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**RE: Docket Number FEMA-2014-0022**

**March 1, 2021**

Good afternoon, my name is Shana Udvardy. It's a pleasure to provide comments on behalf of the Union of Concerned Scientists. As FEMA and the TMAC work to finalize the 2020 annual report and release the 2021 TMAC Tasking Memo, I again would like to emphasize the need for FEMA and TMAC to put future conditions, including projections of climate change, at the forefront of their efforts to improve flood risk mapping.

Additionally, FEMA and TMAC must address how they plan to develop updated guidance to ensure climate change is woven into zoning and land use planning, flood risk reduction and mitigation solutions, and the Community Rating System.

The 2020 Atlantic hurricane season highlighted how changing climate conditions are causing negative trends and that the past is not a predictor of the future. It was a record-breaking season with 30 named hurricanes, several of them noted for their rapid intensification. A recent study found that the chance of a hurricane intensifying went from 1 in 100 in the early 80s to 1 in 20 by mid-2005. Additional worrisome trends are numerous: hurricanes are becoming stronger[1], wetter[2], slower[3], and more destructive[4], and all these trends have been linked to anthropogenic global warming[5] in one way or another.

[1] Holland, G., Bruyère, C.L. Recent intense hurricane response to global climate change. Clim Dyn 42, 617–627 (2014). https://doi.org/10.1007/s00382-013-1713-0
[2] Patricola, C.M., Wehner, M.F. Anthropogenic influences on major tropical cyclone events. Nature 563, 339–346 (2018). https://doi.org/10.1038/s41586-018-0673-2
[3] Hall, T.M., Kossin, J.P. 2019. Hurricane stalling along the North American coast and implications for rainfall. npj Clim Atmos Sci 2, 17. https://doi.org/10.1038/s41612-019-0074-8
[4] Aslak Grinsted, Peter Ditlevsen, Jens Hesselbjerg Christensen. 2019. Normalized US hurricane damage estimates using area of total destruction, 1900–2018. Proceedings of the National Academy of Sciences Nov 2019, 116 (48) 23942-23946; DOI: 10.1073/pnas.1912277116. https://www.pnas.org/content/pnas/116/48/23942.full.pdf
[5] Veronica Penney. Nov. 10, 2020. 5 Things We Know About Climate Change and Hurricanes. https://www.nytimes.com/2020/11/10/climate/climate-change-hurricanes.html

A recent study assessed how hurricanes are losing strength more slowly and found that the 1960's hurricanes lost 75 percent of their strength within 24 hours of making landfall.[6] However today, they lose only 50 percent in the same amount of time. That slowing effect means that hurricanes in the future would have a greater impact from rainfall and winds.

In recent years we witnessed how storms are more consistently forming before the official hurricane season, and that the extension of the hurricane season means longer periods of communities and first responders staying in a state of preparedness and recovery from the disasters.

To add to this unfortunate reality, we are also seeing storms hit the same area successively – take for example Hurricane Laura that hit the Louisiana Lake Charles area in August as a Category 4, one of the strongest storms to hit the state. Then Hurricane Delta hit the same general area only six weeks later, while many houses still had tarps on their roofs and the communities, especially low-income communities, were still working on getting back to normal.

More and more studies continue to raise red flags on the climate change driven trend of more frequent and extreme precipitation events that can lead to more flooding and suffering of communities in many regions of the U.S. For example, a recent study out of Stanford University that finds increases in extreme rainfall in the U.S. caused $73 billion in flood damages over the last 30 years, a full third of total flood damage costs during that timeframe and consistent with global warming predictions.[7]

And, with rising sea levels high-tide floods are becoming more frequent and reaching farther inland. Hundreds of U.S. coastal communities face growing risks of chronic, disruptive flooding that directly affects people's homes, lives, critical infrastructure, and the economy. Recent Union of Concerned Scientists (UCS) research found that more than 300,000 of today's coastal homes, with a collective market value of about $117.5 billion in 2018, are at risk of chronic inundation in 2045—a timeframe that falls within the lifespan of a 30-year mortgage issued today.[8] Approximately 14,000 coastal commercial properties, assessed at a value of roughly $18.5 billion, are also at risk during that timeframe. The properties at risk by 2045 house 550,000 people and contribute nearly $1.5 billion toward property tax base. While every coastal state faces risks, states with the most homes at risk by the end of the century include Florida, with about 1 million homes (more than 10% of the state's current residential properties); New Jersey, with 250,000 homes; and New York with 143,000 homes.

