city, killing 50,000 people. There are even secondary effects from the landslides – for example, over 1,000 cases of Valley Fever, an emerging and sometimes deadly fungus infection, were caused by the dust raised by landslides during the 1994 Northridge earthquake.
- **Dam failures.** The San Gabriel Mountains, north of the Los Angeles basin contain many old dams built in the 1920s and 1930s. The failure of even one of these structures could flood tens of thousands of homes and result in significant loss of life.
- **Aftershocks.** Large earthquakes trigger other earthquakes, sometimes at significant distance away from the main shock. A large San Andreas event could easily trigger an aftershock of magnitude 6.5 – 7 in Los Angeles. Aftershocks can be even more damaging to buildings already weakened by the main shock. A

disaster similar to the 1994 Northridge earthquake could occur as a consequence of a single aftershock.

Our actions before the earthquake strikes will help to determine the losses during the event. Science can tell us the likely consequences of an earthquake and we can use that information to change the outcome. The USGS along with our partners in Federal, State, and local governments and academia have identified steps toward mitigating the earthquake hazard in southern California.

- **Lifelines.** We can reduce the vulnerability of our lifelines by adopting fault-crossing technologies that allow the fault to move without rupturing the pipelines and other transportation systems, such as was used to prevent damage to the Alaska Pipeline during the 7.9 magnitude 2002 Denali earthquake.
- **Retrofitting.** Trillions of dollars of building stock in southern California, built before adoption of modern building codes, have not been retrofitted to modern standards.
- **Rapid information systems.** Modern seismic monitoring systems can provide information about the strong shaking and probable damage within minutes to support decisions by emergency responders. In some cases, information about the probability of shaking can be delivered before the shaking begins.
- **Accurate scenarios.** An integrated picture of what will happen in a future earthquake event from rupture on the fault to shaking and damage of buildings and infrastructure is needed. In order to chart the road to full recovery from such

an event, we need to study and plan for the response at all levels of including emergency response. Such analysis requires research on all aspects of the earthquake process, including: mapping the near-surface geology in the urban region; determining the location and geometry of all hazardous faults; measuring the seismic wave speed in near-surface materials; and deploying Advanced National Seismic System (ANSS) instruments in the ground to quantify the way earthquake waves travel in the region, and in key engineered structures to better predict how they will respond to severe shaking. These results would provide a complete picture of where mitigation will do the most good. Scientific analysis can reduce uncertainty and further engineering evaluation will help reveal the actual level of vulnerability in our built infrastructure and lifeline systems and help to prioritize retrofitting.

- **Education.** Our citizens will eventually be the true first responders to the next disaster. They need to be educated on the likely consequences of earthquakes, how to recognize a safe building, the importance of retrofitting and how to respond safely. In particular, education is the only viable approach to encourage the securing of contents of buildings. Damage to contents caused \$12 billion of the \$40 billion in losses from the 1994 Northridge earthquake.

Southern California has one of the Nation's highest potentials for extreme, catastrophic losses from several natural hazards such as earthquakes, tsunamis, fires, landslides, and floods. Estimates of expected losses from these hazards in the eight counties of southern California exceed \$3 billion per year. These numbers are expected to increase as the

present population of 20 million grows at more than 10 percent per year. Recognizing this risk, the Administration has proposed an Integrated Multi-Hazards Demonstration Project in southern California as part of the President's FY07 budget request to Congress. The project would demonstrate how integrating information and products about multiple hazards improves the usefulness of this information in reducing loss of life and property from natural hazards. The Integrated Multi-Hazards Demonstration Project initiative brings the unique research and systems capabilities of USGS to bear on complex issues surrounding natural hazards events, especially those that are interrelated such as earthquakes and tsunamis. The development of integrated databases and the enhancement of information technology systems to track multiple hazards will facilitate more rapid communication and response to the user community. The USGS will work with local planners, emergency managers, and first responders to develop products and tools such as integrated hazard maps and planning scenarios and decision tools to improve communication of USGS science to communities at risk.

Natural hazard events during the past year underscore the need for timely, relevant scientific information. Our efforts in hazards monitoring and long-term data and information collection from past and present hazard events is not simply a scientific research endeavor - it is a matter of public safety.

Mr. Chairman, thank you for the opportunity to appear before you today. I am happy to answer any questions that you and Members of the Subcommittee may have.



Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

The Big One



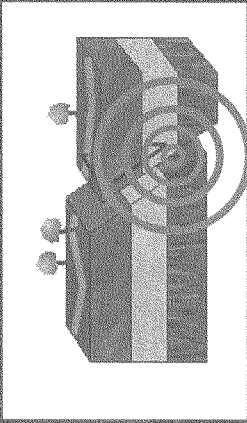
What will happen?
How bad will it be?

Lucy Jones
Scientist-in-charge for Southern California
US Geological Survey

U.S. Department of the Interior
U.S. Geological Survey

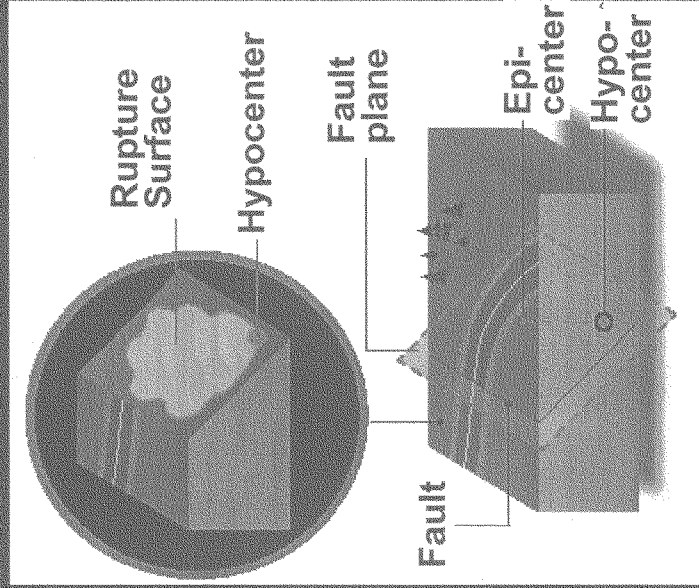
Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

What is an earthquake?



