



FEMA

TMAC

Technical Mapping Advisory Council Meeting
September 30-October 1, 2014

TMAC Members

Doug Bellomo*
Juliana Blackwell
Nancy Blyler
Richard Butgereit
Mark DeMulder*
John Dorman
Leslie Durham
Scott Edelman
Steve Ferryman

Gale Fraser
Chris Jones
Howard Kunreuther
Wendy Lathrop
David Mallory
Robert Mason
Sally McConkey
Christine Shirley
Cheryl Small

Speakers and Briefers

Laura Algeo, FEMA
David Bascom, FEMA
Doug Bellomo, FEMA
Kelly Bronowicz, FEMA
Mark Crowell, FEMA
Michael Godesky, FEMA
Dave Miller, FEMA

Andy Neal, FEMA
Luis Rodriguez, FEMA
Paul Rooney, FEMA
Richard Sacbbit, FEMA
Rachel Sears, FEMA
Joshua Smith, FEMA
Roy Wright, FEMA

Government Attendees

Kathleen Boyer, FEMA
Paul Huang, FEMA

Doug Marcy, NOAA
Lynda Pilgrim, FEMA
Kristin Robinson, FEMA

Registered Public Attendees

Allison Abrams, U.S. GAO
Mike Anderson (no affiliation)
David Conrad (no affiliation)
Mike DePue (no affiliation)
Katherine Greig, NYC Mayor's Office of Recovery
and Resiliency**
Scott Hiromoto, U.S. GAO
Dana Kochnowar, NYC Mayor's Office of Recovery
and Resiliency**

Erika Lindsey, NYC Mayor's Office of Recovery and
Resiliency**
Bel Marquez, URS
Tim McCormick, Dewberry
Russell Riggs, National Association of Realtors
Debbie Robinson
Jerry Sparks

Support Staff

Angela Bidnick, Booz Allen Hamilton
Kirsten Folkedal, Booz Allen Hamilton
Laura Karnas, Booz Allen Hamilton
Michelle McQueeney, J-M Global
Kristin Murphy, Booz Allen Hamilton

Allison Skeer, Booz Allen Hamilton
Katrina Tavanlar, Booz Allen Hamilton
Adam Warfield, Booz Allen Hamilton
Melissa Zientek, Booz Allen Hamilton

* Also a speaker at the meeting

** Joined via conference bridge

Purpose

The purpose of the meeting was to allow the Technical Mapping Advisory Council (TMAC) members to discuss its legislative requirements and hear presentations related to the Federal Emergency Management Agency's (FEMA) national flood program, including those on: (1) Performance Metrics and Milestones Required to Effectively and Efficiently Map Flood Risk Areas; (2) FIRM Accuracy, Quality, Ease of Use, Distribution, and Dissemination; (3) Data Accuracy, Data Quality, Data Currency, and Data Eligibility; (4) Future Conditions Risk Assessment and Modeling; (5) Maintaining, on an Ongoing Basis, Flood Insurance Rate Maps and Flood Risk Identification; and (6) Delegating Mapping Activities to State and Local Mapping Partners. TMAC members were also provided an opportunity to elect chair and discussed next steps for future meetings and working groups.

Day One

Call to Order/Roll Call

Mr. Mark Crowell, Federal Insurance and Mitigation Administration (FIMA) and TMAC Designated Federal Officer (DFO), opened the meeting and welcomed members. He thanked the United States Geological Survey (USGS) and Mr. Mark DeMulder, TMAC member, for hosting the meeting. Additionally, he thanked the TMAC members for their time and diligent work in preparing for the meeting. Mr. Crowell also thanked his FEMA colleagues and support staff for their efforts preparing for the meeting.

Mr. Crowell explained that as the TMAC DFO, he serves as a liaison between the TMAC and FEMA and is responsible for ensuring all TMAC operations comply with the provisions set forth in the *Federal Advisory Committee Act* (FACA). He introduced the Alternate Designated Federal Officers (ADFO), Mr. Mike Godesky and Ms. Kathleen Boyer and noted that Mr. Godesky would act as the DFO for the following day's meeting on October 1, 2014. Finally, he introduced Ms. Lynda Pilgrim, Office of Chief Counsel, FEMA, who will provide advice to the Council, as needed.

Mr. Crowell discussed the meeting operations and said that there is a public docket for the meeting. He noted that copies of meeting materials and the public comments are or will be available on regulations.gov under the docket number listed in the Federal Register Notice. Discussing the public comment period, Mr. Crowell said that comments should be limited to three minutes. He explained that the TMAC received one public comment; however if public commenters are interested in making clarifying comments during the period FEMA is allowing at end of each day of the meeting, they should register with the support staff at the registration and hospitality desk. Mr. Crowell reminded the Council that they are not required to respond to public comments; however TMAC members may request information from the public through the DFO, if necessary. He also noted that per FACA, staff will prepare a meeting summary that includes a description of the matters discussed and the conclusions reached by the TMAC. The summary will be available to the public through regulations.gov and the TMAC website.

