The following comments are being submitted on behalf of the City and County of Denver. This feedback is the result of a collaborative effort between multiple departments with the City and County of Denver including, The Office of Emergency Management, The Office of Climate Adaptation, Sustainability and Resilience, Community Planning and Development, The Department of Transportation and Infrastructure, and The Agency of Human Rights and Community Partnership.

1. **Risk Assessment – General Questions**

*(A1) Are there additional data, information, analysis capabilities, or metrics that would be useful?*

The change in Risk overtime. Once a set methodology is created, tracking the changes in Risk overtime would be beneficial to help determine areas where Risk is accelerating and might help identify areas of future concern more easily. Additionally back dating risk analysis using historical metric data could be beneficial to determine this change in Risk overtime.

*(A2) Does your organization use the National Risk Index? How does your organization use the National Risk Index?*

At the current time the City and County of Denver does not use the National Risk Index to make project and planning decisions. We do however use the CDC’s SVI (or similar tool like housing affordability) to identify areas of additional focus including planning and project identification. There are a few reasons why the City and County of Denver does not use the NRI.

1. We don’t believe that it accurately displays the risk because of how the EAL is used in the calculation. In the methodology section of the RFI we will propose a simple solution to make the NRI more accurately display Risk and provide supporting documentation and analysis.
2. Census Tract level data isn’t useful for Individual project level decision making. Census Tract level data is only useful at the overall planning level to identify areas where future projects would be most beneficial but does not add any meaningful data on the individual project level. This is a big reason why we believe that NRI should no be used to approve projects, because project risk reduction and benefit is very place dependent, and the Census Tract level risk does not tell an accurate story.
3. **Risk Assessment—Methodology**

*(B1 and B2) PART 1: In general, how could FEMA improve its National Risk Index methodology used to understand, measure, and communicate community level natural hazard risk across the country? Are there any potential biases within the National Risk Index data or methods? What methods exist for addressing these biases? Do you have any feedback on the formula used to derive the National Risk Index risk ratings or the specific data used to measure expected annual loss, social vulnerability, or community resilience?*

As previously mentioned in the response for A2 the City and County of Denver is very concerned with the National Risk Index methodology, specifically the way in which Expected Annual Loss (EAL) is used to calculate the final Risk score. Below we will list our concerns with EAL and present a simple solution to address these concerns which results in a much better Risk score outcome. We have also provided attachments demonstrating the use of this new methodology for the City and County of Denver’s 78 census tracts.

Issues with using Estimated Annual Losses (EAL)

1. Building Values are a significant factor in the EAL. Because Building Values are calculated based on census tract level the inequities between neighborhoods are factored in the final EAL. Poor neighborhoods with low building values will have less damages than richer neighborhoods when all other factors remain the same, even when those poorer neighborhoods have a higher number of buildings at risk.
2. Building Values are also not indicative of what actual damage will occur because more expensive buildings are built to higher standards and therefore have less risk than cheaper constructed buildings which can be damaged by lower impact events.
3. Additionally, because EAL is generally inversely proportional to the Community Risk Factor across the country, and because those metrics that factor into Community Risk Factor have been proven to identify high risk communities, the use of EAL threatens to completely mask or even reverse a community’s true risk and exposure to hazards.
4. Finally, EAL varies widely across the country and between rich and poor neighborhoods and means little on its own. Two million in EAL means something very different between zip code 90210 and central Kansas.

Based upon these concerns we propose a simple solution that we hope will be strongly considered before determining the Community Disaster Resilience Zones using the NRI.

Instead of using the raw EAL to determine the communities Risk score, we propose dividing the census tract EAL with the census tract Medium Household Income (MHI) from the US Census Bureau and then using that ratio compute the Risk score, changing no other methodology. We believe this proposed EAL/MHI ratio results in a more accurate risk score for census tracts. The resulting Risk Index formula would be

Risk Index = (Expected Annual Loss / Medium Household Income) \* (Social Vulnerability / Community Resilience)

Or

Risk Index = EAL/MHI Ratio \* the Community Risk Factor

This solution has the following benefits

1. The EAL/MHI ratio helps identify the burden to the community. If the ratio is high, then the community is more likely to be overwhelmed by the damages. And when a community is overwhelmed by the damages that’s when a disaster occurs.
2. The EAL/MHI ratio also allows you to better compare damages across the county and across census tracts.
3. The EAL/MHI ratio removes the inequities created by relying on building cost alone. Rich communities are no longer favored in the final risk score.

