

# Climate Change Adaptation for State and Local Governments

## Part One: Climate Impacts and Risk Communication

Webcast Transcript

November 18, 2010

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# Webcast Agenda and Meeting Logistics

## Slide 1: Introduction Slide

Operator: Good afternoon, my name (Charnel) and I will be your conference operator today. At this time I would like to welcome everyone to the State and Local Adaptation to Climate Change Part One, Climate Impact and Risk Communication conference call.

All lines have been placed on mute to prevent any background noise. If you should need assistance during the call please press star, then zero and the operator will come on line to assist you. Thank you Ms Emma Zinsmeister, you may begin your conference.

## Slide 2: Title Slide

Emma Zinsmeister: Good afternoon and thank you for joining us today. My name is Emma Zinsmeister and I am here with the U.S. EPA's State and Local Climate and Energy Program. Today we're kicking off our climate change adaptation for state and local government's Webcast series and today is the first session which will focus on climate impact and risk communication. Our program typically offers information Webcasts for our state climate energy technical forum and local climate and energy Webcast series and this mini-series and adaptation is serving both of those functions from the month of November, December and January, since the adaptation to climate change has been such an area of growing interest for both states and locals and as you'll see through our Webcast series that fostering collaboration across the roles of government is really essential for promoting successful adaptation strategies.

So we wanted to bring states and locals together and today we'll be providing an introduction to the topic of adaptation, focusing on the potential impact of climate change for the United States and what that means for state and local government operations.

## Slide 3: Webcast Agenda

Emma Zinsmeister: I'll start off today's Webcast by just going over some – basically just the information about how to use the GoToMeeting Software and asking questions and things to the speakers and provide a little bit of background information on what the U.S. EPA State and Local Climate Energy Program has to offer and kind of an over view of all of some of our resources.

We'll then kick off our featured speaker presentations with Dr. Joel Scheraga from U.S. EPA, he'll provide an introduction to the topic of climate change focusing specifically on the impacts and implications for states and local governments.

We'll then move in to a presentation on a risk communication by David Ropeik who is a national expert on risk analysis and communication and he'll provide a framework for how states and locals can communicate risk to their stakeholders to build support for climate adaptation work.

And we'll move in to a case study, Brendan Reed from Chula Vista, California will provide the story of the experiences of his community in California and how they have developed adaptation efforts and really been able to engage stakeholders and build support for adaptation in their community.

#### Slide 4: GoTo Webinar Software Logistics

Emma Zinsmeister: And we're going to be holding questions until the end of all the presentations today, so that we can do that jointly at the end of the session, just some logistical information, you are – all the present, the participants are muted currently, your lines are muted just to minimize the background noise, however you do have the opportunity to submit questions about the presentations and I will touch on that in just a moment.

Also PDF files of all the presentations as well as an MP3 file of the audio will be available a few weeks after today that you can download and share with your colleagues that maybe weren't able to attend the live session today. And if at any point during the presentations you have technical issues, please feel free to contact our technical support, Lauren Pedersen at the e-mail address listed here.

#### Slide 5: Questions (GoTo Meeting)

Emma Zinsmeister: During the presentations, as you develop questions for our speakers, please feel free to submit them in writing using the "GoToMeeting" panel. As you can see, there is a section labeled "Questions" which you can expand. Type in your questions in the box and then hit "Send" to submit them. We'll be collecting those throughout all the presentations, and then we will be reading those off at the end after all the speakers and providing answers to those.

So please as you think of those during the presentations, continually add them in through the system. And as you enter in your questions, include the name of the presenter that you would like to have answer the question, and that will be helpful for us to direct them to appropriate speaker.

#### Slide 6: Optional Feedback (GoTo Meeting)

Emma Zinsmeister: And also at the close of today's presentation, we hope that you will take a few minutes to provide us with some optional feedback. This is really an opportunity for you to share your thoughts on what we can do here at EPA to help support your adaptation effort. And what tools and resources you need, what you would like to see us cover in future Webcasts. So we encourage you to provide your responses to the optional survey that will pop-up in the pop-up window once you close out your GoToMeeting session.

## **Introduction to EPA's Local Climate and Energy Program**

### **Slide 7: U.S. EPA State and Local Climate and Energy Program: Who We Are**

Emma Zinsmeister: So some background information on our program here at EPA. The State and Local Climate and Energy Program works with States, local communities, and we have a growing emphasis on working with tribes to help promote climate mitigation and clean energy, to help achieve multiple benefits, a variety of public health benefits, social benefits, economic benefits.

### **Slide 8: U.S. EPA State and Local Climate and Energy Program: What We Offer**

Emma Zinsmeister: All the resources that we offer are available through our comprehensive Website which you can see a snap shot of here. The Web address is below. We offer a variety of technical informational resources, tools, quantitative evaluation tools, case studies, on a variety of climate topics throughout our Website.

### **Slide 9: State Climate and Energy Partner Network**

Emma Zinsmeister: And as part of the program, we have a State Climate and Energy partner network that focuses on working with energy and environment and utility commissioners, to understand and explore climate change and a variety of energy policies.

You can register to join the informational network through the Web address here, and which provides access to a list of and a variety of other resources.

### **Slide 10: Local Climate and Energy Program**

Emma Zinsmeister: We also have a portion of our program that focuses on working with local governments, to help promote sustainability and climate change mitigation. We have a number of technical resources and case studies available on our Website, some of which are listed here.

### **Slide 11: U.S. EPA Heat Island Reduction Program**

Emma Zinsmeister: And we also support the Heat Island Reduction Program, which is relevant to adaptation since heat islands have described the occurrence of higher temperatures in more dense urban areas, relative to the surrounding suburban or rural areas. And strategies that can be used to help reduce the heat island effect can also be adaptive when thinking about climate impacts. And of course, the heat impacts of climate change are a major concern as well. So please do check out our Heat Island Reduction Website and program, for a variety of resources that may also be of interest to you in your adaptation effort.

### **Slide 12: Climate Change Impacts and Adaptation Resources**

Emma Zinsmeister: And some specific resources that the State and Local Climate Management Program offer their relevance to adaptation are listed here. We have a state side of the program and the local side of the program, that provide links to a variety of resources from EPA, other Federal agencies, and non-federal entities. And a synopsis of the potential climate impacts they may be facing and various adaptation strategies. So that's a great place to start your search for information.

And of course we have the Webcast series that we're kicking off today. There will be a second session in December, on the 15th, that will focus on adaptation planning implementation, that will provide overview of frameworks that states and locals can use as they start assessing their risk to climate impacts and building strategies to increase the resiliency of their communities.

And then part three will focus on several resources and support for climate change that will be held on January 13th and will provide overview of what's going on at the Federal level to develop a national strategy to adaptation, and what kind of guidance, technical assistance, funding, support are being offered by a variety of Federal agencies that help support State and local effort.

#### Slide 13: Additional Climate Change Impacts and Adaptation Resources

Emma Zinsmeister: And of course there are also a number of other resources available from a variety of sources. Here is just a sampling. Here will be covering more during our January call, and this are some great places to start where you can find information that already impacts of climate change provide tracking of current policy developments and provide a number of case studies.

#### Slide 14: Contact Information

Emma Zinsmeister: And if you have any questions about any more programs here, please feel free to contact us. Julia Miller is a great contact from the State programs, can answer questions relevant to adaptation and our other efforts. My contact information is listed here, and then Neelam Patel runs our Heat Island Reduction Program, and you can contact her for questions regarding those resources.