Mr. Crowell took roll call of TMAC members then introduced Mr. Doug Bellomo, Director, FIMA Risk Analysis Division (RAD) to provide an overview of the agenda.

Welcome and Agenda Overview

Mr. Bellomo said that he is looking forward to the TMAC's input and advice and explained that he will coordinate the meeting until the TMAC Chair is elected. He explained that the TMAC plans to use other Federal buildings for future meetings. Discussing the agenda, Mr. Bellomo noted that the briefings at this meeting would provide a baseline conveying where FEMA is on mapping to inform the Council's recommendations. He explained the TMAC timeline, stated that TMAC reports are due in October 2015, October 2016 and October 2017, and reminded participants that the Agency updates flood mapping standards every six months.

USGS Welcoming Remarks and Facility Orientation

Mr. Bellomo invited Mr. DeMulder to make welcoming remarks and provide a facility orientation. Mr. DeMulder noted that the USGS has facilities in every State and explained that the USGS Headquarters (HQ) building was the first office building in Reston. He said that the USGS is the Nation's mapping organization and discussed the agency's mission. Mr. DeMulder noted the evacuation route and the location of the restroom.

Opening Remarks

Mr. Crowell introduced Mr. Dave Miller, Associate Administrator, FIMA, to provide opening remarks. Mr. Miller said that the TMAC members were selected because of their unique contributions. He said that one key use of the maps produced by the program is to inform risk and risk decisions in various communities. He noted that in implementing the *Biggert-Waters Flood Insurance Reform Act of 2012* (Biggert-Waters), it was necessary to provide communities with the best available data that would enable homeowners to rebuild stronger. Mr. Miller noted that in the aftermath of Hurricane Sandy, FEMA worked to quickly release Advisory data; however, instead of acting on the data, many communities waited for more precise data as they thought FEMA's data was too conservative. He discussed the TMAC's charge and said that their discussions will be useful in determining how much precision is needed and what the public is looking for and what they would be willing to invest in. Mr. Miller also noted that he is interested in sea level rise and other data that goes into mapping and flood effects. He concluded his remarks by thanking members for their effort.

TMAC Priorities, Duties, and Reports

Mr. Crowell introduced Mr. David Bascom, Program Specialist, FEMA, to discuss the TMAC priorities, duties, and reports. Mr. Bascom provided an overview of Biggert-Waters and the *Homeowners Flood Insurance Affordability Act* (HFIAA). In addition, he discussed the TMAC member's duties and responsibilities. Mr. Bascom discussed the Council's reports and noted the timing of the reports is important to the extent that the recommendations inform the standards that FEMA implements.

Mr. Bellomo said that it will be challenging to maintain consistency with Biggert-Waters and HFIAA. Mr. Howard Kunreuther, TMAC member, asked if the TMAC has the ability to interact with communities to understand the challenges that they have when making decisions. Mr. Bellomo noted that the TMAC has two State and two Local Cooperating Partners. He noted that if the Council wishes to leverage additional sources, it can invite subject matter experts to brief the group. Additionally, he mentioned that the TMAC may wish to receive an additional briefing from Mr. Andy Neal, FEMA, regarding the affordability study. Participants discussed the legislation and the need to help communities move to the next phase, in addition to managing spectrum and resources. Ms. Christine Shirley, TMAC member, recommended that the TMAC think about migration zones and including them on the flood insurance rate maps (FIRM). Ms. Juliana Blackwell, TMAC member, said that in the next eight years the U.S. will have new horizontal and vertical datums.

Administratively, participants requested that they receive the PowerPoint presentations in advance of the meeting. In addition, they recommended developing a SharePoint site.

Public Comment Period

Mr. Crowell announced that per FACA, members of the public were invited to provide written comments on the issues to be considered by the TMAC. He noted that those comments were to be submitted and received by September 22, 2014, as noted in the Federal Register Notice. In addition, those interested in speaking at the meeting should have registered as a speaker by September 22, 2014. He requested that speakers limit their comments to no more than three minutes and said that the public comment period will not exceed 30 minutes.

Mr. Crowell said that the TMAC received no request for speakers in advance of the meeting; however, it received one written comment. He read the written comment submitted by Mr. David Chang, North Carolina Department of Transportation (see appendix). Mr. Chang asked that the TMAC define “any increase” as it relates to floodway encroachments. Mr. Crowell reminded participants that there will be time set aside at the end of the day for additional public comments.