Every point on the rupture surface releases energy


A bigger fault means a bigger earthquake



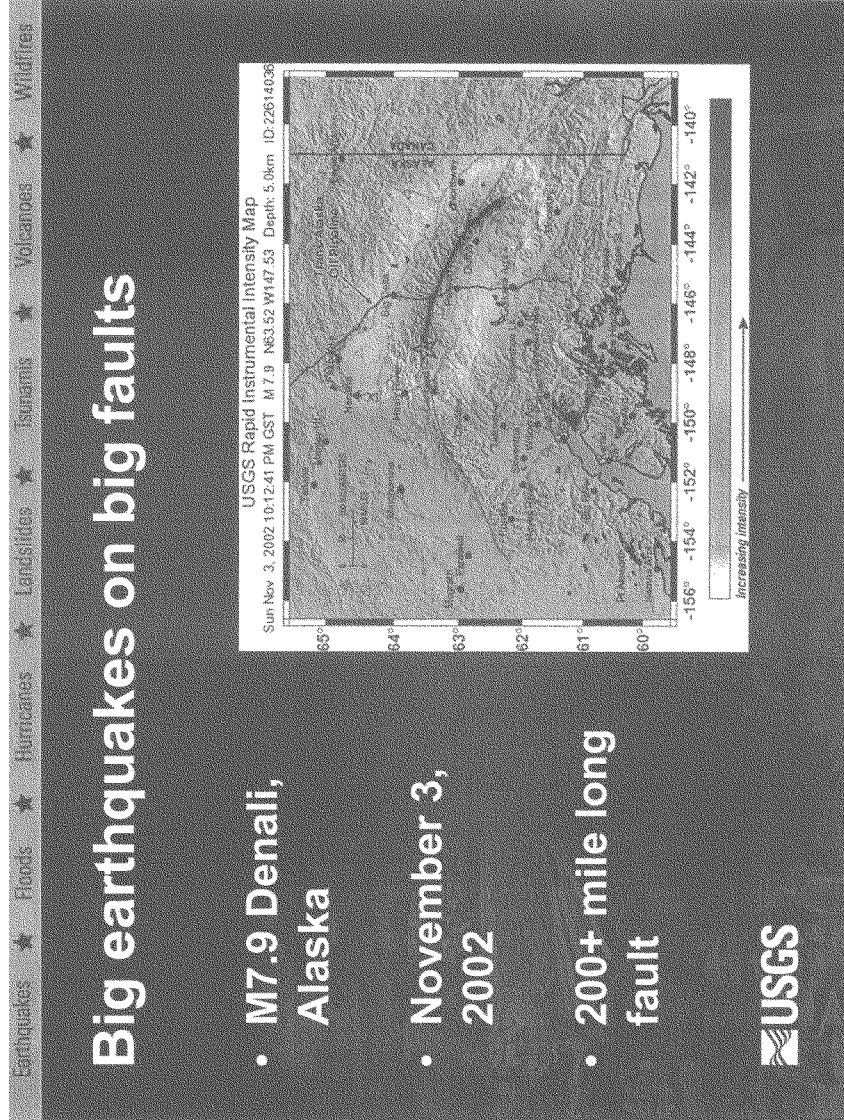
Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

What Controls the Level of Shaking?

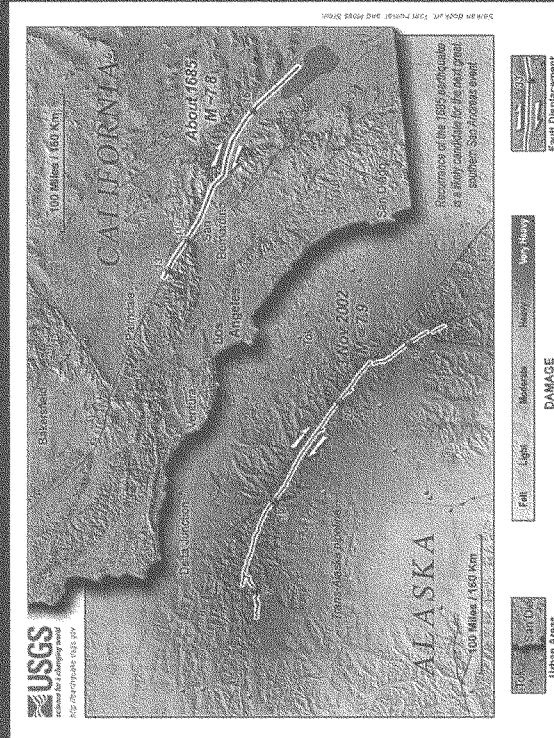
- **Magnitude**
 - More energy released
- **Distance**
 - Shaking decays with distance
- **Local soils**
 - amplify the shaking

 USGS



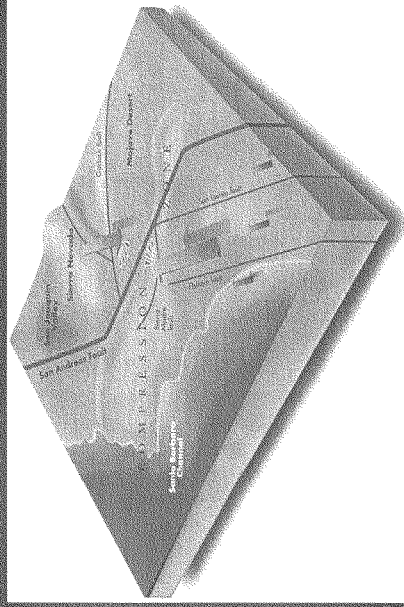


Near people...