And also, we have a State and local climate and energy listserv, which is linked to it at the bottom of the slide here. The listserv provides information on our upcoming Webcast such as news adaptation Webcast, as well as a number of resources from EPA and other sources as they are developed. We do feature adaptation resources as well as mitigation resources and other things on clean energy.

So now we'll be moving into our featured speaker presentations.

# **An Introduction to Climate Change Adaptation**

Emma Zinsmeister: We'll be starting with presentations from Joel Scheraga. Dr. Scheraga is a Senior Advisor for Climate Adaptation in EPA's Office of Policy. His responsibilities include helping EPA design and implement sectors of climate adaptation measures to protect human health in the environment. And prior to this position, he served as the National Program Director for EPA's Global Change Research Program. And he was also the EPA Principal Representative to the U.S. Global Change Research Program, which coordinates and integrates scientific research on climate and global change and is supported by the U.S. government. He served as the Lead Author and Contributing Author for the Inter-governmental Panel on Climate Change, which was awarded the Nobel Peace Prize in 2007.

Dr. Scheraga has a Degree in Geology from Brown University, and built a Masters (as) teaching in Economics from Brown University. Take it away Joel.

Slide 1: Title Slide

Joel Scheraga: Well thank you very much Emma, and good afternoon everyone. It's a real pleasure to join you today to speak about the importance of adaptation to climate change for our nation and for the States and for our local communities.

In my presentation today, I'll spend first a few minutes in the most general terms, motivating for you the importance of anticipating and adapting to changes in climate. And then I'll delve into some of the data to support some of the assertions I'm going to make, and then provide you with several very concrete examples, to try to illustrate for you the importance of mainstreaming and integrating climate adaptation into the things that you do on a day-to-day basis.

Slide 2: Introduction Slide

So let's start with some of the basics. The climate is in fact changing. And in fact it's been changing for millions of years. Also, over that time period, or over the course of recorded human history, the earth climate has remained remarkably stable. But since the industrial revolution, the climate system has become less stable. And that's where our concern is.

Since the industrial revolution, average temperatures around the world have been changing at an increasingly rapid rate. And as we look to the future, although it is true that scientists cannot absolutely predict the precise level of temperature change, there is now a clear consensus that the resulting temperature, by the end of this century – by the end of the 21st Century, will be higher than anything experienced in the past 10,000 years. Or in plain English, beyond anything in human experience.

Slide 3: Why Does Climate Change Matter?

So why do we care about this? Why do these unprecedented changes in climate change matter to people around the United States? I see we have a technical glitch here. We should be advancing the slides. Please stand by. We'll get this resolved momentarily. There we go. OK.

#### Slide 4: Climate Change and Sustainable Communities

Again, why do we care about these changes in climate, that I just referred to? Why do these changes matter to the people on the street? The reason it matters, is that climate – is because of the States and the cities in which you live, are in fact operating in this rapidly changing world. And many of the things that people care about are in fact sensitive to changes in weather and changes in climate. Things like clean air and safe drinking water. And even economic developments are sensitive to changes in climate.

Now up until now that hasn't been problematic because as folks like yourselves in the States and Local communities made planning decisions, really they'll choose the things that are in fact climate-sensitive. You've been able to assume that climate will remain relatively stable in the future, because in the past, prior to the industrial revolution, that's what we observed. So for example, as you designed and you built new sewer systems and invested a lot of money in doing that, you were able to assume that past climate is a good reflection of the what the future will hold.

The problem though, and as I just suggested, is that the past is no longer a good predictor of the future. And climate change is now posing new challenges to the types of decisions that you make on a day-to-day basis in your communities. And because climate is changing unprecedented ways, we all must adapt. We must anticipate and plan for changes in climate.

Now, this isn't about dealing with climate change for its own sake. This is about ensuring that the nation and our States and our local communities can attain the long-term goals that you have for the economy, for public health and for the environment. This really is about the things that people care about on a day-to-day basis.

#### Slide 5: Adaptation is Essential

So what I'm suggesting to you today, but differently, is that if we don't anticipate future changes in climate, and begin to mainstream climate adaptation into our day-to-day decisions, we may in fact fail to get to where we want to go.

#### Slide 6: We can plan ahead...or we can react

Now if you take a look at this graphic, what you see is that we as humans have an opportunity to plan ahead. This is not a doom and gloom story. Unlike that poor polar bear you see on the left hand side, who doesn't have the ability to anticipate the future, but rather can only react to climate change as it occurs, and in fact faces very limited options dealing with these changes. We as human beings have the ability to anticipate the future. We have an opportunity to prepare for the future impacts of climate change in order to avoid the adverse impacts and take advantage of any opportunities that climate change may present to us. So that we don't do things, like you

see on the right hand side there – we don't do things like build railroad tracks in areas that will become inundated by rising sea levels, which again clearly has economic impacts.

#### Slide 7: Climate Adaptation Must be “Mainstreamed” into Planning Decisions

So the bottom line is, climate adaptation must be mainstreamed into our daily lives. Climate change has to become another consideration in our decision-making processes, along with all the other things that you think about on a day-to-day basis.

#### Slide 8: Any Smart Policy Portfolio Must Consist of Both Mitigation and Adaptation Strategies

Now, before I go further, because I'm asked about this a lot. Very often people say to me, "Are you just waving the white flag here and giving up on trying to slow the rate of climate change and giving up on mitigating green house gases. I want to be absolutely clear, that by advocating adaptation to climate change, I am not in any way waving the white flag on climate mitigation. Any smart policy portfolio must consist both of strategies to reduce the emission of green house gasses in order to slow the rate of climate change, as well as actions to adapt to a changing climate because regardless of what we do to mitigate green house gas emissions, the climate will continue to change, partly because the natural variations in climate and partly to these human activities. Some climate change will be unavoidable, and we have to be prepared for it.

Now at the same time, as you can see at the bottom of that slide we also need to explore investments that have what we call "core benefits". That is, we need to explore opportunities to adapt to a changing climate in ways that might also lead to reductions in green house gases because, plain and simple, that's the economically smart thing to do. And we want to use our resources in the most efficient way possible.

#### Slide 9: The Climate is Changing

OK, let the 30,000 feet picture of what I'm trying to convey in my presentation. Now let's dive into some of the data in details, to actually justify some of the suggestions I've made. What you're looking at here are actual observations of changes in climate that occurred during the 20th Centuries. These are not modeling results, these are actual observed changes, and this comes from NOAA's National Climatic Data Center. Now you should note that although this data is for the 20th Century, this data has now been extended through 2006 with exactly the same results and in fact stronger results.

If you look at the upper left hand corner, what you're looking at are observed changes in temperature. And as you can see, on average across most of the United States it has in fact become with few exceptions, a warmer world. But it's also really important to note that there's a regional texture to these changes. What's going on in New York City is very different than what's going on in Texas, which is very different than what's going on in Nevada. And since all impacts are local, and you in your local communities and States are going to be taking adaptive actions at the local level, this regional texture is very important.



In the upper right hand corner, what you're looking at are changes in precipitation, and as expected from the science, with an intensification of the water cycle as it's become a warmer world – we expected it to become a wetter world, and in fact it has. You can see that across most of the United States, there's been as much as a 40 percent increase in precipitation during the 20th century. But again there is a regional texture to these changes.

Finally take a look at the lower left hand corner. What you see there is a graphic that I'd really like you to fix in your minds for the rest of the presentation.