Performance Metrics and Milestones Required to Effectively and Efficiently Map Flood risk Areas

Mr. Crowell introduced Mr. Joshua Smith, Program Specialist, Business Analysis Branch, FEMA; Ms. Kelly Bronowicz, Program Specialist, Data and Dissemination Branch, FEMA; and Mr. Luis Rodriguez, Chief, Engineering Management Branch, FEMA, to discuss performance metrics and milestones required to effectively and efficiently map flood risk areas.

Mr. Smith discussed the Risk Mapping, Assessment, and Planning (MAP) vision, noting that through collaboration with State, local, and tribal entities, Risk MAP will deliver quality data that increases public awareness and leads to action that reduces risk to life and property. The presenters noted that FEMA currently uses four primary metrics to measure the effectiveness of the flood mapping program in achieving the vision, including: (1) New, Validated, and/or Updated Engineering (NVUE); (2) deployment; (3) awareness; and (4) action. He said that there is a strong focus on promoting awareness with a focus on communication, including meeting with communities. He explained that Risk MAP also measures the percentage of local officials who are aware of flood risks through their community by conducting an annual survey. In addition, participants discussed riverine versus coastal miles and metrics.

Mr. Rodriguez said that there is more visibility on the technical credibility of the maps because of changing laws. He said that the public frequently asks if data is accurate and if the flood maps are reliable. He said that the law requires FEMA to assess flood hazards information every five years; therefore, there is the potential challenge of miles expiring in a flood hazard zone. He also explained that it is important to look at budget constraints and the competing priorities at the local level in order to determine where to invest in resources. Ms. Bronowicz reinforced awareness and action and said that it is important to determine the local government priorities and how the data will help them perform their jobs more effectively. She explained that it is not just about the mapping process, but also about how FEMA can guide communities to understand the hazards that they face and the actions that they can take to deal with the hazards. She noted that there is a large gap in the understanding of hazards, risks, and what the public expects the local Government to do.

Mr. DeMulder asked how the budget reduction was affecting the Risk MAP program. Mr. Bellomo explained that the majority of the cuts affected mapping. Ms. Cheryl Small, TMAC member, asked about the tools provided to the community with regards to interacting with realtors, builders, and the general public in reference to risk. Ms. Bronowicz said that the information conveyed to the public differs by region. She said that Risk MAP provides outreach materials regarding hazards; however it looks to the regions to develop an outreach plan and identify stakeholders. She explained that FEMA is trying to centralize risk engagement and that the program is trying to get a contractor in place that will be managed by HQ but supported by the regions..

Discussing the TMAC’s role in providing guidance, Mr. Bellomo said that the mapping program is funded in two ways: (1) through fees; and (2) direct appropriation. He said that those funds are used for identifying flood hazards and Risk MAP, among others. He noted that the program works to allocate funding for mapping to regional offices. He also noted that community interest plays a role in the risk based approach. In recent years, the mapping program has received approximately \$120 million a year from fees and \$85-90 million a year from appropriations.

Ms. Wendy Lathrop, TMAC member, asked about the expiration of miles. Mr. Rodriguez said that the program has tools to help them track the five year expiration period so that they are aware of the need to assess the miles. He also noted that when funds are not available to complete studies, the current map

will remain in place and the project may be extended over multiple fiscal years. Mr. Bellomo noted that there is a document that describes the miles expiration process that he may send to TMAC members.

Ms. Sally McConkey, TMAC member, noted that deployment takes time and effort. Mr. Bellomo said that there are deployed and not deployed watersheds and both types contain management data (e.g., some have miles that have not be assessed, do not need to be assessed, or are expired). He noted that regional offices work with State and local governments in order to set priorities. Mr. Bellomo also explained that FEMA measures progress and is held accountable through performance measures.

Mr. John Dorman, TMAC member, stressed the importance of defining risk and said that two broad functions of the maps are determining insurance rates and determining where to build structures. He explained that while there are many metrics, it is important for communities to adopt higher standards. Mr. Gale Fraser, TMAC member, asked why FEMA spends resources if the foundation will change. Mr. Bellomo said that the level of flood risks in unpopulated areas is not the same as those in urban environment and said that FEMA is making progress on map modernization. Mr. Kunreuther recommended that the TMAC consider income levels and Mr. Bellomo informed participants that the law required an affordability study, which is underway as a separate effort. Mr. Kunreuther said that the TMAC should consider that people want to have confidence that they have an accurate map.

Mr. Bellomo said that in a typical year FEMA sees about the same number of properties being moved into the Special Flood Hazard Area (SFHA) and out of the SFHA due to more accurate analysis and mapping. There are approximately 200,000 properties changing SFHA status each year.

