DRAFT STATEMENT

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A RATIONAL DISCUSSION OF CLIMATE CHANGE:
THE SCIENCE, THE EVIDENCE, THE RESPONSE

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Good morning, Chairman Baird, Ranking Member Inglis, members of the Subcommittee. My name is Jim Lopez, and I am Senior Advisor to Deputy Secretary Ron Sims at HUD, who has been tasked by Secretary Donovan to lead HUD's climate change efforts. Thank you for this opportunity to testify today.

On behalf of the Deputy Secretary and Secretary Donovan, I want to thank and commend you for your leadership in developing and pushing for innovative and integrated approaches to the critical issue of climate change. I appreciate this opportunity to tell you how we at HUD -- individually and in partnership with other federal agencies -- are working to develop more sustainable, resilient communities across the nation.

I should note that this is an issue with which I've had hands-on experience at the local level. Before coming to HUD, I coordinated King County's climate change preparedness initiative in Washington State and I was a contributing author to *Preparing for Climate Change: A Guidebook for Local, Regional and State Governments*.[1] My experience at the county level has given me an important perspective on what the federal government could and should be doing on this critical issue.

Efforts to curb greenhouse gas emissions, known as climate change mitigation, have become a widespread imperative for all levels of government. However, scientific evidence indicates that even if we could halt greenhouse gas (GHG) emissions today, the world would still experience a changing climate for decades to come due to the long-lived nature of carbon dioxide and other greenhouse gases as well as the absorption of heat by oceans.[2] While federal, state, and local

[1] ICLEI, University of Washington, 2007.

[2] Council on Environmental Quality, *Progress Report of the Interagency Climate Change Adaptation Task Force*, p. 15.

efforts, including HUD's, have tended to focus on reducing GHG emissions, there is an increasing focus on developing complementary climate resilience strategies, defined by the National Research Council of the National Academy of Sciences as the "capability to prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy and the environment.[3]"

Climate Change and the Built Environment

The consequences of climate change are complex and far reaching. It is becoming increasingly clear that GHG emissions, the primary cause of climate change, are in large part a result of energy use in our built environment – either as a result of energy use in buildings themselves, or transportation energy used to move people and goods.[4]

Climate change is affecting many aspects of our society, our livelihoods and our environment. Communities across the nation are experiencing climate change impacts, such as changes in average temperatures, more extreme weather events, and rising sea levels.[5]

The effects of climate change are expected to be significant for both rural communities and metropolitan regions (where most of the built environment is located). As a federal cabinet agency focused on the built environment, on strengthening metropolitan areas as well as rural communities, and expanding opportunity for all Americans, we at HUD recognize the need to take action.

Reducing GHG emissions in the built environment is essential to making progress on climate change at the speed and scale required. Across the country, cities, counties and States are finding innovative solutions to climate change that involve the built environment—from King County to Miami-Dade County, from Chicago to Los Angeles, from Milwaukee to New York City, and from Phoenix to San Francisco. In addition, home builders and community- and faith-based organizations, public housing authorities and private building owners, and financial institutions and foundations are taking action to prepare the built environment for climate change.[6]

These communities – and many others - are putting in place strategies to adapt to risks and stresses caused by climate change, such as flooding and extreme precipitation; temperature spikes and urban heat island effects; water shortages and drought; and rises in sea-level in coastal communities.[7]

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[3] National Academy of Sciences, National Research Council, *Adapting to the Impacts of Climate Change*, Prepublication Copy.

[4] Energy Information Administration, http://www.eia.doe.gov/oiaf/1605/ggccebro/chapter1.html. Buildings generate about 40 percent of emissions overall, and transportation generates 28 percent.

[5] Karl, Thomas R, Melillo, Jerry M. Peterson, Thomas C *Global Climate Change Impacts in the United States* (2009), cited in *Progress Report, of the Interagency Climate Change Adaptation Task Force*, p. 15 (2010).

[6] Center for Clean Air Policy, *Ask the Climate Question: Adapting to Climate Change Impact in Urban Regions* (June 2009).

[7] Ibid, p. 11-14.