#### Slide 10: Increases in the Number of Days with Very Heavy Precipitation (1958 to 2007)

Again as we've predicted from the science, as the water cycle intensified, we expect to see more extreme events. More droughts and more flooding events. And you can see that during the 20th Century, across most of the country, the frequency and intensity of storm events, to find its more than two inches of rainfall per day, has in fact gone up. And as you can see from the next slide, this trend has in fact intensified for all 50 States. Including Alaska and Hawaii and Puerto Rico, during the past 50 years. So fix that in your mind.

#### Slide 11: Climate Change on the Move: Changing Summers in the Midwest

Very quickly, I just do this thing for or fun, I thought this graphic would give you a real sense for the magnitude of the changes we're expecting in the future. And for those of you who may be on the phone from Illinois, what you see here is that your summers will become more like Louisiana's and Texas' climate. And I'm not here to tell you that that's a good thing or a bad thing. That's for you to decide. I'm simply telling you that these changes are likely to occur.

#### Slide 12: Climate Change is Affecting Human Health and the Environment

OK. Now what does all this mean? Well, if all this was about temperature and precipitation changes we could pack up and go home. But during the past 20 years we've come to understand that changes in climate will have significant impacts on many of the things that you care about. Many of the things that people out on the street throughout the country care about. And without going into a lot of details as we don't have a lot of time here, we've learned that climate change will pose significant risk to public health. For example, increasing the risk of heat stress that could result in death and illnesses, potentially causing changes in air and water quality, which can also affect public health. And even causing changes in our ecosystems that can lead to the spread of waterborne and vector borne diseases.

It also poses risk to many sectors of our economy, like agriculture, and forestry. It can have impacts on wildlife and ecosystems, and even damage some of our infrastructure. For example as we saw during the floods in Iowa over the past few years. It can cause significant economic disruptions, such as we saw on the energy sector that had impacts across the country during hurricane Katrina.

And also if you look in lower left hand corner, it also can lead to a significant, and quite frankly tragic losses of cultural resources, as we're already seeing in tribal communities in Alaska.

Slide 13: We are already seeing the impacts of climate change

And following up on that, I really want to emphasize for you, we are not talking about something that will happen in 50 years or a hundred years. We are already seeing the impacts of climate change.

Slide 14: Newtok, Alaska

And again let's stay with the tribal communities in Alaska. These impacts – when you see here – and I won't go into the details of this graphic. But what you can see here is that the communities in Newtok – the tribal communities in Newtok and Shishmaref and Kivalina, in Alaska, are already suffering very serious impacts due to climate change.

Slide 15: The Importance of Mainstreaming

Now let me take a few minutes during my remaining time to illustrate for you the importance of mainstreaming in climate adaptation into your day-to-day decision-making.

Slide 16: Potential Impacts of Climate Change on U.S. Regional Air Quality

Let's start with air quality. We all obviously care about the quality of the air that we breathe and our children breathe. Last year EPA released a major new report examining the implications of climate change for air quality across the United States – across the 48 contiguous States. And we really asked a very basic question, "Do air quality managers across the country need to pay attention to climate change as they develop air pollution control strategies? To meet – to for example meet EPA's air quality standards?" and the answer as you can see was a resounding "Yes."

Just looking at tropospheric ozone, what we found was climate change has the potential to produce significant increases in ground level ozone, in many regions of the country. So what does that mean? In very practical terms, what that means is, if you're an air quality manager in a city that is already out of attainment of our air quality standards, your job will likely become more difficult as the climate changes. So you have to anticipate climate change. On the other hand, even if you're an air quality manager in a city that is in attainment, but just barely in attainment, climate change may take you into non-attainment. That's what we call the "Climate Penalty". So again, anticipating and preparing for and adapting to climate change matters.

Slide 17: USA: Combined sewer overflows

Let me turn to a different example – let me turn to the water sector and water infrastructure – a big dollar ticket item. As many of you know, we have over 700 combined sewer systems across the country, particularly in the Mid-West and the North-East. These are often very old systems, like a hundred years old, that combine storm water and waste water into a single system. And many of these systems, just because of their age, must now be redesigned and rebuilt, at a cost in the billions of dollars. This isn't chump change, we're talking about real dollars here. Now one of the characteristics of these systems is that they can overflow when there are intense storm

events. And as you can see from this graphic, 1.2 trillion gallons of sewage and storm water a year are discharged during these overflow events.

Now what does this have to do with climate change? Well think back to that graphic I told you to fix in your mind that showed you that the frequency and intensity of storm events is rising with climate change. These are exactly the sorts of events that cause these systems to overflow. So with climate change there is a risk of more overflow events from combined sewer systems.

#### Slide 18: Combined Sewer Overflow in the Great Lakes Region

Now presumably if you're a mayor in a city that is investing hundreds of millions of dollars into rebuilding one of these systems, for example in Pittsburgh or Chicago or New York, you want to make sure that the new system gets to where you want to go. Now about three years ago we were asked by mayors in the Great Lakes region across 182 communities that have these systems, to determine whether they needed to pay attention to climate change, as they invested billions of dollars in rebuilding these systems.

And we performed a very simple experiment. We said, suppose they go ahead and invest all of this money, and rebuilt 182 systems, but don't consider climate change, will they get to where they want to go? And you can see the punch line at the bottom. In fact if they do that, on average, every year, there could be 237 exceedance events, above EPA's control policy across these communities. That's the punch line. But again, this isn't a bad news story. It really is a story of opportunity.

#### Slide 19: Opportunity for EPA to Partner with City Planners to Manage the Risks

Our results showed 1.) Climate change and climate adaptation matters to the design of these systems. 2.) It tells engineers in these cities, that they can't keep doing business in the same way they have in the past. They can no longer use past climates as predictions of future climates, as they calculate the required system size. 3.) It tells us that mayors have to make policy decisions, social choices about the margin of safety they want to build into these systems using the best available scientific information at that time, and then their engineers, given that policy decision, can build really good systems.

The bottom line is that the risks posed by climate change are in fact manageable and avoidable, if we prepare now.

#### Slide 20: Climate Change and TMDLs

Staying with water resources for one more second. Let me just very quickly say that this slide suggests that those more frequent and intense storms due to climate change may also lead to more run-off of sediments and pollutants into our rivers and streams and lakes, and again making it more difficult for States to attain water quality standards.

But again, if States and local communities, mainstream climate adaptation into their decision-making processes, for example in the development of TMDLs, these impacts can be avoided.

Slide 21: Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems (July 2008)

Finally I want to bring to your attention again that climate change may exacerbates many of the public health problems your communities are already facing due to a lot of other social and economic factors. We took a look at this and EPA produced a major report in July 2008 which I'm proud to say was one of Discover Magazine's, "Top 100 Science Stories" of 2008. And as you can see, this study concluded that climate change – to human health and the human systems that support our way of life across the United States.

Slide 22: The Good News

So hopefully I've motivated for you in very concrete terms, why, and the ways in which climate change may matter to folks in your communities. Let me end with a few words of encouragement, and emphasize the opportunities that face, to anticipate and adapt to climate change, to protect those things that we care about.

Slide 23: Many Opportunities to Adapt Exist (examples)

There's been a lot of work already done, developing menus of adaptation options. Many opportunities already exist to adapt to climate change. And in fact many of these actions are things you already consider in different contexts. Things like doing better land use planning, establishing heat warning systems that Emma referred to earlier on, to protect people during heat waves. Enhancing the efficiency with which we use water.

And all we're saying here is that as you do these things, you should ask the climate question. You should ask what additional effects climate change will have, that you want to anticipate and respond to, and build into your planning decisions.