Ms. Shirley asked how mitigation actions are tracked. Mr. Jones asked if all mitigation actions were treated the same when counted. Mr. Bellomo stated that there is currently no attempt to prioritize or classify mitigation actions; however it may happen in the future.

Ms. Bronowicz said that FEMA's regional offices work with local governments to determine potential mitigation actions and how to implement the actions. Mr. Smith added that FEMA has an action tracker database to track the actions. He noted that the actions are often taken through updated mitigation plans. Ms. Shirley explained that communities may get frustrated when going through the discovery process. She informed participants about an U.S. Army Corps of Engineers (USACE) program that involves planning assistance to States. She recommended that the TMAC leverage this program, along with any similar programs. Mr. Bellomo said that FEMA works closely with both floodplain management and insurance programs. Ms. McConkey said that the TMAC should contemplate the cost of various resources with regards to the metrics.

FIRM Accuracy, Quality, Ease of Use, Distribution, and Dissemination

Mr. Godesky reminded participants of language from Bigger-Waters that states ““Recommend to the Administrator how to improve in a cost effective manner...the accuracy, general quality, ease of use, distribution and dissemination of FIRMs and risk data.” He discussed the terms accuracy, quality, ease-of-use, distribution and dissemination, and risk data. Additionally, he said that accuracy refers to how well the base flood elevations (BFE) are determined and how well the flood hazard boundaries align to the topography. Precision refers to the level of detail in the data and in the methods/models used. Mr. Godesky also referenced a 2009 report sponsored by FEMA and National Oceanic and Atmospheric Administration, entitled *Mapping the Zone: Improving Flood Map Accuracy* and discussed the report's key findings. He noted that topography is the most important factor in flood map accuracy; however, FEMA does not have a control over where high-quality topographic data exists. He also noted that base flood elevations cannot be estimated more accurately than approximately one foot.

Mr. Godesky discussed the FEMA map quality process noting that FEMA has quality assurance standards. He also stated that FEMA developed the *Quality Assurance Management Plan* to assure quality. Additionally, contractors develop quality management plans for assuring quality. Mr. Godesky discussed the floodplain boundary standard that ensures that the horizontal boundaries of SFHA align with the available topographic data. Additionally, he discussed reliability criteria and the Government

Accountability Office (GAO) report on quality entitled *FEMA Flood Maps: Some Standards and Processes in Place to Promote Map Accuracy and Outreach, but Opportunities Exist to Address Implementation Challenges*, noting several recommendations from the report. Mr. Godesky discussed the quality review process and said that Operating Guidance 11-13 added an eighth quality validation step to previous established reviews and a new requirement for mapping partners to formally self-certify work. He discussed measuring and tracking quality metrics, and said that he can provide the TMAC with applicable data that they may request.

Mr. Godesky noted several key takeaways from his presentation, including that accuracy and precision are different; quality depends on perspective; uncertainty is inherent to the floodplain mapping process; topography is the most important factor in riverine accuracy; higher mapping standards are not always cost effective; FEMA has made improvements to the quality assurance process; and FEMA has made improvements in how it delivers flood risk products.

Participants discussed the distinction between accuracy and precision. Ms. Blackwell shared the definition of accuracy from the *Mapping the Zone: Improving Flood Map Accuracy* report and said that people need to know the truth about the information being provided as it can lead to a better discussion and better recommendations. Ms. Lathrop agreed, noting that the TMAC should use plain language terms when describing the terms. In addition, she explained that the current floodplain boundary standard is about precision and data consistency rather than accuracy.

Mr. Scott Edelman, TMAC member, said mapping the 100 year mean flood elevation may be appropriate for policy rating purposes across the National Flood Insurance Program (NFIP), but is not suitable for building design purposes. Mapping mean elevations is confusing to the public, and therefore it would be advisable to develop a design standard so that when people build they are relatively safe. Mr. Jones concurred, and stated the 100 year flood standard is low when compared with other hazard maps, and that engineers must compensate for uncertainty in design conditions. Flood elevation uncertainty information should be provided, and flood-resistant designs should meet the same level of reliability as designs to resist other hazards. Flood maps and studies do not provide this now. Mr. Kunreuther agreed and said that the mapping process does not include the uncertainty on the likelihood of a flood occurring and the damage that may result from the flood, things that play a key role in determining insurance premiums. Transparency regarding the treatment of uncertainty is needed. Mr. Bellomo said that there is disconnect between the FIRM and the flood hazard boundary map, which was challenging for the public. He explained that there was a push to combine insurance rating and mitigation in order to determine if people should purchase flood insurance, elevate their property, or both. Participants agreed that there are several uncertainties that the TMAC must deal with including the national environment and elevation data.