Just last week, the First Street Foundation released their latest research that quantifies the financial impacts of flood risk carried by American homeowners, and how those impacts are growing as flood risks worsen due to a rapidly changing climate. The team found that there are nearly 4.3 million homes across the U.S. with substantial flood risk that would result in financial loss. The analysis indicates that if these homes were to be insured against flood risk through the National Flood Insurance Program (NFIP), the rates would need to increase 4.5 times to cover the risk today, and that the cost of expected annual loss of properties in the next 30 years will grow by as much as 61% due to climate change.[9]

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[6] Li, L., Chakraborty, P. Slower decay of landfalling hurricanes in a warming world. Nature 587, 230–234 (2020). https://doi.org/10.1038/s41586-020-2867-7

[7] Climate change has caused billions of dollars in flood damages.

[8] Underwater: Rising Seas, Chronic Floods, and the Implications for US Coastal Real Estate. 2018. https://www.ucsusa.org/sites/default/files/attach/2018/06/underwater-analysis-full-report.pdf and https://www.ucsusa.org/sites/default/files/attach/2018/06/underwater-analysis-technical-backgrounder.pdf

[9] The Cost of Climate America's Growing Flood Risk

Climate change is also worsening wildfire seasons[10] and in turn, is amplifying destructive flash flooding and debris flows as even modest rainfall landing on fire-denuded landscapes can trigger these events.[11]

These climate change trends are exacerbating long-standing inequities, environmental injustices, and environmental racism. Disadvantaged segments of the population already face big challenges from the COVID-19 pandemic due to lack of resources and historical disenfranchising. Extreme weather, flooding, hurricanes, and other disasters exacerbate these challenges. Studies find that white Americans and those with more wealth often receive more federal dollars after a disaster than do minorities and those with less wealth[12] and that disaster relief in the U.S. worsens the growing gap between white and black wealth.[13] Indeed, the recent equity report by FEMA's NAC highlighted how FEMA can work to address these challenges and gaps.[14]

This recent science, together with the foundational Intergovernmental Panel on Climate Change Special Report on Global Warming of 1.5C (IPCC 1.5)[15] and the U.S. Fourth National Climate Assessment (NCA4)[16], drive home the fact that FEMA and TMAC must give climate change and future conditions the urgency these issues deserve by directing an all-hands-on-deck approach when it comes to incorporating climate change and future conditions throughout their efforts. This means climate change and future conditions must be a front and center focus of TMAC's 2020 report, equity and affordability considerations, public engagement with states, local and Tribal governments on graduated risk informed insurance rates (RR 2.0), and its tasks for this year.

We specifically ask that TMAC and FEMA work together to provide greater transparency to the public regarding the Risk Rating 2.0 program and its impact on communities. As mentioned during the TMAC meeting today, much of the engagement to date has been done within the community of flood and mapping experts. FEMA needs to expand upon that good effort by initiating a robust public engagement with states, local and Tribal governments to help educate communities on FEMA's efforts to move to graduated risk informed insurance rates with the implementation of RR 2.0. This ask is in line with FEMA's 2019 memo which specifically tasks TMAC to deliver fair and equitable insurance rates and to increase transparency.[17]

I want to thank TMAC for their work to date and for the opportunity to provide comments.

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[10] Michael Goss et. al 2020. Climate change is increasing the likelihood of extreme autumn wildfire conditions across California. Environmental Research Letters, Volume 15, Number 9. https://iopscience.iop.org/article/10.1088/1748-9326/ab83a7

[11] USGS. No Date. California Water Science Center. Post-Fire Flooding and Debris Flow. https://www.usgs.gov/centers/ca-water/science/post-fire-flooding-and-debris-flow?qt-science_center_objects=0#qt-science_center_objects

[12] https://grist.org/article/npr-investigation-finds-fema-aid-favors-the-rich-and-white/

[13] As Disaster Costs Rise, So Does Inequality. Junia Howell, James R. Elliott. December 4, 2018 https://doi.org/10.1177/2378023118816795

[14] FEMA NAC report https://www.fema.gov/sites/default/files/documents/fema_nac-report_11-2020.pdf

[15] Intergovernmental Panel on Climate Change (IPCC). 2018. Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emissions pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. https://www.ipcc.ch/sr15/

[16] US Global Change Research Program (USGCRP). 2018. Fourth national climate assessment: Impacts, risks, and adaptation in the United States, volume 2. Washington, DC. Online at https://nca2018.globalchange.gov

[17] https://www.fema.gov/sites/default/files/documents/fema_technical_mapping_advisory_council_2019_annual_report_memo.pdf

**March 1, 2021 afternoon comments on the TMAC's 2020 report**

I would like to make a few comments based on what I heard today during TMAC's review of the 2020 report:

1) First, I think TMAC ought to consider some creative ways to include the public comments in the report such as an Appendix. All previous engagement documents and data are included as an Appendix, so it'd seem like a logical addition.