Slide 24: Investments in Adaptation

Now finally for those of you who might say you can't afford to adapt, I would simply say, it isn't a question of if you'll pay; it's a question of when you'll pay. And whether you want to take advantage of the wider array of options open to you, if you anticipate and plan for the future now, rather than reacting to climate change when it occurs.

Slide 25: It Pays to Plan Ahead: Reactive Adaptation During a 1957 Kentucky Flood

So let me conclude by saying, we're definitely smarter than this pig – this is a real photograph out of a newspaper. We're definitely smarter than this pig who could only react to the 1957 Kentucky flood.

Slide 26: Lest we be cavalier about how easy it is to adapt...

But let's make sure we use our smarts that we have as humans, and make informed and better planning decisions.

Slide 27: Contact Information

And with that I'll end. Thank you.

Emma Zinsmeister: All right, thank you Joel. It was an excellent presentation really set the stage, for our conversation on adaptation and providing concrete examples of potential impacts that we're – we can face and are already facing, and the way in which States and locals have an opportunity to put climatic considerations into their everyday operations to hopefully take advantage of the opportunities and also avoid negative impacts.

# **Risk Communication: A Vital Tool for Building Public Support for Climate Change Adaptation**

Emma Zinsmeister: So we're going to move into a presentation from David Ropeik. David Ropeik is an Author, Consultant and Speaker on Risk Perception, Risk Communication, to governments businesses, trade associations, and a variety of other types of organizations. He's the co-author of "Risk, A Practical Guide for Deciding What's Really Safe and What's Really Dangerous in the World Around You and the author of How Risky Is It, Really?: Why Our Fears Don't Always Match the Facts as well as numerous other pieces and articles for publication such as the New York Times, Los Angeles Times, Atlantic Magazine as well as NPR. Mr. Ropeik is also an instructor at the Harvard University Extension School.

Prior to joining Harvard Mr. Ropeik was a daily news reporter for WCBD TV in Boston for 22 years where he specialized in reporting on environment and plants issues. He twice won the DuPont Columbia Award which often cited as the Pulitzer Prize for broadcast journalism. Mr. Ropeik has a Bachelors and a Masters in Journalism from North Western University. Take it away David.

## Slide 1: Title Slide

David Ropeik: Well hi everybody and thank you to the organizers for the opportunity to contribute and I normally ask questions in the middle of my presentations when I go around the country presenting on this so be prepared to have questions asked of you although you're all muted and you won't have a chance to answer them but I do it that way so that you think about things and are engaged.

## Slide 2: Risk Communication and Climate Change Adaptation

David Ropeik: So the first thing I want you to think about is, what do you think Risk Communication means? There are 500 or so of you logged on and there are probably that many different definitions, so oops changing my slide too fast. Here is what it means to me.

Risk Communication to a lot of people seems to mean, what do I say, how do I persuade people to think and do what I want them to think and do? I want you to think about it more broadly. I want you to think that it's a tool for building successful relationships, constructive relationships rather than just explaining the facts and persuading.

## Slide 3: Risk Perception and Climate Change Adaptation

David Ropeik: And my definition of Risk Communication is on this slide and it has three things that I want to point out to you that are unique I think. First risk communication is what you do, actions, more than words. It's implicit how you walk the walk, how people are going to think about their relationship with you about the risk issue and that's what we're talking about as a risk issue the adaptation to climate change.

So it's actions first, words and other interactions of course and the second unique thing is that respect, the perceptions of the information recipients and that's what most of my talk will be about, it's how do people perceive risk and it turns out that risk perception is not a fact based affair only, there's a lot of emotion in it which I will explain the psychology of and if you try to educate people into thinking the way want them to think, that's different than respecting the fact that they feel about it the way they feel. This is like any conversation with any person, right? If you respect where they are coming from you'll have more influence on them, that's a broader, more holistic approach to Risk Communication.

And the third part is don't say you should, at the end it's up to people to make their own decisions about threats to their health and safety. You want to encourage them to think about it in a certain way but risk communication that says you should test you health for late on or et cetera is suggesting how you should feel and how does that feel? If I told you on the phone right now you should worry about this or you shouldn't worry about that, you're not going to listen to me as much.

So Risk Communication is more about building relationships, now you can establish them better if you know not only how people feel which you can survey but why. And the first thing I want you to understand is that the perception of risk is subjective.

The definition of risk in most dictionaries is the probability of something bad happening. Probability is to some degree to some degree calculable, what does bed mean to you? There are 500 others on this conversation, there are 500 definitions of what bed means, so risk, the probability that something bad might happen. We take the facts and we interpret them through a physiological set of characteristics, which I'll explain in a minute to come up with how we decide and how we behave, so risk, there is no right, there are no facts. Climate change is a great example isn't it? Same facts have lots of different interpretations, so we have to respect where those interpretations are coming from in order to have more effective relationships with people about those issues.

Now to the extent that adaptation I going to require money or changes in legislation or changes in behavior et cetera, it's going to require public support and I would suggest that there are two important publics to consider in terms of encouraging that support, they're listed here and there are different psychologies involved in each and that's why I've listed them separately.

#### Slide 4: Risk Communication and Climate Change Adaptation

David Ropeik: The first is the denier community, they see the facts and they don't think that they're persuaded climate change is really happening.

The second community you might think are on the side of adaptation, they believe climate change is happening, that it's human made, that it should be regulated and we should do things about it but the real question with them is, in terms of risk communication and building successful relationships to support adaptation decisions is how worried are they? How concerned are they? And so let me show you the results of a recent survey, it's 2006, it was done

by Anthony Loeser with Yale but I talked with him the other day in preparation for this and he said the results are pretty much consistent with what's going on now.

#### Slide 5: Risk Perception and Climate Change Adaptation Who Will It Happen To?

David Ropeik: The number in these slides might change but the relativity is what matters. So I've been – the study subjects he asked about climate change, have you heard about it? Ninety percent of them had and then he asked, who will it happen to? And more people thought that it will happen plants and animals or future generations or in developing countries, than in industrialized countries, than in U.S. and fewer still thought it would happen in their community and fewer still thought it would happen to their family and the smallest amount thought it would happen to them. Think of what that means in the level of public support you'll have for spending any money or changing any legislation if that's how people feel about climate change and I'll ask you this question now. As I ask a lot of my environmentalist friends, can you name one way that climate change will seriously, negatively impact you in the next 10 years? A lot of people struggled to answer that question. So that leads to this side which is from (Lisa Ruitz's) study as well.

#### Slide 6: Risk Perception and Climate Change Adaptation What should we do about it?

David Ropeik: What should we do about it she asked? Well the answer is broad like we should reduce emissions or we join the Kyoto Protocol or we should increase café standards and forgive the French accent over the E, that's what my spell checker did. Well lets go for that and when the options start say might cost you money, business tax, gas tax, support that's broad shows itself to be very thin, and it falls off and in fact a similar study at DBC a couple of years ago asked, to what degree do you think they're going to have to be lifestyle changes to account for climate change, to adapt to and mitigate climate change? And majority of people said, oh yes absolutely and then were asked, are you ready to change? And the number went down significantly.

So what we have to understand then, is the psychology that explains how people perceive the issue because that psychology is part of how they will decide and behave and which needs to be respected if you want to nature influential and trusting relationships with them. And there are several general psychological characteristics to risk situations that make them feel more or less scary regardless of the facts. Well they are – these are like lenses our glasses thorough which we see the facts and end up with a feeling that those facts adjust to be more or less (worry).