Addressing Vulnerable Populations

Critical to all of these efforts is the need to pay particular attention to the impact of climate change on vulnerable populations. As noted in the National Research Council's Report, *Adapting to the Impacts of Climate Change,* groups with increased vulnerability to climate change are infants and children, pregnant women, the elderly with chronic medical conditions, low-income households, and outdoor workers.[8]

Low-income, often minority, families are frequently most at risk from the effects of extreme heat that will become more frequent due to climate change. They may be unable to afford the high cost of utilities in these conditions, or invest in the cooling equipment needed to mitigate these effect – often with tragic results.[9]

As noted by the U.S. Global Science Research Program, "in the future (as in the past), the direct impacts of climate change are likely to fall disproportionately on the disadvantaged. People with few resources often live in conditions that increase their vulnerability to the effects of climate change. The fate of the poor can be permanent dislocation, leading to the loss of social relationships and community support networks provided by schools, churches and neighborhoods."[10]

That's why we asked grant applicants for HUD's new regional sustainability planning grants (described below) to pay particular attention to addressing the needs of low-income and underserved populations; and why we are expanding our efforts to lower carbon emissions through improved energy efficiency in the affordable housing sector. Let me describe these initiatives in more detail.

HUD's Role – Sustainable Communities Initiative

I am pleased to report that through the Sustainable Communities Initiative HUD is supporting a new generation of community and regional planning that we think will result in more climate resilient communities. Just last month Secretary Donovan announced the first *Regional Planning Grants* to be awarded under the Sustainable Communities Initiative – our flagship effort to enable communities to develop more integrated regional responses to both mitigating, and adapting to the effects, of climate change.

This initiative is being implemented through an unprecedented partnership with EPA and DOT, the Partnership for Sustainable Communities. This important cross-agency collaboration is designed to encourage integrated solutions to the multidimensional environmental, housing and transportation challenges faced by cities and suburbs and rural areas.

The initiative will foster collaboration across jurisdictional lines and enable metropolitan leaders to "join up" housing, transportation, and other policies to address the critical issues of affordability, competitiveness, and sustainability. Moreover, our partnership with EPA

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[8] *Adapting to the Impacts of Climate Change*, National Academies of Sciences, 2010, pp.32-33.

[9] Center for Clean Air Policy, *Ask the Climate Question: Adapting to Climate Change Impact in Urban Regions*, p.12, June 2009. In Chicago, for example, upward of 600 mostly poor, elderly and African American persons died in the wake of a sever heat wave in that city. As a result, Chicago has adopted an aggressive plan to enhance its capability to manage heat waves.

[10] Karl, Melillo and Peterson, *Global Climate Change Impacts in the United States (* 2009).

encourages recipients to consider water infrastructure planning and conservation along with their housing and transportation plans. As noted in the National Academy of Sciences Report, climate change will place additional burdens on already stressed water resources. More intense droughts and flooding events are projected to become common in some regions.[11]

HUD's Notice of Funds Availability (NOFA) for the regional sustainability planning grants encouraged communities to address climate adaptation and resilience as part of their regional planning efforts. Eligible activities include:

> *Conduct comprehensive climate change impacts assessments* to guide regional planning and implementation strategies. Assessments may comprehensively evaluate a range of likely climate change impacts or may focus on an impact area of special concern in the region (e.g.: sea level rise or reduced water availability. Findings from climate impact assessments should be used as a basis for defining adaptation actions to be implemented in appropriate plans and strategies.

Some of the grant awards were to regional planning bodies in areas most vulnerable to flooding and extreme weather conditions: the South Florida Regional Planning Council (Hollywood, Florida), the Houston-Galveston Area Planning Council and the Gulf Regional Planning Council (Gulfport, Mississippi). The goal of these grants is not just to develop plans – it is to articulate a vision for growth tailored to specific metropolitan markets that federal housing, transportation, and other federal investments can support.

Funding to these metropolitan regions and rural communities can be used to support the development of integrated, state-of-the-art regional development plans that use the latest data and most sophisticated analytic, modeling, and mapping tools available.

In addition to these regional sustainability grants, HUD collaborated with DOT to award another $75 million in Community Challenge grants for local communities to initiate innovative housing, transportation, rural development and urban revitalization initiatives that are also likely to yield lower carbon emissions in these communities.

These efforts will benefit urban, suburban and rural communities alike. The 2007 American Housing Survey estimates that nearly 50 percent of people who live in rural places today live within the boundaries of metropolitan statistical areas. This requires a level of integrated planning that spans jurisdictional boundaries in new and unprecedented ways.