Not only have we proposed this possible solution, but we have also created an excel spreadsheet with this proposed change and the impacts it has on the final risk score for all City and County of Denver census tracts, as well as corresponding maps displaying the results. These documents are attached to this RFI response.

Having reviewed the resulting redistribution of risk that results from changing EAL to EAL/MHI in the risk calculation we believe that the new risk index outcome is a much better representation of our community’s actual risk and makes the National Risk Index a much more useful and equitable tool. We are happy to have additional conversations about this proposal.

*(B1 and B2) PART 2:*

There is also a second issue we have identified with the EAL. We are also presenting a separate solution to address this issue. This issue has no effect on the City and County of Denver but it does have the possibility to negatively impact rural communities and result in the wrong rural communities being chosen as Community Disaster Resilience Zones.

The use of Agricultural loses in the EAL calculation is very valid in determining an areas overall risk as these losses alone often result in disaster declaration for rural communities, especially in large scale severe storm events. However, using Agricultural EAL as a factor when determining CDRZ’s is problematic in multiple ways,

1. FEMA mitigation funding sources prioritize projects that focus on people, and rightfully so. While crop losses are significant and disastrous, FEMA isn’t paying to put a roof over a corn field to protect it from hail or building a levee to protect a soybean field from a flood (unless of course there is also a community behind it). The bottom line is that CDRZ’s are meant to identify COMMUNITEES most at risk, and by factoring agricultural loses into the decision we run the risk of prioritizing fields over small towns. We will demonstrate a few examples where this is happening below.
2. Local communities will always prioritize reducing the risk of people in their community over fields. Rural communities are more concerned with installing tornado shelters, raising home elevations to protect from flooding than hail damaged crops. Again, by including EAL in the determination of CDRZ’s we run the risk of choosing the census tract next to a small town, because it includes a large number of valuable croplands, over the small low-income community with 500 structures at risk.
3. Crops are overwhelmingly insured, with nearly 90% of the crop acreage insured in the United States according to the USDA. In addition, Since 2000, 42% of total indemnity payments were for losses attributed to drought or high temperature according to the USDA, and there are no mitigation strategies to address these issues (other than installing irrigation which is not a FEMA option, nor is it realistic given climate changes threat to dwindling ground water resources and the fact that river water is already overallocated). (https://www.ers.usda.gov/topics/farm-practices-management/risk-management/crop-insurance-at-a-glance/)
4. Low income individuals don’t own farmland. According to the USDA the Median total household income among all farm households ($92,239) exceeded the median total household income for all U.S. households ($70,784) in 2021. By using the EAL for agriculture in the determination of CDRZ’s we are valuing higher income earns over low-income individuals.

Here's an example of where the use of Agricultural EAL results in small communities being deprioritized.

1) Cozad, Nebraska Population 3,988

Cozad, Nebraska is represented by census tract 31047968300 and is almost surrounded by the much larger (geographically) census tract 31047968100. Under the current Risk formula which includes the use of Agricultural EAL, Cozad has less risk than its surrounding census tract 31047968100 despite Cozad having a higher social vulnerability, this is because Cozad has less than half of the EAL of census tract 31047968100. However, if you look at the EAL calculation that Cozad has both a higher building EAL and a higher fatality EAL, but 31047968100 has a significantly higher Agricultural EAL. By including agriculture in the calculation for Risk when determining the CDRZ’s we are devaluing what really matters, these small communities in rural areas. There are countless other examples across the country where this occurs.

Proposed Solution:

Our proposed solution for this issue is also simple. We propose that Agricultural EAL be removed from the Risk calculation entirely when determining CDRZ’s. Yes, this will greatly reduce the “Risk” score for rural areas. However, FEMA has been given the directive to spread CDRZ’s out evenly between rural and urban areas, so even by removing Agricultural EAL this will not impact the fact that rural areas will still be chosen as CDRZ’s. FEMA will still be choosing the rural communities with the highest risk scores. In fact, by removing Agricultural EAL FEMA will end up making better choices for CDRZ areas that can benefit from FEMA mitigation programs. Small towns like Cozad, Nebraska are much less likely to be overlooked.