We share these, however on top of these general characteristics, we each of layer our own reality, if you're a parent, if you're young, if you've had cancer in the family, if you're poor. There are a lot of individual characteristics and local variations for each of your community, that layer on top of these general characteristics I'm going to describe, that having been said these general characteristics are probably true in all of your communities for the individuals that you will be dealing with.

#### Slide 7: Risk Perception and Climate Change Adaptation



David Ropeik: And the first one that deals with climate change as I showed you in those previous slides is can it happen to me? And if you think it can happen to you, you'll be more worried and if you don't think there is any way that climate change is going to seriously, negatively impact you in the next 20 years, you'll be less concerned, you can say in the polls that you're worried about it but when they ask you how much you're willing to spend or do or support, it's not going to be there. The, me factor isn't there with climate change yet. Although I noticed that in Joel's presentation you talked about things that you care about, that's precisely the way you want to start displaying things because the, me factor matters.

Is it going to happen now or later? Most of us think of climate change as well, it's kind of on the way now but it's mostly a later. The problem with that is in terms of the risk perception psychology later is less scary than what's staring you in the face at the moment. In order to get down the road you have to get passed the wolf that's in the road in front of you at the moment. So we are psychologically predisposed to pay less attention to, care less about, risks that threaten us later than those that threaten us now.

Here's another factor, is the risk personalized or abstract? Does it have a face? Does it have a name? That map of those communities in Alaska, those are maps from the air. Did you see these faces there? The maps abstract, Inconvenient Truth, the movie had these great pictures from, the 30,000 foot level as Joel said, of the sea level rising on Florida and look at what's going to happen. Does anybody live in outer space? That's an abstract presentation, the concept of a risk is not as compelling as the risk presented in real terms and you want an example of that quickly? Statistics of the war dead don't move people nearly as much as pictures of body bags, which is why presidents who want to support wars, don't allow those pictures to be shown on the news. So a personalized risk is more compelling. And abstract risk which is what a global or climate presentation risk is, just less compelled, less concern to all of us.

#### Slide 8: Risk Perception and Climate Change Adaptation

David Ropeik: Here are a couple of other factors. We weight the benefits and harms in our heads – the benefit and risk, to come up with our judgment about how worried to be. Well the benefit in this case that we're talking about with climate change is, the comfortable current modern lifestyle that we have. You want to change yours? Do you really? Are you really ready to? Well that will depend on how big the risk is, if you're not really particularly worried that it's going to happen to you and it's abstract we'll the comfort of your current lifestyle wins and the risk gets played down in your head. So the benefit risk conversation at the moment is one of the challenges to get people more concerned about, paying attention to, I'm not saying worried about, I don't want you freak people out, that's not what I'm saying but a risk like this is going to mostly not ring our alarm bells in part because of these benefits.

Is it catastrophic or chronic? That means does it happen all at once on a large scale or is it spread out over time? Like climate change. Think of the Gulf oil spill recently, lots of attention, lot's of oh my god; it was awful it was terrible. It was tangible, we weren't talking about of shore spills we were looking at one, it was personalized, it wasn't abstract if you will, it was concrete.

In addition it had happened all at once in one big frouny swoop. We do so much damage to the Gulf of Mexico every year with fertilizer run off and eutrophication and deoxygenating of the water. We have huge dead zone, bigger than the oil spill area every year, does that make the news? No, because it doesn't happen in one big concrete event, neither does climate change and that again is physiological factor that's going to impact – reduce how worried we are. The kind of stuff you saw and (we did) with this study.

#### Slide 9: Risk Perception and Climate Change Adaptation

David Ropeik: Is the risk a voluntary risk or is it imposed on us? So let me ask you all this question? How does climate change feel? Does it feel like something that's been done to you by somebody else or something that you're choosing to engage in yourself? Well if you think about it on first flush it feels imposed, right? By what? By modern life, by the technology that gives us this comfortable lifestyle. Now think about what that means, you're a participant in that modern comfortable lifestyle. You may not be volunteering to have more flooding or intense rain but you are volunteering to live the way we live which is what is supposedly causing part of this, so in a sense you can argue that emotionally this isn't completely feeling like an imposed risk, if you believe, it's human made, you have to look in the mirror a little bit and voluntary risks don't upset us as much.

And this last factor here, control. Can we do something about it, the second factor on this slide? Can you do something about it? If you can you're less worried, now that's interesting because we're on the phone today talking about adaptation and you've heard a lot of people suggest I presume, hey we don't have to worry about climate change that much, we can adapt. That's what they say, that means the sense that we can do something about it makes us less concerned about it and that inures poorly to the motivation to spend money or raise those railroad tracks to Nova Scotia that Joel showed us or do those sorts of things and we can do something about it, means we're less concerned about it.

#### Slide 10: Risk Perception and Climate Change Adaptation

David Ropeik: Here are a couple of additional factors that are relevant to climate change. A risk that's natural is less scary, a risk that's human made is more scary and one of the reasons I think people are paying serious attention to climate change is, this isn't just natural, the science suggests that it is significantly an act of human behavior, that raises our concern, see how that factors in? And another interesting one is, risks to our kids, cause more concern than risks to adults.

The Environmental Defense Group recently ran a commercial about climate change and it showed a parent on the railroad track saying I don't care about it as the train got closer and just as the train was about to hit him, the parent says I don't care I can just – I'll be gone by the time the train gets here and he steps out of the way and his kid behind him about to get whacked by the train. Here's the problem however, risks to our kids does make us more concerned but risks to our kids now makes us more concerned than risks to our kids later, remember the now or later factor. And risks to our kids or our grand kids, Joel was talking about the temperature in the year

2100, you seen those people yet, seen those kids yet? No. So that's a later and so the risks to our kids in future generations are diminished by that factor.

I'm trying to go on but yes it worked, OK. So there are several emotional factors that underlie how we feel about climate change and I'll get in a moment to suggestions about how to use that to do better risk communication to build more constructive relationships when you talk about adaptation.

#### Slide 11: Risk Perception and Climate Change Adaptation

David Ropeik: But now is the time to talk about the second audience, the deniers. There's a different psychology here and it's called cultural cognition. We take positions on many issues, not based on the facts alone. But so as to confirm what our general group believes in order that our groups view will predominate and that our group will accept us as a member in good standing. This is very powerful because as social animals we want to survive and we depend on the group for our survival, sub-consciously we're very keenly attuned to how our various groups are doing. So we chose our positions, we cherry pick the facts to much what our group's view is.

#### Slide 12: Cultural Cognition

David Ropeik: Now here's what's important for cultural cognition. Now group doesn't mean, Republican or Democrat, or Catholic or Muslim or whatever. Group in this case means how should society be organized? How should the world around us work? And we all fall somewhere on these two (continua) as you can see on your slides.

#### Slide 13: Cultural Cognition

David Ropeik: The first one is Individualist or Communitarian. An Individualist thinks society should mostly but out, unless the lion is attacking the tribe should mostly be off doing their own thing, a Communitarian on the other hand thinks society and we're all in it together is how we should all operate all together all the time. That's the world that they think is a safer society to be in.

#### Slide 14: Cultural Cognition

David Ropeik: A Hierarchist, on the second (continuum) is a person who likes order and structure and class and rigidity and predictable rank and structure and the status quo, predictability. Egalitarians think it should be all open and flexible. Now the way it looks is this, we fall somewhere on these two (continua) and into these quadrants and for climate change it looks like that. Hierarchists and Individualist who think things should be rigid stay the same society should but out, deny the existence of climate change because to admit its existence would admit we're all in it together to fix it.