Mr. Bellomo said that as the group contemplates what the future brings, they must think about both insurance and design. If a mitigation map takes a conservative approach, it may increase the cost of construction, development, and doing business but it will lead to a safer future. On the insurance side, people are hesitant to pay for tomorrow's risk. Mr. Kunreuther suggested that people be rewarded for taking measures to make houses safer in order to satisfy both safety and insurance requirements. Mr. Chris Jones, TMAC member, said that the TMAC should map existing conditions correctly before considering future conditions. He suggested having different layers on a map to include layers for insurance purpose and layers for floodplain management purposes.

Ms. Shirley asked about the requirement to purchase flood insurance and if it was required by law or policy. Mr. Bellomo noted that there are mandatory purchase requirements and Ms. Shirley questioned whether the standards can be changed to reflect uncertainty. Ms. Shirley asked if the 0.1 foot above BFE for Letter of Map Amendment approval threshold can be changed.

Ms. Lathrop commented that there are communities who do not currently have maps that would appreciate having one. She explained that given available resources, there are times when it is appropriate to perform an approximate study. Ms. Lathrop said that an approximate study would provide a framework for local risk assessment, planning, and land use regulation that is not possible without a

maps. Mr. Kunreuther agreed with Ms. Lathrop and said that transparency is very important and suggested developing confidence intervals if there is uncertainty.

Mr. DeMulder noted that the TMAC may make recommendations that will require funding. Mr. Bellomo said that the TMAC has a responsibility to address cost and it would be useful for the TMAC to develop cost effective recommendations. He reminded participants that due to the fiscal budget, decisions will have to be made in a timely manner and in order to affect the FY 2017 reauthorization, and the TMAC should help Congress make the most informed decision. Mr. Bellomo suggested that the TMAC make interim recommendations to the FEMA Administrator and take advantage of strategic opportunities. Mr. Jones asked about the current fees associated with flood policies and Mr. Bellomo remarked that he would provide that information to the TMAC.

Additionally, Ms. Lathrop asked if FEMA could ever get away from the term FIRMs to make it evident that they are used for more than just insurance purposes. Mr. Bellomo said that the TMAC may impact change in this area through its recommendations.

Data Accuracy, Data Quality, Data Currency, and Data Eligibility

Mr. Crowell introduced Mr. Paul Rooney, Mapping Technology Specialist, FEMA, to discuss data accuracy, data quality, data currency, and data eligibility. Mr. Rooney stated that Biggert-Waters said that “the Council shall...recommend to the Administrator mapping standards and guidelines for (a) flood insurance rate maps; and (b) data accuracy, data quality, data currency, and data eligibility. He said that his interpretation of the requirement are requirements for the data that goes into an analysis, expertise in selecting and analyzing data, and finished products.

Discussing FEMA’s *Guidelines and Standards Strategic Plan*, Mr. Rooney noted that it contains a set of goals and supporting objectives to overcome existing challenges in the way the agency’s mapping standards are developed, communicated, and managed. He also discussed the Policy for Flood Hazard Mapping and Risk Analysis that was approved in 2013. He said that the initial policy contained 419 mapping standards. He explained that the primary goal of the effort was to clarify existing standards and said that about 10 percent represented new or significant changes to existing mapping standards. He explained that FEMA implements most of its mapping standards through contracts. Mr. Rooney noted that FEMA performs routine maintenance on the standards twice a year – in May and November. Mr. Rooney provided a summary of key data standards for Coordinated Needs Management Strategy (CNMS)/revalidation, base map, elevation data, vertical datum, engineering, hydrologic and hydraulic (H&H) analysis, coastal, levees, floodplain boundaries, letters of map change, data coordination and gathering, and discovery standards.

Mr. Rooney discussed how FEMA is addressing the National Academies’ recommendations. He noted the report included many findings regarding minimum uncertainties in BFEs on order of one foot from major input data sources. He also said that there were several findings regarding elevation data and explained that largely, the lower resolution data that was fundamentally accurate provided reasonable results; however, elevation data was not always accurate and qualified for use on early products.

In summary, Mr. Rooney said that standards are FEMA policy; They are concise and outcome oriented; with a semi-annual process in place to maintain standards and guidance; and core standards for elevation accuracy, suitable quality assured, and best available current conditions data; the standards rely substantially on professional certification, communication, and transparency; and that the National Academies evaluated technical approach and most recommendations have been addressed.

Mr. Dorman questioned whether the regulations reflect the intent of the law. Mr. Rooney said that the current standards reflect current conditions. Mr. Bellomo said that there are different ways that FEMA can implement sections of the law (e.g., regulation, rule, changing standards).

Participants discussed transparency. Mr. Rooney said that after the discovery process is concluded, items become part of the record and are made available for public review. Mr. Kunreuther said that the

group should strive for both communications and transparency. Participants also discussed future conditions and Mr. David Mallory, TMAC member, said that they are looking at a 30 year timeframe and using the mapping to inform hydrology regarding how much land to be developed.