If there is still the desire to keep Agricultural EAL in the formal as part of the determining, we suggest multiplying Agricultural EAL by 0.5 to reduce its factor into the final EAL. People's lives and homes are much more important that farmland so we need to prioritize what truly matters and pick CDRZ locations that can benefit from FEMA programs.

1. **Climate Change and Future Conditions Data**

*(D1) How should FEMA incorporate climate change and future conditions data into the National Risk Index? What tools/data sources should FEMA consider (e.g., Climate Risk & Resilience Portal,17 Climate Mapping for Resilience and Adaptation Tool,18 or U.S. Climate Resilience Toolkit 19) when expanding the National Risk Index to include anticipated impacts due to climate change? Who should FEMA consult with and include when developing this possible expansion?*

FEMA should consider all the above tool and these additional tools listed below when considering how to include the impacts of climate change into the tool. We believe the best course of action would be to start conversations with all these parties to see which data sets would be best to use to begin developing climate change impact metrics for the NRI.

Additional tools include:

1. Tribal Climate Tool
2. Aquatic Systems Interactive Tool
3. Climate change Vulnerability Index
4. Heat Vulnerability Index
5. Social Vulnerability Analysis: A Comparison of Tools
6. Sea Level Rise Viewer NOAA

Additionally, when developing climate change impact metrics FEMA should consult with the following:

1. State and local resilience and adaptation managers
2. Emergency managers and planners,
3. Community groups - NAACP, indigenous rights groups,
4. Adaption and Resilience Experts
   1. The National Adaptation Forum,
   2. Urban Sustainability Directors Network,
   3. State Climatologists Offices,
   4. Climate Central,
   5. The National Water Center (NOAA),
   6. NIDIS (National Drought information System Staff),
   7. National Weather Service Headquarters for emergency warnings and watches.
   8. Environmental Groups: Environmental Defense Fund, the Nature Conservancy, and Western Resource Advocates.
   9. Federal Groups: I would reach out the CEQ’s climate adaptation team, OSTP’s climate team, USGCRP’s climate team, National Park Service Climate Change Response Program, National Climate Centers, NOAA’s RISA programs

Finally, FEMA should begin a partnership with the U.S. Global Change Research Program and fully integrate with them for the sixth National Climate Assessment due out in 2028. By integrating with the USGCRP FEMA can leverage climate scientist and best available research to develop climate change threat indicators that can be released in the 2028 update.

1. **Questions to Identify Community Disaster Resilience Zones**

*(E1) How can FEMA best communicate this designation once it has been made to the relevant jurisdictions and communities? What additional data and information would be useful to communities who are designated community disaster resilience zones? Would it be beneficial for FEMA to use a phased in approach or announce in stages, making adjustments to the selection methodology based on lessons learned, feedback and results? If so, what data and information should FEMA consider for a phased approach and how frequently should these designations be reviewed and how?*

FEMA should notify the communities (state and locals) selected to be CDRZ prior to making an official announcement to ensure that there are no disagreements about the perceived risk. Risk is very localized and without local buy-in the designation will not be successful. FEMA should provide local communities with a fact sheet notifying them of what the designation means, and FEMA should schedule a Q&A with the state and local jurisdictions Emergency Management officials and other vital departments to answer questions and begin to build a working relationship with them. A phased approach would be best as there will likely be lessons learned as this effort begins and the designations should be reviewed every five years to align with HMP cycles and to ensure the latest data is being used to make selections. Five years also gives the jurisdiction adequate time to get project momentum.

*(E4) How should FEMA work with State, local, Tribal and Territorial Governments in designating zones? How can FEMA Partner with States, Tribes and Territorial government in working with local governments with community disaster resilience zones?*

FEMA should set up designated regional coordinators to work directly with the designated resilience zones state and local partners. Because states do not have adequate capacity to support grant applications FEMA should work directly with the local entities to ensure successful project implementations.

(E6) What are the significant barriers that potential community disaster resilience zones face in accessing and leveraging Federal resources, and how can FEMA and other Federal agencies assist them in overcoming these barriers and make this process more equitable?