#### Slide 15: Cultural Cognition

So these underlying psychologies and these next two slides I'll go through quickly, you don't have to read them they are there so that when you get the slide – you can see where you fall on these hierarchies and understand it a little better.

#### Slide 16: Cultural Cognition

David Ropeik: There are more accurate predictors of our positions on things like climate change and a lot other polarized issues of the day than the standard demographics of party and what not. You need to understand and respect where people come from these cognitions and if you do, you can change how they think.

#### Slide 17: Cultural Cognition

David Ropeik: In an experiment, two new stories quoting scientists describing the same scientific facts on climate change, said a solution will require nuclear power and one sentence was changed, in one version it said that will revitalize the nation's nuclear power industry, good for the economy and the status quo, another version said, we'll need to do that with more regulation and son of a gun, if you look at what happened, when you showed those two version to Hierarchists and Individualists, the ones who think society should butt out and that status quo was better, those who saw that nuclear power was good for the economy, softened their denial on climate change.

#### Slide 18: Cultural Cognition

David Ropeik: And those who saw the pro-regulation version strengthened their denial of climate change, and vice versa for the egalitarians and communitarians, those who saw the pro-economy, climate change and nuclear power are good for the economy started to waiver on their climate change feedback.

#### Slide 19: Cultural Cognition

David Ropeik: Those who saw the pro-regulation story think that – had a stronger agreement with climate change.

#### Slide 20: Suggestions

David Ropeik: So let me close with this line. There is an underlying psychology that explains why people feel the way they do and understanding that lets you use that psychology and interacting with them better as Joel was doing. Make it local. Don't talk about think globally and act locally, think locally, what's happening to you, what's important in your community. Make it concrete; don't show me pictures of what this coast is going to look like from out of space. You want to do a simulation, do it with somebody's front porch on it. Make it concrete, not abstract, talk about your weather, your flooding, et cetera.

Make it now, talk about what's happening now, or what will be happening as best science knows it, in the short term, not later. Talk about tradeoffs between risks and benefits, as if the community is deciding whether to spend some money now or some money later, spending it now might end up spending less. We think about risks and benefits subconsciously, make that conversation that conversation over. And finally find ways to frame the things that do adapt to climate change in ways that don't necessarily associate it directly with climate change. What community wouldn't want to save energy? Reduces costs, energy independence, what community wouldn't want to reduce the risks of flooding.

So in a community where the cultural cognition realities are such that there are a lot of denials don't frame the adaptation in terms of change that they deny – in terms of fixing a problem that they deny exists because then they won't support the adaptation.

#### Slide 21: Resources

David Ropeik: All of this in summary. And here are some – there are some resources here, I will let you read that slide for just a minute but these will be circulated amongst you and then I'll post that one so that you can contact me if you would like to, I'll be glad to help.

All of this in summary is this, our interpretation of risk is subjective. The psychology that explains how we interpret that risk, in this case climate change is understood. Understanding the underlying psychology that's at work can help you interact with people about your issue, more respectfully of their feelings rather than just trying to message them out of those feelings. That will establish more trust and a more constructive relationship and more support for what you're trying to do.

#### Slide 22: Resources

David Ropeik: So all of that is summarized at much greater length in the book that is posted. I would be glad to take your questions online or subsequently if in this last version you had some ideas you think might be valuable and more detail down the road. And thank you.

Emma Zinsmeister: Thank you David. That was a great presentation and very helpful framework for thinking about how to communicate the risk of climate change and moving people to pursue adapted efforts.

## **Adapting to Climate Change in Chula Vista, CA**

Emma Zinsmeister: So building on that we will move in to a key study of how Chula Vista California worked to engage stakeholders on their adaptation efforts. Brendan Reed is the environmental research manager for the city of Chula Vista California, where he is responsible for the development of environmental programs and policies dealing with energy management, water conservation and global climate change.

As a part of the city's climate action effort, Brendan coordinates multi-departmental teams tasked with lowering greenhouse gas emissions and risks on climate change impact. In addition to his work at the city of Chula Vista, Brendan served as a mayoral appointee on the city of San Diego's Wetlands Advisory Board and as an instructor for the University of California San Diego's Sustainable Business Practices Certificate Program, Brendan.

Slide 1: Title Slide

Brendan Reed: Hello everyone and thank you for inviting the city of Chula Vista to participate in the Webcast today. I should warn you that my PowerPoint will move pretty slowly so I will have to time it as far as switching the slides because there seems to be a delay there, lots of pictures.

You heard a little bit about my background, what I was really trying to do today is again kind of take what you have heard already in this Webcast and give you a sense of what it might look like when it's implemented on the ground. So we'll step right on into it.

Slide 2: Climate Adaptation Planning with...No Money. No Experience.

Brendan Reed: So climate adaptation planning. A lot of people, a lot of jurisdictions don't have very much experience with it. Obviously they've probably started to get engaged in climate mitigation. So there is typically a little hesitation on moving forward with climate adaptation planning and hopefully again my slide will update, there we go.

So really when we pursued climate adaptation planning, we did it with really no extra money, so no extra funds to pay consultants and we really had no direct experience at a staff level of a climate adaptation planning. That's not to say we did it alone and we were fortunate to have support from ICLEI local government for sustainability which many of the participants in the Webcast might be familiar with, and we also had great support from our local community foundation called San Diego Foundation.

And the San Diego Foundation was very instrumental because they had released a study called the focus 2050 study which did look at the impact of climate change, regionally in the San Diego area. So that we really used that as a starting point for our community discussion about climate adaptation.

Slide 3: Outline

Brendan Reed: So in today's presentation, I'm really going to just talk a little bit about Chula Vista so you get a sense of what our community is like because every community is different and obviously when you move forward with the climate adaptation planning exercise you really have to tailor it for your community.

Then I will talk a little bit about the sort of planning phases and the tools we used, but really in the context of how we used it to communicate climate adaptation to our stakeholders. And then finally I'll finish up with some lessons learned.

#### Slide 4: Chula Vista Statistics

Brendan Reed: So a little bit about Chula Vista and again I will apologize because I know it's slowly switching the screen. So imagine you're looking at a beautiful map of the city and that city is Chula Vista.

So let me tell you a little bit about Chula Vista. We are the second largest city in San Diego County. We have about a quarter of a million people. We're about 50 square miles, so we are about the size actually of the city of San Francisco geographically. We are located seven miles above the U.S Mexican border and seven miles south of downtown city of San Diego.

We have a very diverse landscape and so it's actually a great sort of a mesocosm for doing climate adaptation planning. Again hopefully you will see soon on your screen a map and on the western side of our city is a bay front area along San Diego bay. So obviously some nexus. We see sea level rise there.

We have open space along our northern and southern borders and really wrapping around our city boundaries and so we have nexus with wild fire issues. We have a reservoir on our Eastern boundary dealing with water supply. I mean in addition to a diverse landscape we have a diverse population really ethnically and social economically.

Majority of our population is Hispanic and a large majority speak English as a second language.

#### Slide 5: Early Climate Work

Brendan Reed: So a little bit about Chula Vista's background in climate. We are definitely not new to it, in fact the city begun it's climate work in the early 1990's way before it sort of was in vogue when climate action planning became popular and it was really catalyzed by our early involvement ICLEI we were actually a charter member for the organization and that led the city to create its first CO<sub>2</sub> reduction plan in 1996. And really the city has been implementing that since then.

In about 2007 we reconvened a stakeholder group, what we call our climate change working group and that was – had representatives from businesses, local community organization resonance on it, and we did go through a planning exercise to update our climate mitigation work.