Ms. McConkey asked about community outreach and the data that is used. She said that while communication is important, it is equally important that communities understand the data. Mr. Jones asked if, when a study is scoped, it references working standards. Mr. Rooney said that he will have to verify what is described in the reference guide template. Ms. McConkey said a study's Mapping Activities Statement should indicate the specific mapping procedures and standards to be used. Mr. Bellomo cautioned the group on overprescribing standards because this can stunt innovation and technology.

Mr. Rooney discussed the difference between standards and guidance and noted that guidance can evolve into standards. Ms. Shirley said that there is some uncertainty when using base maps and she would like to see reference marks on flood hazard layers so that the differences can be explained. Mr. Bellomo explained that once a digital product is produced, the floodplain boundary is mathematically determined and, as GPS improves, base maps will not be needed. He also explained that mapping varies from one state to another.

Ms. Lathrop asked if anything in the specifications requires there to be a clear definition on benchmark or reference systems. Mr. Rooney said that surveying must be tied to the National Spatial Reference System. Mr. Bellomo noted that light detection and ranging (LIDAR) technology no longer requires surveyors to be on the ground. He explained that LIDAR data must be certified by a licensed professional and should be able to be traced and repeated, if necessary.

Mr. Butgereit expressed concern that many past recommendations to FEMA were not reflected in the mapping standards. Mr. Rooney said that FEMA considered all recommendations; however, the agency has not been able to implement them all yet. Mr. Butgereit suggested that the TMAC examine previous recommendations including those from the first TMAC, GAO, and others who have made recommendations about the mapping program.

Mr. Fraser asked if there are Federal topographic standards that the TMAC should reference so that it does not duplicate these. Mr. Bellomo said that there is a lot of activity surrounding three dimensional elevation programs. He said that the USGS developed a series of standards; however, there was no consensus on the standards. He further explained that there is growing consensus regarding a Federal topographic data acquisition standard.

Ms. Leslie Durham, TMAC member, reminded the Council that non-regulatory products have opened a lot of opportunities to States and communities, and the TMAC should not be overly prescriptive on the non-regulatory side. Ms. McConkey recommended that the TMAC receive a presentation on non-regulatory products in the future. Mr. Kunreuther requested that FEMA refer the TMAC to a reference document outlining regulatory and non-regulatory products. Mr. Bellomo will distribute a link of regulatory and non-regulatory products.

Nomination and Vote on TMAC Chair

Mr. Crowell said that per the Charter, the TMAC shall elect any one member to serve as Chairperson of the Council. The Chairperson will preside over Council meetings in addition to specific responsibilities authorized under the Biggert-Waters. He informed participants that the Chair will assume their responsibilities at the conclusion of the meeting on October 1, 2014. Mr. Crowell reviewed the Chair responsibilities, as referenced in the TMAC Bylaws, and said that the Chair will be allowed to appoint a Vice Chair who will have several responsibilities including coordinating member engagement and serving as the Chair in their absence.

Both Mr. Dorman and Ms. McConkey accepted the nomination and discussed their qualifications that would make them an effective leader for the TMAC. Following the discussion, TMAC members cast their ballot and Mr. Crowell announced that the Chair would be announced during the Day 1 recap.

Brief Clarifying Statements from Public

Mr. Crowell said that while not required by law, the TMAC wanted to offer the opportunity for members of the public to provide brief clarifying statements based on the TMAC's conversations. He reminded members of the public to keep their comments to three minutes.

Mr. Russell Riggs, National Association of Realtors (NAR), introduced himself and said that he has been involved in floodplain issues for many years. He offered a plea to TMAC members that they remember the people that will be impacted by their decisions and recommendations. Many private citizens have begun discussing flood maps. He said that he has served on panels with FEMA officials in the past and understands the task facing the TMAC, noting that individual homeowners may approach them with difficult questions. Mr. Riggs also reiterated that the discussions in which the TMAC has engaged to date reflect some of the issues with which homeowners struggle. Maps are a flashpoint; homeowners constantly question the accuracy of the maps, the type of information, how maps are developed, how communities are notified, and how FEMA bureaucracy addresses these issues. He said that he realizes the TMAC is a technical committee but that affordability issues are critical to organizations like NAR and individuals trying to buy property. Affordability also affects community property values. Mr. Riggs continued that risk communication to the public is another major issue, and that future conditions often strikes fear into the heart of homeowners and NAR members. They frequently do not understand the difference between modeling, risk, and data and how those factors impact their property.

Mr. Crowell thanked Mr. Riggs for his comment and said that it would be reflected in the record.