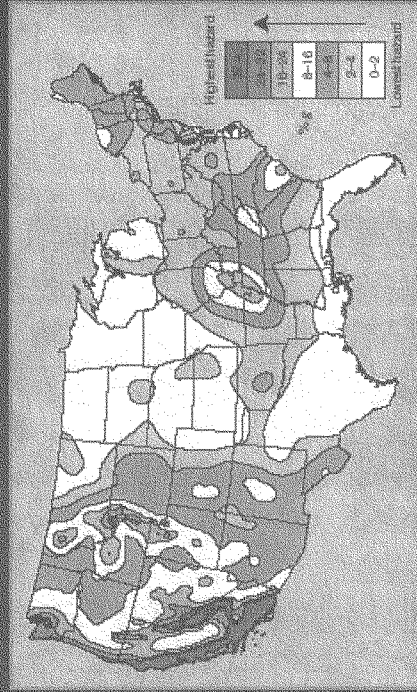
What is your earthquake risk?

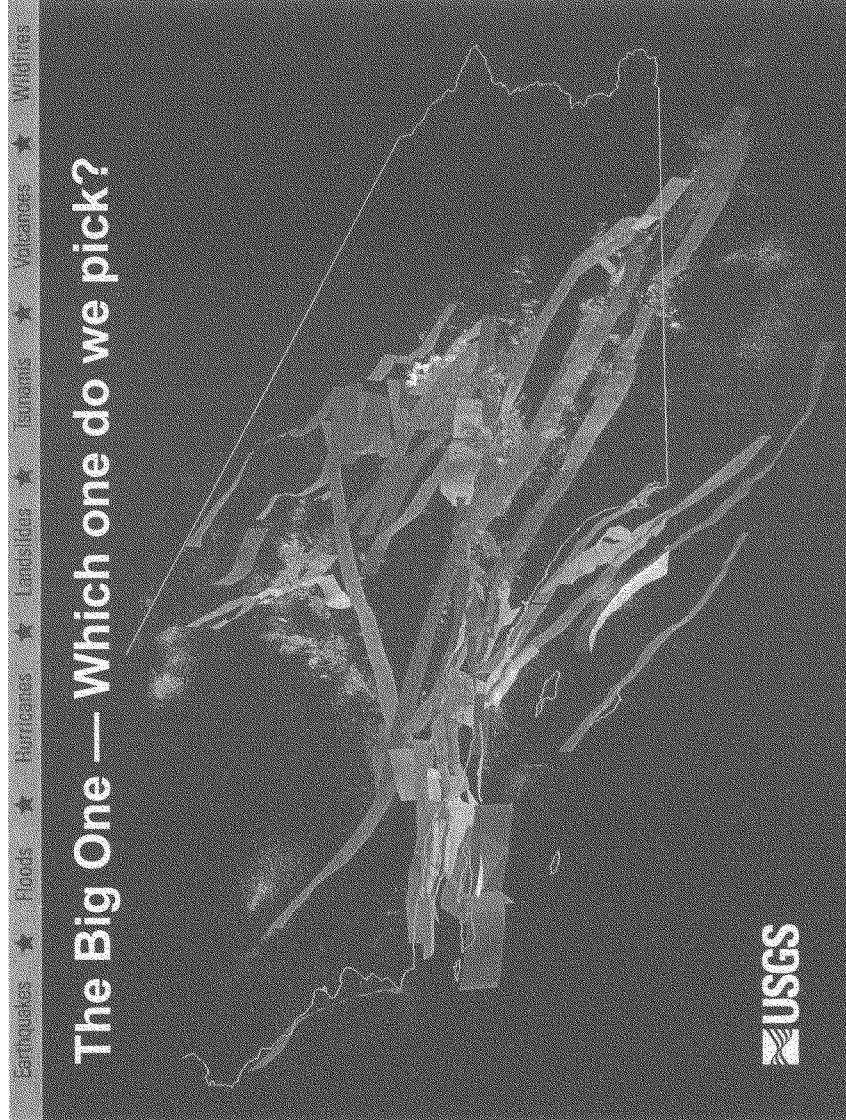
- What are your faults?
- How often do those faults move?