So I mention that because we kind of had a first run at using a stakeholder group to really develop policy and program recommendations. In 2010 our city council directed staff to reconvene our climate change working group but for this time to have them look at how the city could prepare itself for climate change impacts hence create a climate adaptation strategy.

So we like I said – we reached out to our representatives from ICLEI as well as the San Diego foundation and really had about a year to work with our stakeholder group and the community in general to create a climate adaptation for council consideration.

#### Slide 6: Current Climate Mitigation Strategies

Brendan Reed: So again we have been doing climate mitigation for a long time, we've done – we do alternative transportation work, efficiency and solar retrofits and we've done a lot with green buildings and smart glass that will go into all those but I think generally our community is pretty aware of kind of those kind of issues.

I said a high level – whenever we do these kinds of programs in the community we really never communicated as like climate mitigation or green house gas reduction program. We always are messaging it the form of saving on your monthly utility cost, we do it as a quality of life improvement – less traffic congestion, cleaner air and in fact our entire environmental program is built around the kind of clean (moniker). So we never even talk about being green, we talk about being clean. And I think we found that that really resonates in our community.

#### Slide 7: Climate Adaptation Planning Process

Brendan Reed: So when we started to look at how we were going to approach climate adaptation planning, and hopefully in a few seconds here you will see a slide that outlines approach. We decided to look at seven focus areas and these were sort of typical climate action planning focus areas like energy management, water management, but there were also kind of new things for us to start to investigate such as public health, wild fires, eco systems and biodiversity. So we really had to – for this climate adaptation planning side, really reach out to new types of stakeholders in the community because again it was going to be a little bit different of a conversation.

We also from a very sort of early on point had to start communicating really the difference between climate mitigation and climate adaptation. And when we brought our climate change working group together, I can tell you that the – they really struggled with the two and so when we would start talking about climate adaptation and someone would mention a climate mitigation measure and we have to say, oh no, no, remember that's different, that kind of policy or program is designed to reduce emission.

So we had to be really clear about communicating that. And then what also what obviously complicates that, are there some strategies that are climate mitigation and climate adaptation measures? So it was really – sometimes I think it was frustrating for us stakeholders to kind of be using all these terms but in the end they really did seem to pick up on the economy between climate adaptation and climate mitigation.



## Slide 8: Climate Adaptation Planning Process

Brendan Reed: Again I know my slides aren't really moving forward correctly. So one of these slides will hopefully come up in a reasonable timeframe. So we had three planning phases for this, we had the first planning phase of just gathering information. This is really important, we had guest presenters come and speak to our group. And this is important because having an outside person come, a regional expert, a technical expert. We're blessed with lots of higher education institutions in the region.

That was a great way of communicating sort of climate adaptation issues because they were not a city employee; they weren't even typically even a stakeholder from our direct community so that helps kind of lend some credence to the message.

We also at the end of our information gathering stage, we held a public forum, and this was just an open house forum where the public was invited to come. We had made posters of all of our different seven focus areas and listed out different potential vulnerabilities for the city and ways we could reduce those vulnerabilities. And I can't stress enough how valuable our open house public forum was.

We received amazing comments back, we had various ways that the public could comment, they could put a sticker on a poster which means that they supported a certain strategy, they could write down comments on a sheet of paper and then we had big kind of poster boards where they could also just write their feelings down.

So we found that was really good because it allowed typically members of the public who might communicate more comfortably in different ways, they were able to do that. Whichever way sounds most comfortable for them.

The second part of our planning phase was analyzing the risks, and we created these adaptation matrixes but we tried to quantify risk. And this was definitely a challenge. We had again no really – no extra money to do this analyses so we really had to just do our best relying on some technical expertise from local universities as well as just our own staff expertise.

And we described risk as the product of the likeliness of a possibility of an impact happening, and then the consequence of that impact on our local community. And so we rated all of our vulnerabilities to climate change on a sort of a one to five scale or a high medium low scale. We also had some initial criteria that we used to just vet out things immediately and those were things like whether a strategy was in the city's jurisdiction, we are not our own water providers so we had limited influence on strategies that look at water supply and conveyance.

We looked at whether things were fiscally feasible meaning that we had – there were some funding somewhere that we could get to actually implement a strategy because in these tough times really there is no extra money in our general fund. And then we wanted to make sure that whatever adaptation measure we pursued it did not contradict or duplicate a current mitigation measure. We really wanted those to be distinct different strategies.

Our final way of – in the planning process was really taking the group, the stakeholder's groups recommendations out into the community and to our elected officials and communicating in that forum. So we did visit a number of city commissions as well as go to our city council. We had a special workshop again where the working groups themselves introduced these concepts and introduced these recommendations to the city council.

So that was really important because it didn't look like these were coming staff because these strategies or these recommendations weren't, they were really coming from the stakeholder group. And we got lots of compliments from our elected officials about how pleased they were to see that a diverse group of stakeholders had worked together to create these recommendations.

And I can tell you council, this is in October, council did accept the climate change work – working group's recommendations and has directed staff to develop more detailed implementation plans tapering back to them in the spring. And these would be then review by council and considered for future implementation.

#### Slide 9: Climate Adaptation Planning Process

Brendan Reed: So I will skip a couple of slides because I don't think you're getting to see much of these and I apologize again. But what we went – what came out of these strategies or these climate change working group was 11 strategies.

#### Slide 10: Climate Adaptation Planning Process

Brendan Reed: Some of them did also have a mitigation kind of focus such as one that focuses on cool-paving and cool-roof for municipal projects but also a private parking lot projects. One that includes shade trees in the community and one that includes water ways.

So there was some instance where there were strategies that did touch on adaptation and mitigation. But the majority of the strategies did just focus on adaptation and they looked at wild fire issues, they looked at public health issues extreme heat event issues and so forth. Just some final lessons learned, really important like I said about engaging stakeholders and communicating with them in the right way.

#### Slide 11: Lessons Learned

Brendan Reed: I can't say enough about our open house format and how powerful that was to engaging the broader community. Another thing at our open house format is that we actually had the climate change working group members, staff, the stations. So really staff wasn't doing anything. It was the climate change working group members who were engaging with the public.

I really liked that concept and that design because it built a sense of (cam-rotary) between our working group members. You know they kind of had this really powerful shared experience. So

it was really good, beneficial for when we got into the sometimes heated debate of selecting certain recommendations or strategies.

They kind of had a good working relationship at that point. In our efforts in communicating to the public risk, we really stressed the preparedness and lowering risk and we really stressed the core benefits of these actions. So maybe again saving on utility costs, or maybe you're creating increasing property values with more shade trees along our streets.

We really rarely coined any of our efforts under the banner of like climate adaptation or climate mitigation. Another sort of lesson learned was avoiding analysis paralysis. We found that a lot of times we didn't have all the answers, the working group didn't have all the answers. So we kind of had to just power through that and just realize that there was uncertainty in our adaptation plan because there's uncertainty in climate adaptation in climate change in general.

So we definitely had to make sure that we powered through that. And then finally there was a big focus on building on existing plans and programs. Obviously there's not a lot of money around in local governments right now. So we knew the best success for implementing any of these climate adaptation strategies would be to build on existing work that the city is already doing.

Slide 12: Just Do It

Brendan Reed: So again I truly apologize for the problems with the slides but let me describe my last slide. It's a little kid on a steep hill about to jump on a skateboard and it says just do it at the top. And I can say somehow a local government person who has you know, we have so much on our plate already and it might seem like an impossible task. I think this framework for engaging stakeholders in the community and communicating risk to the broader public was really ineffective, inefficient way to pursue a climate adaptation plan.