CDRZ should be the most at-risk communities in the country so they will be under resourced and overburdened. Money and resources available for mitigation projects will not improve outcomes alone. A coordinated effort from multiple federal agencies is needed to give the community the needed capacity to begin to reduce its risk to the hazards it faces. In addition, CDRZ need funding to do community master planning as they will likely have insufficient existing plans and projects identified. A master planning effort will allow the CDRZ to build a comprehensive vision of the future and a portfolio of strong projects that will benefit the community for years to come. The wholistic master planning process will also better leverage the influx of federal resources and ensure that the zone not only reduce their risk to hazards but also build capacity and resilience through diverse solutions.



**(F) Resilience or Mitigation Project Planning Assistance**

*(F1) What would be the most useful and equitable way for FEMA to provide financial and technical assistance to benefit communities with Community Disaster Resilience Zones to plan, apply for, and evaluate resilience or mitigation projects?*

FEMA should pair their traditional funding methods with other grant opportunities (from other federal agencies) for community building to provide resources that make communities more resilient – urban infrastructure improvements, community-based health centers/resources, housing microgrants. Funding options need to be as deep as they are diverse. Unique problems require unique solutions and FEMA should work hard to encourage and not discourage these unique answers. Again, funding for master planning, and funding that supplement projects identified in master planning efforts will be key to building more resilience in these zones. Mitigation plans are useful, but are not detailed or diverse enough to successfully pull off wholistic community wide resilient solutions the way community master planning can.

*(F2) How can FEMA support comprehensive community resilience planning to benefit community disaster resilience zones and the larger communities those census tracts lie within?*

Again, FEMA needs to provide funding specifically for community master planning. In addition, FEMA funding directed toward communities should be paired with objectives and goals out of HUD and DOT - potentially paired with other Federal grants seeking to improve community planning, placemaking, community building (grants for providing services, healthy food, medical care) in communities where those things are lacking. We become a more resilient community when we plan for more equitable outcomes across the city and hazard reduction alone is not enough to have meaningful impact on outcomes.

*(F3) How should FEMA engage with State, local, Tribal, Territorial, and nongovernmental levels to provide technical assistance to benefit communities within Community Disaster Resilience Zones?*

FEMA should provide a direct FEMA Regional coordinator to the local jurisdiction to reduce the game a telephone between the locals, state, and federal levels. This will greatly improve coordination and relationships and allow for FEMA to more quickly towards project implementation.

*(F4) What activities could FEMA undertake to help community disaster resilience zones understand and implement the types of projects, activities, or services that would minimize/reduce natural hazard risk?*

FEMA could work to create joint grant funding opportunities with HUD and DOT who are working on projects to strengthen communities through better streets, redundant and improved infrastructure where needed, stronger building codes and regulations. These funding opportunities would encourage the creation of more holistic projects and unique approaches to increasing community resilience.

*(F5) What are potential unintended consequences of designating these zones and/or implementing other parts of this legislation that should be considered.*

Because the current NRI formula is skewed based on building value, potentially defining risk on value of loss rather than vulnerability of the population affected by a disaster, future funding streams could be misdirected to wealthier communities and father exacerbate already existing inequalities. Please see the proposed solution in Section B to address this. Additionally, areas of very high risk and areas with great proposed risk reduction projects will exist outside of the CDRZ, so it is imperative that a large amount of funding still be made available for these areas. CDRZ’s will not be the only vulnerable areas.

**(G) Community Disaster Resilience Zone Project Application and Certification Process and Other Investment Opportunities**

*(G2) How can the identified community disaster resilience zones and FEMA’s assistance amplify other Federal and non-Federal programs to direct resources to communities with high risk to natural hazards, high social vulnerability and low community resilience? What other programs would be complementary?*

As previously mentioned, creating joint funding opportunities with HUD and DOT would result in more wholistic and creative projects that would have a greater impact on increasing the communities resiliency.

**(H) Community Disaster Resilience Zone Projects Causing Displacement**

*(H1) How can FEMA best ensure any residents displaced by resilience or mitigation projects receive equitable treatment?*

Provide a funding mechanism to create matching affordable housing for property buyouts within the same neighborhood. This could be a partnership with HUD. By doing this you are moving people away from the risk but allowing them to stay within their community. This also ensures that the new housing being built is not being built in a place equally as risky.

*(H2) How can FEMA ensure comprehensive community engagement is a central component of any community resilience planning and project implementation for Community Disaster Resilience Zones?*

By attaching a master planning funding mechanism to the designation. This will engage the whole community in an in-depth planning processes and ensure that strong equitable projects are designed and put forth.