This is a national problem

- But Southern California alone has half the Nation's risk

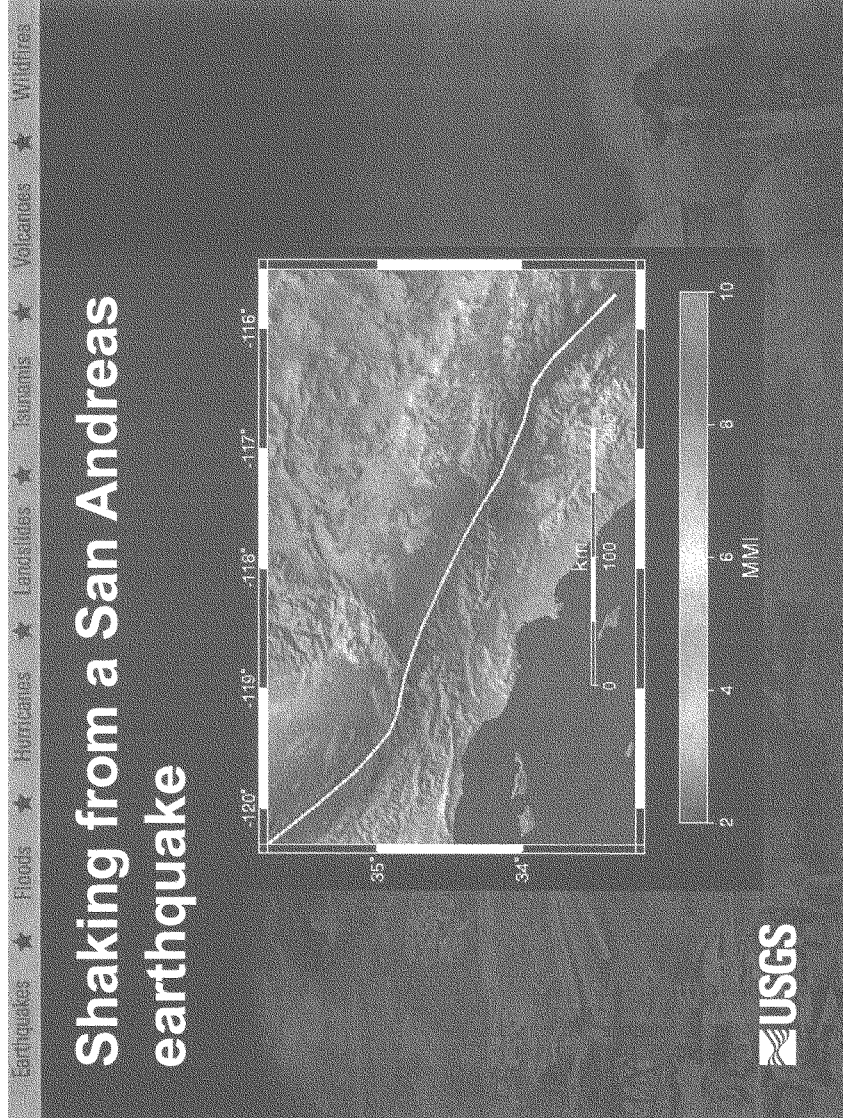




Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

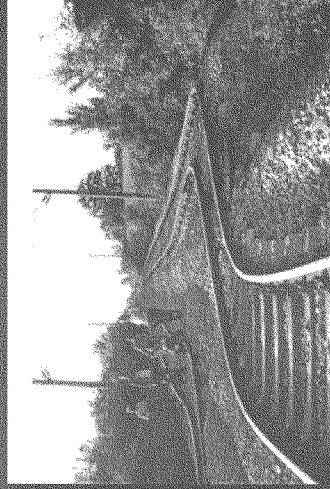
The Big One — Which one do we pick?

 USGS



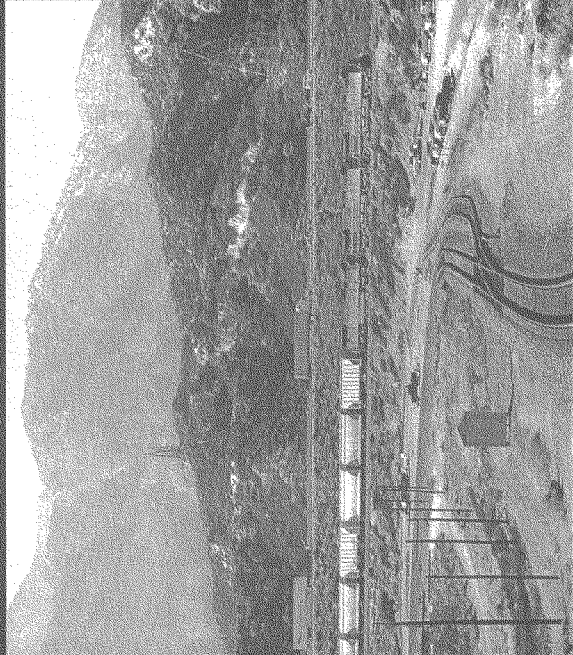
How bad will it be?