2) Second, on public engagement I'd like to make a few points:

   - In section 4.2.4 on gaining and maintain trust – there isn't much time for a robust engagement process with FEMA's current rollout schedule with the rates to be released in April and the implementation in October. As currently planned, the implementation of RR 2.0 will come after many communities have been hit by consecutive flood and disaster events exacerbated by the pandemic and the economic hardships. We need to be thinking about how the new rates will hit low-and fixed income communities who are already stretched thin.

   - This draft section speaks to "others" – TMAC should better describe which groups and type of communities they plan to gain and maintain trust with. By not directly notating the types of communities, for example communities that have been repetitively flooded, communities of color, low- and fixed income communities, among others, it is effectively leaving them out.

3) Third, given that the 2020 report is being released under the new Biden administration, an administration that has made climate change a priority both nationally and internationally and released an expansive climate change executive order on day one, it's a bit hard to believe that the TMAC report doesn't seem to mention climate change anywhere in the document. Climate change needs to be fully integrated throughout, for example, in the visions statement, in figures and graphics, etc.

4) Finally, regarding providing public comments on the 2020 report, FEMA in the Federal Register notice for this meeting states that "*Any related materials will be posted to the FEMA TMAC site prior to the meeting to provide the public an opportunity to review the materials*." However, FEMA did not share the draft document before or during the TMAC meeting today. It is difficult for the public to provide comments on a large document in real-time and does not do justice to FEMA's goal of wanting to be transparent and involve the public.

Thank you for the opportunity to provide comments.

**March 2, 2021**

Thank you for the opportunity to speak and offer comments on behalf of the Union of Concerned Scientists. It is refreshing to hear that FEMA and TMAC will now be able to explicitly integrate climate change into their work. Yesterday I spoke to the many negative climate change trends that are challenging our communities now and will continue to worsen into the future. UCS has expertise in conducting rigorous technical analysis and could be a resource when it comes to climate change.

I am also glad to see that the 2021 tasks call for TMAC to address the outstanding recommendations from TMAC's 2015 Future Conditions report. I found at least seven recommendations that are outstanding, these include the need for FEMA to develop guidance on local zoning, scenario approaches, advisory maps, and regulations.[18]

On this point – TMAC should prioritize guidance for the restored National Flood Risk Management Standard (FFRMS) with special attention on technical guidance for riverine areas under climate change projections.

I'm also glad to see the 2021 tasking memo speaks to stakeholder engagement and the rollout of RR 2.0. However, the engagement and education must flow both ways – collecting information from stakeholders but also educating and providing information to stakeholders – the latter seems to need to be built out more substantially.

Reaching and engaging the public today will be challenging given communities and businesses are recovering from cascading impacts from COVID 19 and a record year of costly disasters. A longer transitions pathway will allow for more time to engage and educate the public and Congressional member who need to provide FEMA with the direction to establish an affordability program.

To ensure the historically disadvantaged and low- and fixed income communities are not excluded, FEMA and the TMAC in coordination with the National Advisory Council (NAC) should develop a subcommittee to help focus outreach efforts on those communities that are at high risk, have been disproportionately disadvantaged, and have few resources to adapt to changing climate conditions.

To further a smooth path to implementation of RR 2.0, FEMA should task TMAC to work with FEMA consultants to conduct a rapid pilot case study that provides examples of what the new graduated risk approach would look like in practice. This pilot study should:

[18] 1. FEMA should develop guidance for how local zoning and land use planning can be used to identify where and how land use will change in the future and incorporate that into local hazard and risk modeling.
2. FEMA should use a scenario approach for flood hazards calculation and mapping under future conditions that will allow users to evaluate the robustness of proposed solutions to a range of plausible future conditions, including uncertain land use and climate change impacts.
3. Maps displaying the location and extent of areas subject to long-term coastal erosion and future sea level rise scenarios should be advisory (non-regulatory) for Federal purposes. Individuals and jurisdictions can use the information for decision-making and regulatory purposes if they deem appropriate.
4. Consider whether and how future conditions information could be used for regulatory purposes.
5. Consider rates of future conditions changes and determine appropriate planning time horizons.
6. Consider how future conditions should be linked to mitigation grants to reduce future losses.
7. How might floodplain management regulations and the Community Rating System be modified to support future conditions?

1) showcase real world examples of ratings based on homes in zip codes from both urban and rural areas in riverine and coastal communities and communities of different income and vulnerability levels.
2) Can anonymize the data so as not to target any specific community or individual household but still give a real time snapshot.

This pilot case study would help educate and gain support from the public and congress, which are so critical for the lifespan & success of RR 2.0.

I want to thank TMAC for their work to date and for the opportunity to provide comments.

Sincerely,

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