Energy Efficiency and Green Building

Another important component of HUD's work to support sustainable communities is in the area of energy efficiency and green building. Properly implemented and maintained, relatively modest investments in energy retrofit improvements can significantly reduce energy use in existing buildings, as well as improve comfort for residents. [12]

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[11] National Academy of Sciences, *Adapting to the Impacts of Climate Change*, p.34 (2010).

[12] Hendricks, Goldstein, Detchon and Shickman, *Rebuilding America: A National Policy Framework for Investment in Energy Efficiency Retrofits*, Center for American Progress (August 2009). In the residential sector, investments of $5,000 to $20,000 per

HUD itself spends more than $5 billion on utilities in public housing and other federally-assisted and public housing, and is taking steps to lower energy consumption in this stock, which houses some of our more vulnerable populations, including the elderly.

Through the Recovery Act, we have invested heavily in energy efficiency in housing, including, for example through the Green Retrofit Program, which has provided grants and loans to owners of privately-owned multifamily buildings. Average expenditure will be approximately $10,000 per unit, and we expect to retrofit some 20,000 units through the program.

In addition, significant investments have been made in public housing. Through the Recovery Act, 1,500 new units will be built to green standards or achieve the Energy Star for New Homes and another 35,000 units of public housing should lower energy use by at least 20 percent[13]. We also provide incentives for public housing authorities to utilize third-party Energy Performance Contracts, and plan to retrofit another 15,000 units through this mechanism over the next two years. We have also established a partnership with the Department of Energy to lower barriers to the use of DOE's Weatherization Assistance Program in housing stock supported by HUD.[14]

Interagency Climate Change Adaptation Task Force and the Federal Role

The same level of interagency cooperation that underlies the Partnership for Sustainable Communities and our partnership with DOE to improve the energy efficiency of our buildings is now shaping federal actions to address climate adaptation and resilience. Last month, the Interagency Climate Change Adaptation Task Force, of which HUD is a member, submitted a report to the President emphasizing the importance of this issue to the Federal government.

The Task Force began meeting in the Spring, 2009. It is co-chaired by the Council on Environmental Quality (CEQ), the National Oceanic and Atmospheric Administration (NOAA), and the Office of Science and Technology Policy (OSTP.) Recognizing the important role of the Federal Government in adaptation, President Obama signed an Executive Order on October 5, 2009 that called on the Task Force to recommend how the policies and practices of Federal agencies can be made compatible with and reinforce a national climate change adaptation strategy. The Executive Order charged the Task Force with delivering a report through the Chair of the CEQ to the President within one year.

The Task Force's Report to the President reiterated the scientific consensus that climate change is a scientific fact, and that human activities are a major contributing factor. It re-affirmed the Administration's commitment to both take steps to mitigate greenhouse gas emissions, as well as develop adaptation strategies to enable communities to withstand and respond to the effects of climate change:

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unit can achieve energy savings of 20 - 40 percent on average. In commercial properties, investments of $10 to $30 per square foot can deliver energy savings of up to 40 percent.

[13] U.S. Department of Housing and Urban *Development Capital Fund Recovery Competition Grants, Notice of Funds Availability*, May, 2009.

[14] See www.hud.gov/recovery/weatherization.

There is scientific consensus that the Earth is warming due to increased concentrations of greenhouse gases (including carbon dioxide) in the atmosphere (IPCC 2007, GCCI 2009, NRC 2010). Increased energy trapped in the atmosphere and the oceans due to these higher concentrations of greenhouse gases is already leading to impacts, in the United States and globally, including warmer average water and air temperatures.

The Obama Administration is committed to mitigating (i.e., reducing) greenhouse gas emissions to minimize the future impacts of climate change. However, the climate impacts we are observing today will continue to increase, at least in the short-term, regardless of the degree to which greenhouse gas emissions are managed. Even under lower emissions scenarios, global average temperatures are predicted to rise by over 2°F over the next 100 years (Figure 2) due to factors such as the long-lived nature of certain greenhouse gases in the atmosphere and the absorption of heat by the Earth's oceans. In the long-term, the ability to manage greenhouse gas emissions and moderate or reduce atmospheric concentrations of greenhouse gases will affect the magnitude of the impacts that we will need to adapt to (NRC 2010). Therefore, mitigation and adaptation are inextricably linked, and both are required in order to reduce the impacts of climate change.[15]

The Federal Role

The Task Force found that the Federal Government has an important and unique role in climate adaptation - but it is only one part of the broader effort that must be supported by multiple levels of government and various other private and non-governmental partners throughout the country.