So, thank you so much.

Emma Zinsmeister: Thanks Brendan. I think all of our speakers echoed a few really key messages about – when talking about climate adaptation and climate impacts on your communities. Really focusing on what's local, what the core benefits are and making things really tangible for people and speaking in terms of what they care about.

## Questions and Answers

Emma Zinsmeister: So, thank you to all of our presenters, I think we have a few minutes left to take some questions. And for any questions that we don't have time to get to, we will provide answers in writing that we'll post to the Website along with the presentations and the audio file.

So Lauren if you want to take off with the questions.

Lauren Pederson: My first question is for Joel. Is there a presentation or information that is available for the healthcare sector to start to adapt to the public health concerns due to climate change?

Joel Scheraga: That's a great question and unequivocally the answer is yes. There has been a lot of excellent work that's been done by the public health community itself to look at number one, the potential impacts of climate change on public health. But number two also proactive interventions that states and local communities can take, as a quicker side not surprisingly since climate change tends to exacerbate problems that already exist due to other socio-economic stressors.

Many of the things that you would do to adapt to climate change are actually enhancement to existing public health interventions. Now I promise I'll post online, as Emma said, the key references you might want to look at. But just to what your interest, number one, in 2000 EPA released the first major assessment of climate change on human health along with recommendations that can be used.

That can be found on the Website for the U.S. global change research program which is [www.climate-science.gov](http://www.climate-science.gov) and you'll find it under publications. Number two, again just to give you a sense where some of these major resources are, there is a book that the World Health Organization released just a few years ago which EPA actually sponsored. That talks about risk and responses to climate change.

Number three, it's not all being done at the federal level. Several states already have adaptation strategies that explicitly talk about human health, and I'll give you one example. But just cause I personally was involved in it, the state of Maryland is about to release its revised climate change adaptation strategy. And it has an entire chapter on human health that I was looking up to help author, and it contains very detailed recommendations for the state on how they can deal with the health impacts.

Number four if you go to the CDC Website, they have a climate change page with information on potential interventions. So again that's just to wet your interest, the resources are there and we'll post these references for you on the Website.

Lauren Pederson: Great, thanks Joel, and then another question for you. Could you provide an example on climate change and management of invasive species?

Joel Scheraga: Great question. I appreciate that question because we didn't get the chance to talk about it today, but climate change can in fact exacerbate the problems posed by invasive species. When invasive species are introduced for other reasons, for example on ships coming into the great lakes region, climate change can create an ecological environment over which these invasive species can either begin to survive or in fact spread.

And as I said, this is an issue of concern in places like Chicago which is very concerned about it. I'll give you a short but hopefully a very helpful response. In 2009 EPA released a major report focused explicitly on the implications of climate change for invasive species, and the report laid out management practices that could be implemented to account for the exacerbation of the problem by climate change.

And I would note that this report in the spirit of some of what David said, this report was developed in partnership with regional and state resource managers who are already dealing with invasive species. And we worked with them to understand how those management practices could be augmented to account for climate change, and again we'll post that on the Website. So, its not one specific management example but there's a whole report there and we'll get it to you.

Lauren Pederson: Great thanks Joel, and then this next question is for you David. Are there statistics available for approximate percentages within the general population of how many people fall into the individualist Communitarian or a Hierarchists Egalitarian category? And how by knowing such information or studies help us to communicate climate change related issues. And do you know if these percentages are trending or changing?

David Ropiek: There are no generalities with cultural cognition because it depends on the issue. There're people who could be really libertarian on some things and really communitarian on the other end of that continuum on others, so it depends on the issue. So there is no single general truth. There're great statistics on a number of issues at the Website that I posted in my slides which is [www.culturalcognition.net](http://www.culturalcognition.net), just one word.

The point I would make is this, I hoped to help you understand that the argument over whether climate change is real or not is being waged with the weapons of the facts, but it's about something much deeper. So just trying to wage it with the facts, one form of this communication is insufficient. And having a sense from your local community where they land on that sort of a way of thinking will help you have a more successful and less contentious relationship in the part of your community that has the extreme believers and the extreme deniers.

Because the extremes are coming from something other than the facts and just arguing it based on the facts is going to get you nowhere. But in terms of specific details, I would look to [culturalcognition.net](http://culturalcognition.net), and in answer to the second part of your question, the current issues of the day certainly change what's important to us.

So I've written in several blogs recently that, the more threatened people feel by an uncertain future like the economy, the more tribal, if you will is what I call it, the more cultural cognition will matter because the more we need tribe to keep us safe. So that can make it a stronger motivator, we certainly saw that in the recent vote.

But the most important point is to think about that perspective in the relationships you're trying to nurture with better risk communication so that you can achieve the kind of adaptation you're after.

Lauren Pederson: OK, great. Thank you for that, that response. And then the next question is for Brendan and you presented outstanding metrics in your presentation. And this attendee wanted to know how you came up with the likelihood and consequence numbers that were assigned in the planning metrics.

Brendan Reed: So like I sort of mentioned, we sat down – for the likelihood factor, we sat down with a local researcher (Dan Cain) at University of California San Diego scripts institute who is involved in the IPCC and everything. And we kind of just went through and tried to score the likelihood of some of these impacts. Again it was informed by the San Diego foundation's focus 2050 study which had been a much larger collaborative effort between multiple research institutions in the area.

And then for the consequence side, that was really more scored by staff but it really had to do with, what does vulnerability mean to our own city operations and our community services et cetera? So again due to our budget constraints, we had to take more of our, if you will, almost a qualitative approach to it. And we're – I think the last thing I just would mention is that, our stakeholders were fairly comfortable with that.

And part of that was because in implementing an adaptation plan, part of that is you'd be going back and reassessing what the best available data is. What are your assumptions and are they still holding true. So they did see it as sort of a long-term, continual improvement process.

Lauren Pederson: I have one more questions lined up for Brendan. How much staff time and resources did Chula Vista commit to this effort? And how long did it take from start to adaptation?

Brendan Reed: Well, we started the process, we had our first climate change working group meeting in December of 2009 and we presented or the climate change working group, presented their recommendations to council on October 7th. So I have about 10 months there, and as far as staff time, we – just sort of estimating, we held a working group meeting about every three weeks and the meetings themselves were two hours long and there was probably another two hours of prep time and sort of post meeting debrief work.

So it was definitely not a – it wasn't a small amount of time. We again, really leveraged our resources from ICLEI as well as someone from the San Diego foundation who helped do a lot of the initial research. And all of that I just would want to say is all of this information is available on the city of Chula Vista's Website under our clean Web portal, there's a link to what, on our homepage.

So feel free to use the information that we gathered, it might shorten another local jurisdiction, local jurisdiction's process, hopefully.

Emma Zinsmeister: Thank you Brendan and we're happy to post the link to that Website with the questions and answers so, folks can get to that information as well. Thank you to everyone for participating today, if there're any questions that you didn't to, we will post those answers in writing. And I encourage all the participants too as you exit out of our Webcast today to participate in the optional feedbacks survey and give us your thoughts on what we can cover here at EPA in future Webcasts.

And what tools and resources would be helpful for you in implementing your adaptation efforts. We will be holding the second session of this Webcast series on December 15th where we'll get into more detail on the processes of planning, adaptation strategies and actually working towards implementation. And we will have state and local speakers to share their experiences as case studies. So we hope that you will join us then.

Thank you again and thanks to our speakers for your time and your wonderful presentations.

Operator: This concludes today's conference call, you may now disconnect.

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