- So big you can't drive away from the disaster
- Disruption to infrastructure

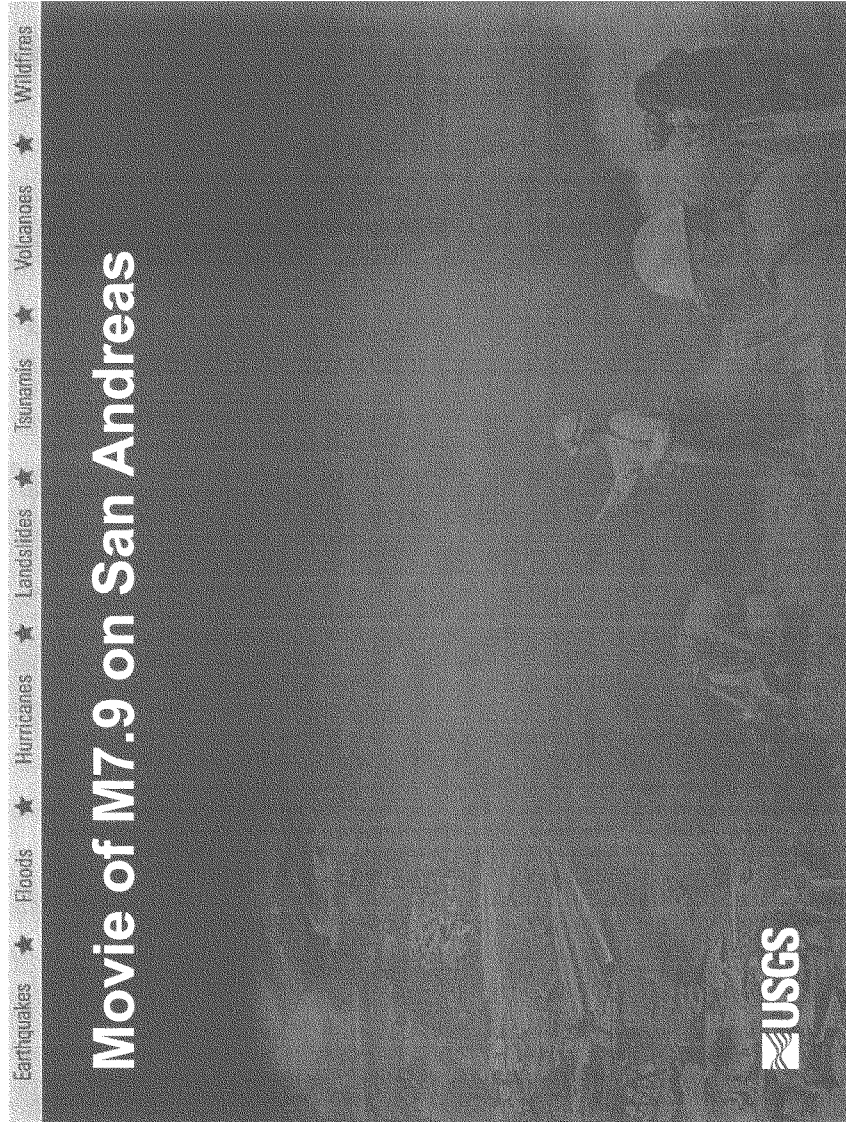


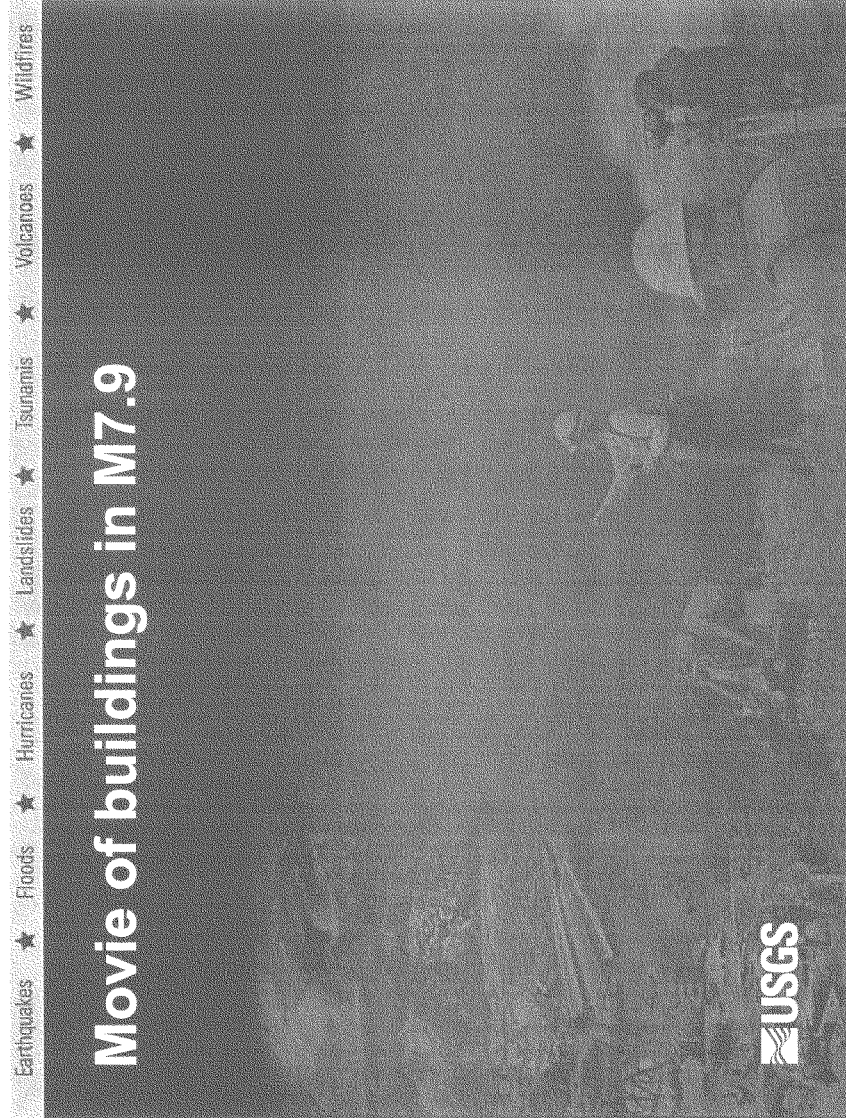
Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

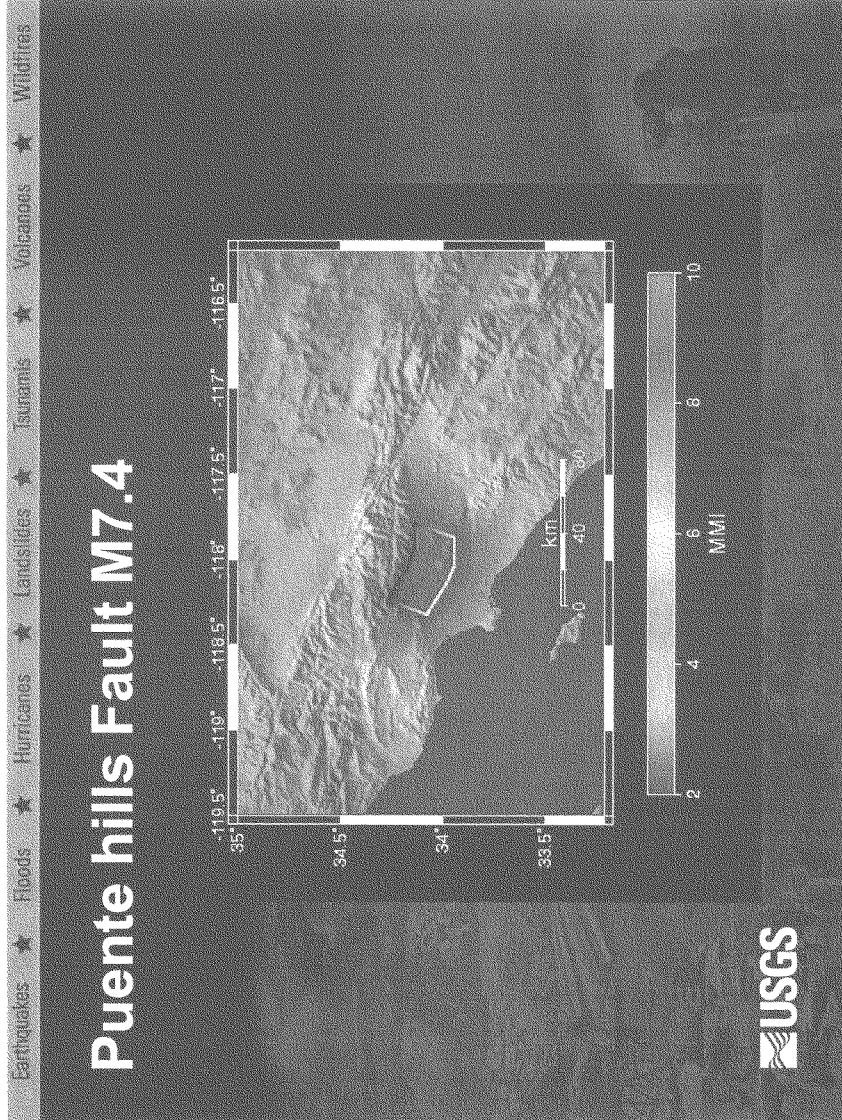
All railroads and freeways into Los Angeles cross the San Andreas fault