Day One Recap, Action Item Capture

Mr. Bellomo announced that Mr. Dorman will be the TMAC Chair. Mr. Bellomo said that he would continue to facilitate the remainder of the meeting and Mr. Dorman would take over the role following the meeting's conclusion on October 1, 2014.

Mr. Bellomo said that the TMAC covered multiple of topics that helped establish the TMAC's baseline understanding of the mapping program as it stands today, and have started exchanging thoughts and ideas about where it might focus some of its efforts. He said that the group heard from Mr. Miller, who provided some thoughts about how maps are used to not just regulate, but also to inform communities and people about their flood risk. Mr. Bellomo discussed Mr. Bascom's presentation and said that he reviewed the TMAC report requirements that were established in the flood insurance reform laws. Summarizing the performance measures presentation, Mr. Bellomo said that FEMA representatives discussed the current performance metrics for the Risk MAP program, highlighting the four key measures of deployment, NVUE, awareness, and action. Discussing the FIRM accuracy presentation, Mr. Bellomo reminded participants that they discussed the importance of the TMAC working on developing current definitions of accuracy and precision and that quality, accuracy, precision, and uncertainty are all inextricably linked. Regarding the data accuracy presentation, he noted that the presenters discussed incorporating future risks and conditions, including how some States are doing this, what the current standards call for, and what FEMA needs to do as a result of the recent flood insurance reforms. Mr. Bellomo concluded his remarks by reviewing the day's action items.

Adjournment

Mr. Crowell thanked participants for the robust discussion and reminded participants that the meeting would resume at 8:30 a.m. on October 1, 2014.

Day Two

Call to Order, Day One Recap. Capturing of Additional Thoughts

Mr. Godesky welcomed members to the second day of the TMAC meeting and took roll call. He introduced Mr. Bellomo and Mr. Dorman, who provided opening remarks and a recap of day one activities. Mr. Bellomo also reviewed the day two agenda, including presentations on future conditions, maintaining flood insurance risk map, and State CTPs. Mr. Dorman also discussed the TMAC's legislative requirements and said that he developed a possible list of working groups associated with them, which are intended to help develop specific recommendations for the TMAC's reports. He asked members to please consider on which working groups they wish to participate. He said that he is requesting several members to volunteer as vice chairs to lead the various working group activities and identify the SME and centers of excellence that should potentially participate in the TMAC's activities. He reiterated that SMEs will not be voting members.

Mr. Godesky then introduced Mr. Roy Wright, Deputy Assistant Administrator, FIMA, to provide opening remarks. Mr. Wright said that he was very pleased that the TMAC was holding its first meeting after approximately a decade of speculation. He thanked the TMAC members' organizations and companies, acknowledging that participating in the TMAC takes the members away from their day to day jobs. Mr. Wright commented that the TMAC members have an exceptional breadth of experience, representing nearly every dimension of the mapping program. He said that the TMAC is authorized to address and make recommendations on nearly every aspect of the program, but to be sensitive to the requirements that the TMAC must address in its first year.

Mr. Wright said that part of the TMAC's value is that it has the opportunity to provide ongoing advice to FEMA, and that FEMA welcomes that advice. In addition to the formal recommendations provided through reports, he explained that by taking part in and listening to the TMAC's deliberations, FEMA representatives and subject matter experts may proactively incorporate the TMAC's perspectives into their programs. He also said that just because the TMAC discusses a topic, it may not warrant a formal recommendation; likewise, he encouraged the TMAC to prioritize the recommendations it puts forth to the Administrator so that the most important issues are formally being addressed.

Mr. Wright continued that he often focuses on the policies addressing future risk and that there are many different views about the topic. As he travels across the country and speaks about climate adaptations, increasing resilience, and building structures higher and stronger, State and local officials agree that it makes sense to do those activities and seek guidance on how it is possible. He said that FEMA needs to know how to do that in a way that addresses risk and technical credibility. Mr. Wright then opened the floor to member questions.

Ms. Lathrop asked the best way to ensure that advice is clear to FEMA without creating a formal recommendation. Mr. Wright replied that the TMAC and FEMA need to work collectively and that FEMA will incorporate TMAC's preliminary findings or input when FEMA officials believe it is appropriate or beneficial to do so. In the event that FEMA begins to incorporate TMAC advice ahead of a formal recommendation, the TMAC could then possibly provide feedback that it agrees with FEMA's direction or may wish to develop a recommendation to make course corrections. Ms. Pilgrim reiterated that all recommendations that are submitted to the Administrator need to be voted on by TMAC members and reflect a consensus of member opinions. She said that FEMA can always listen to informal advice by a member of the TMAC, but making recommendations would require adherence to the formal recommendations process. Mr. Wright also commented that, under the law, FEMA has to respond to any recommendation the TMAC sets forward. Mr. Bellomo encouraged the TMAC members to incorporate all advice into a report in some way. Mr. Wright provided an example of how FEMA's National Advisory Council developed recommendations to help create a national mitigation plan.