In particular, "Federal leadership, guidance, and support are vital to empowering others to act and to enabling decisions based on the best available information and science. Just as importantly, the Federal Government can learn from and build off the efforts of others, as many cities and states within and outside the United States have already begun to implement adaptive measures."

The Task Force also acknowledged that the Federal Government has an important stake in adaptation because climate change directly affects a wide range of Federal services, operations and programs, particularly those associated with management of public lands, infrastructure, and national security, among others.

The Task Force recommended in its Progress Report that Federal Agencies make adaptation a standard part of strategic planning to ensure that resources are invested wisely and that Federal programs, services and operations remain effective in a changing climate.

[15] Council on Environmental Quality, *Progress Report of the Interagency Climate Change Adaptation Task Force: Actions and Recommendations In Support of a National Climate Change Adaptation Strategy*, October 5, 2010.

The Task Force also recommended that the Government continue to enhance climate services that enable informed decisions based on the best available science, and to work with the international community to improve knowledge sharing and coordinate adaptation investments.

We also need to pay more attention to the unintended consequences of policies that may increase our vulnerability to climate risks and thus make adaptation more costly and difficult; for example, certain policies may lead to high risk activities in the very areas that climate science would suggest people avoid.

The Interagency Task Force adopted a set of Climate Adaptation Principles (see Attachment A), as well as five Policy Goals that we hope will shape federal action in this arena. In addition, we expect to initiate a number of pilot projects where these principles and goals can be tested in partnership with local communities.

Thank you Mr. Chairman, and members of the Committee – I look forward to answering your questions.

Attachment A: Federal Interagency Task Force
Climate Adaptation Principles

Adopt integrated approaches. Climate change preparation and response should be integrated into core policies, planning, practices, and programs whenever possible.

Prioritize the most vulnerable. Adaptation plans should prioritize helping people, places, and infrastructure that are most vulnerable to climate impacts. They should also be designed and implemented with meaningful involvement from all parts of society. Issues of inequality and environmental justice associated with climate change impacts and adaptation should be addressed.

Use best-available science. Adaptation should be grounded in best-available scientific understanding of climate change risks, impacts, and vulnerabilities. Adaptive actions should not be delayed to wait for a complete understanding of climate change impacts, as there will always be some uncertainty. Plans and actions should be adjusted as our understanding of climate impacts increases.

Build strong partnerships. Adaptation requires coordination across multiple sectors, geographical scales, and levels of government and should build on the existing efforts and knowledge of a wide range of stakeholders. Because impacts, vulnerability, and needs vary by region and locale, adaptation will be most effective when driven by local or regional risks and needs.

Apply risk-management methods and tools. A risk management approach can be an effective way to assess and respond to climate change because the timing, likelihood, and nature of specific climate risks are difficult to predict. Risk management approaches are already used in many critical decisions today (e.g., for fire, flood, disease outbreaks), and can aid in understanding the potential consequences of inaction as well as options for risk reduction.

Apply ecosystem-based approaches. Ecosystems provide valuable services that help to build resilience and reduce the vulnerability of people and their livelihoods to climate change impacts. Integrating the protection of biodiversity and ecosystem services into adaptation strategies will increase resilience of human and natural systems to climate and non-climate risks, providing benefits to society and the environment.

Maximize mutual benefits. Adaptation should, where possible, use strategies that complement or directly support other related climate or environmental initiatives, such as efforts to improve disaster preparedness, promote sustainable resource management, and reduce greenhouse gas emissions including the development of cost-effective technologies.

Continuously evaluate performance. Adaptation plans should include measurable goals and performance metrics to continuously assess whether adaptive actions are achieving desired outcomes. In some cases, the measurements will be qualitative until more information is gathered to evaluate outcomes quantitatively. Flexibility is a critical to building a robust and resilient process that can accommodate uncertainty and change.

Attachment B: Federal Interagency Task Force Policy Goals

Encourage and mainstream adaptation planning across the Federal Government.

Improve integration of science into decision making.

Address key cross-cutting issues.

Enhance efforts to lead and support international adaptation.

Align and coordinate capabilities of the Federal Government to support national adaptation.