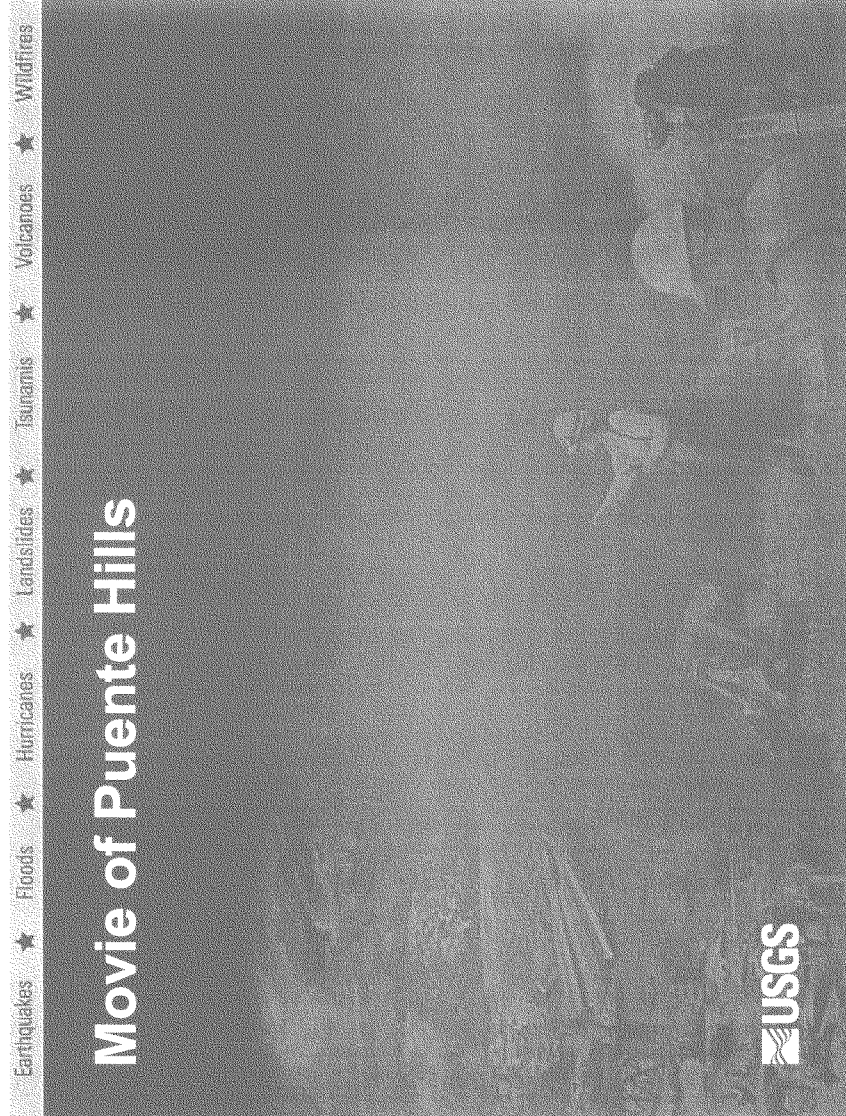


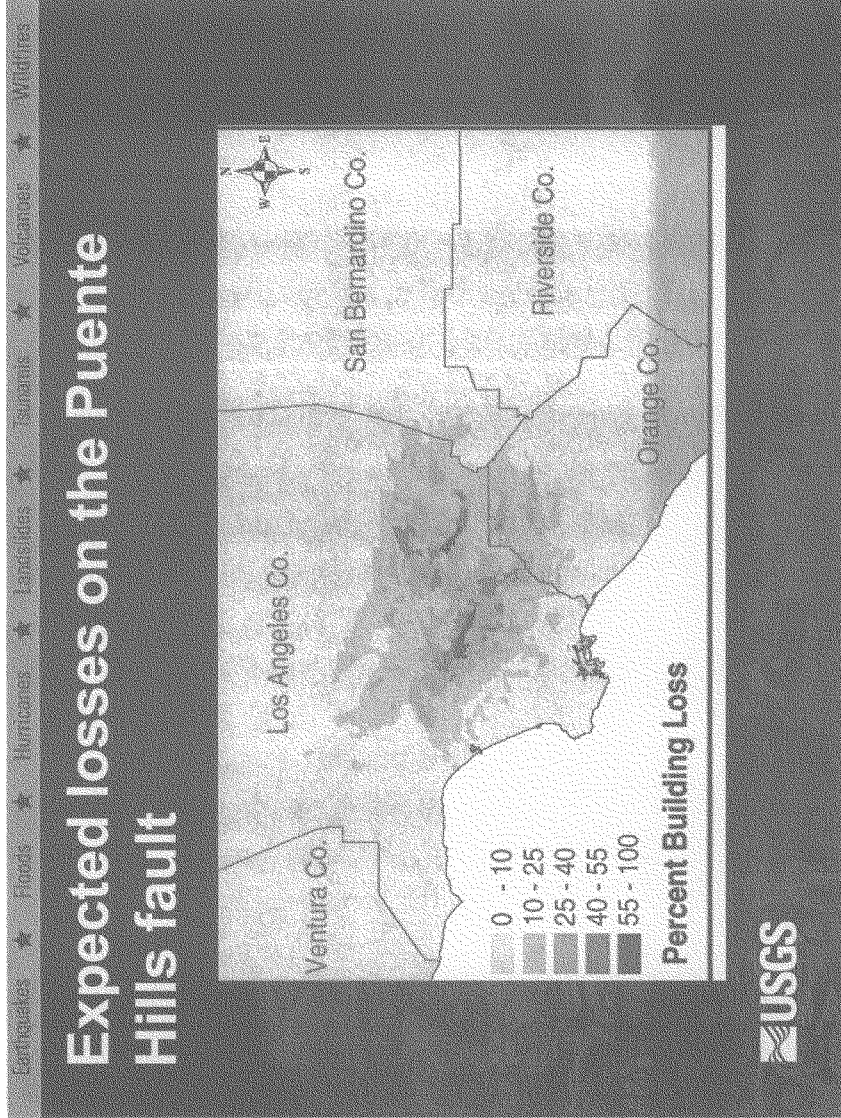
USGS












Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

Major impacts



- Disruption to transportation
- 1950-1970 Midrise construction
- Highrise?
- Dams

 USGS

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

Fires??

- If the earthquake happens during Santa Ana conditions



Science cannot stop the loss

- The community must use the science to make decisions before we succeed.



The Urban Earth



Who will be involved?

- USGS researchers

- Earthquakes
- Tsunamis
- Landslides
- Floods
- Wildfires
- Ecologic impacts
- Social consequences

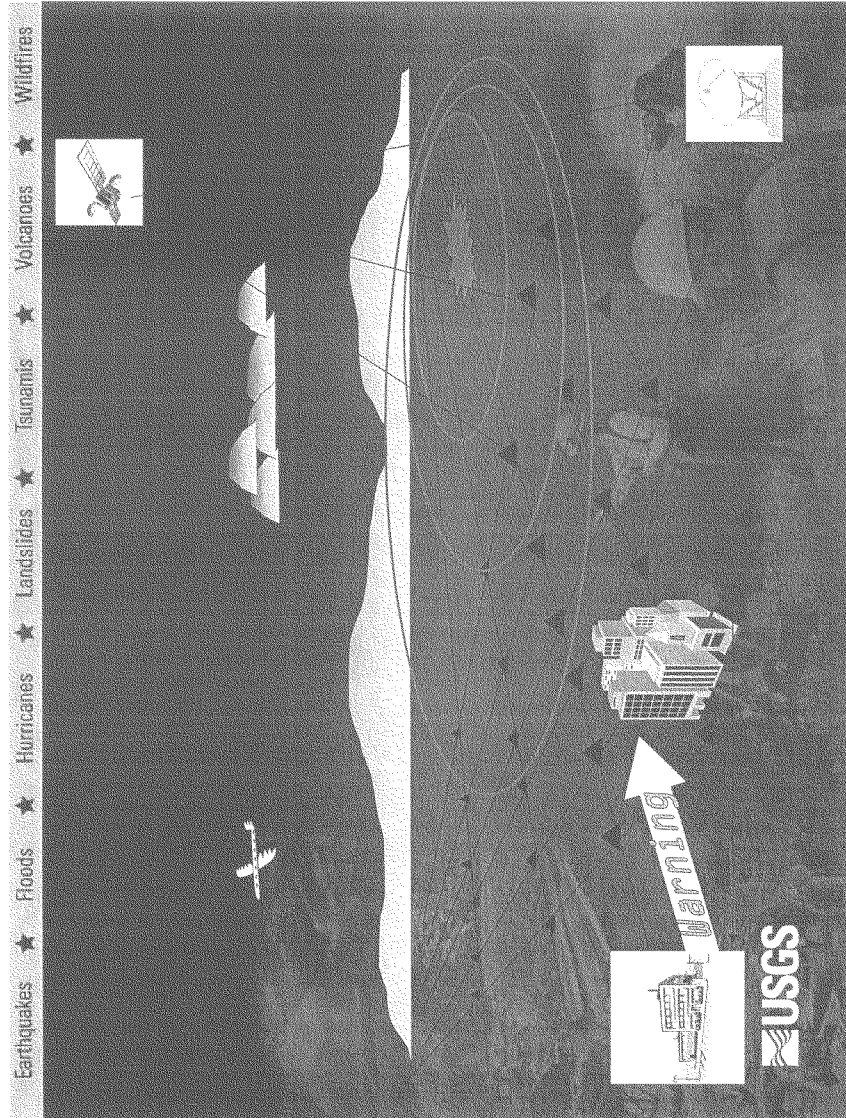
Community
Partners



Why integrate the science?

- We need the same data
- We serve the same customers
- We share the same goals
 - Improved understanding of the urban-earth interface
 - A safer southern California





New Efforts in FY2007

- A systematic analysis of the southern San Andreas fault
- Additional stream gauges to support flood analysis and forecasting
- Debris flow early warning system for burned areas with NWS
- A new process to determine future research directions with the decision makers of southern California



**U.S. House of Representatives
Committee on Transportation and Infrastructure
Subcommittee on Economic Development, Public Buildings and
Emergency Management**

**Director Henry R. Renteria
California Governor's Office of Emergency Services
February 23, 2006**

Introduction

Good morning Chairman Shuster and members of the Subcommittee. Thank you for the opportunity to testify before you today on these important issues. As this brief video depicts, in California because of our many natural disasters, we, like the Gulf Coast States have learned some lessons through experience. There is no doubt that a catastrophe like Hurricane Katrina would severely tax the emergency management systems and people of any state and the nation.

You have asked me to present testimony today about how the federal government can improve its capability and readiness in responding to catastrophic disasters, as well as what is needed to enhance state and local response capabilities. I will speak from the state perspective, and you will

hear also today from our partners at the local level as well as the scientific community.

I want to start by saying that we have learned these fundamental principles about disasters:

1. We cannot predict what the next disaster will bring. Each disaster has its own unique set of issues, so our emergency response system must be flexible. The answer to ten different disaster scenarios is not ten individual plans.
2. All disasters require common capabilities that must always be addressed by public safety agencies.
3. Finally, to be truly prepared for any disaster we must focus on investment on organizational systems, training our personnel, communications and resource acquisition. These areas are critical to all disaster hazards, regardless of cause.

Systems

Because the next event--be it infectious disease outbreak, earthquake or terrorism--cannot be predicted with any true accuracy, we have learned that

the best way to ensure our readiness is to develop sound and flexible systems that can be applied throughout the disaster spectrum. Ten years ago California adopted the Standardized Emergency Management System, or SEMS. As the video depicted, SEMS is a standard organizational structure used by all cities, counties, and state agencies during a disasters. SEMS also provides for standardized command and control, communications, terminology and mutual aid. Mutual aid in California is executed through a “bottom up” approach whereby a local incident commander requests additional assistance through a tiered process—surrounding local jurisdictions first, then the state, then the federal government. This is structure is commonly understood, organized, and streamlined to prevent unnecessary delay and provide access to assistance once resources are exhausted.

Also we recognized many decades ago that mutual aid between states during disaster is critical. Emergency management is fundamentally a local and state government issue. The federal government has resources that will be needed in a catastrophic event, however not necessarily the unique capabilities that states do to directly assist people during a disaster crisis. Therefore, we believe that is the best interest of the nation for the federal

government to support mutual aid compacts between the state, like the Emergency Management Assistance Compact (EMAC).

In addition to the many natural and technological disasters that have tested our capability to respond and recover, California agencies have conducted numerous emergency management exercises, hundreds in just the past year.

Training

With each disaster and with each exercise we learn more and improve our capability. But the basic system remains unchanged because it has proven its effectiveness. One aspect of that system is standardization of training. My office in cooperation with law enforcement, firefighters, emergency medical providers and others have developed standardized training delivered through a training academy. In addition, each discipline, such as fire and law enforcement, has developed its own standard training that includes the common elements of SEMS.

As a result of having a standardized system, our planning at the state level has focused on assisting local governments and not preparing plans that sit

of a shelf. Particular attention is concentrated on cities and counties as they primarily attend to human needs during disaster, or any emergency for that matter. We have found that a common, all-hazards planning approach is the most effective means to address the many disasters we are at risk to, whether they occur all at once or separately. In most cases the consequences of disasters will be similar; for example, an evacuation plan addressing special needs populations will apply whether there is flood or a terrorist attack.

A testament to the lessons learned and applied in California is the federal government's recent adoption of California's SEMS system, known as the National Incident Management System (NIMS). In doing so they recognize that the success of SEMS is not based upon a top-down approach to disaster management, but rather a recognition that management of disasters occurs like the disaster itself--from the bottom-up.

Communications

As we saw in 9/11 and again with Hurricane Katrina, communications between emergency responders and organizations is critical. California started developing interoperable communications many years ago to support

mutual aid at all government levels; however we still have work to do to ensure the necessary communication protocols and technology are maintained and current. The Governor has initiated projects at both the state and local government level to further improve and plan for our expanding emergency communications needs. We also must ensure redundancy when traditional means of communication fail. California as a result of our experiences has implemented a number of communications means and protocols to retain contact between local, state and federal government—such as radio, satellite, phone, internet. We have also recently expanded our alert and notification system with local government, and are upgrading our statewide satellite voice and data communication service.

Resource Acquisition

Part of the communications equation in any disaster is the ability to request and acquire resources. In California, we have technology in place, known as Response Information Management System (RIMS), that enables information sharing on resource needs between jurisdictions. But even this system would be severely taxed by a catastrophic disaster. The federal government should support these state developed systems, and maintain a

response plan that contains sufficient flexibility and that is designed in a manner to best assist first responders. In doing so, federal resources in a disaster can be provided through a process that is organized and synchronized with the existing state and local systems; not as an entirely separate system of federal support.

Infrastructure and Planning

I would like to point out that California has made tremendous strides in making our state safer, particularly in terms of earthquakes. We have some of the most stringent building codes in the world. As you have heard, there have been advances in modeling, measurement/shake potential and hazard assessment capability. We have implemented alert and warning technologies. We have made efforts to educate the population about earthquake risk through campaigns and other tools. After all, it is not earthquakes themselves that will cause loss of life—it is the resulting structure collapse, fires, landslides, etc. We have had in place for years comprehensive earthquake programs and planning tools that integrate scientific information, technology and lessons learned. While we remain

aware of our earthquake risk, we would also not experience the same loss of life today that occurred 100 years ago.

People

One of the most important lessons is that people, not government, are the true first responders. It will take more than government systems and resources to address the most catastrophic disasters. Therefore, California has implemented initiatives such as a comprehensive individual disaster preparedness campaign and legislation which allows integration of the private sector into emergency management. The more that individuals, families and workers are trained and educated to be aware, be prepared and have skills to be and/or assist emergency responders, the quicker and more effective our response will be.

Lessons Learned

There is no doubt that hurricanes Katrina and Rita have been a wake up call to all. While we have strong emergency systems, we know that the largest scale disasters, such as these devastating hurricanes or a catastrophic

earthquake in California, will impact hundreds of thousands of people and stress our ability to preserve life and safety and recover our economy. We must also plan for the next disaster, not the last; reinforce our strengths and anticipate our vulnerabilities.

Our state and nation are rich in resources to assist in a disaster—from local government up to military assets. However, we will fail our citizens if there is not a system, organization and infrastructure in place to get this support where it is needed in an expedient and organized manner.

Since 9/11 we have invested significantly in emergency preparedness. But, the human toll of Katrina shows we may not have invested wisely. What can be learned from this is that the development of local emergency organizations, reinforcement of training, and investment in communications systems are what will best prepare us for the next disaster--be it hurricane, act of terrorism, or the next earthquake. In California, we have been fortunate to receive in the past several years homeland security funds to better ready our state and local governments for acts of terrorism. However, at the same time, with the rise in terrorism awareness the federal government lost momentum for catastrophic natural disaster planning—such as

earthquakes—that had been underway prior to 9/11. However, I do believe the resources already exist to address these issues. We do not necessarily need additional funding; what we do need is a commitment at the federal level to expand the nation's preparedness activities to a true, all-hazards approach.

Thank you.