Mr. Jones asked when the next series of mapping standards will be updated. Mr. Wright replied that the deadline to incorporate feedback into the November standards release is July. Mr. Bellomo reiterated that as soon as the November standards are released, FEMA begins planning and developing standards for the next cycle, so there is an 8 or 9 month lead time and publication occurs every 6 months.

Mr. Mallory asked how the TMAC work aligns with and supports the FEMA Strategic Plan. Mr. Wright stated that the plan has five priorities, and the fourth priority is "Enable Disaster Risk Reduction

Nationally”, which addresses the Risk MAP program. The priority has three objectives, “Provide credible and actionable data and tools to support risk-informed decision-making,” “Incentivize and facilitate investments to manage current and future risk,” and “Enhance the effectiveness, financial stability, and affordability of the National Flood Insurance Program.” The TMAC’s work may touch on all three of those objective areas. He remarked that risk reduction is a top priority of the Administrator, as well as how to remain agile and deploy people quickly. Mr. Kunreuther said it would be useful for the TMAC to understand the strategic plan and where the council could best react to the plan’s contents. Mr. Wright welcomed the TMAC’s input, noting that FEMA is currently examining activities for FY 2016 through FY 2018.

Mr. Wright said that both he and Mr. Miller will periodically attend TMAC meetings to understand the recommendations from the group and thanked members again for their service.

Future Conditions Risk Assessment and Modeling

Mr. Godesky introduced Mr. Crowell, Mr. Andy Neal, and Ms. Rachel Sears, FEMA. Mr. Crowell told members that his presentation would provide historical background on FEMA’s consideration of future conditions through the NFIP; the results of study on the Impact of Climate Change and Population Growth on the NFIP; the sea level rise planning tool; and requirements of BW-12 regarding future conditions. Mr. Neal would address insurance/actuarial implications of future conditions and Ms. Sears would discuss FEMA-wide policy initiatives to address climate change.

Mr. Crowell said that climate change is important in the context of the NFIP because NFIP currently has approximate 5.4 million policies in force, with \$1.3 trillion coverage in force, and owes approximately \$24 billion to the U.S. Treasury, mostly as a result of losses from Hurricanes Katrina and Sandy. He explained that there are two categories of erosion within the NFIP: event-drive erosion (storm related) and long-term erosion (future conditions). He said that both sea level rise and coastal erosion are geophysically linked, as long term sea rise is an enabler of long term coastal erosion, and noted that FEMA never had direct statutory authorization to map long-term coastal erosion until the passage of Biggert-Waters.

Mr. Crowell provided an historical overview of FEMA’s activities addressing long term coastal erosion, including a national conference on coastal erosion in 1977, passage of the Upton/Jones Amendment and related activities between 1989 and 1995; a 1990 study by the National Research Council titled “Managing Coastal Erosion;” and a 2000 Heinz Center Report, “Evaluation of Erosion Hazards,” on the economic impact of erosion on the NFIP. The reports had various levels of impact, ranging from no action from the 1977 conference report to specific statutory updates from the Upton-Jones Amendment. Mr. Crowell also discussed various studies and reports that examined sea-level rise, including FEMA’s 1991 study, “Projected Impact of Relative Sea Level Rise on the National Flood Insurance Program;” a 2007 Government Accountability Office Report titled “Climate Change: Financial Risk to Federal and Private Insurers in Coming Decades and Potentially Significant;” and an AECOM, Michael Baker, Jr., and Deloitte study completed in 2013 titled “The Impact of Climate Change and Population Growth on the National Flood Insurance Program through 2100”.

Mr. Crowell discussed the global projections of sea-level rise used in the AECOM, Baker, and Deloitte study, noting that the relative changes in the sea level parameter were primarily derived from the eustatic curves of Vermeer and Rahmstorf from 2009 and were adjusted for local variability using the USGS Coastal Vulnerability Index and tide gauge from the National Oceanic and Atmospheric Administration (NOAA). Scientific results of the study addressed riverine, coastal and combined riverine and coastal projections, noting that by 2100, the weighted national average size of special flood hazard areas (SFHA) may increase by about 40% to 50%. Regarding demographic and economic findings, the study made the following conclusions: by 2100, the population within riverine and coastal SFHAs will increase by 130-155%; the total number of policyholders participating in the NFIP may increase approximately 80-100% by 2100; and the average premium per policy will increase by about 10-70%.

Mr. Crowell informed participants of the Sea Level Rise Tool for Sandy Recovery (SLR Tool) which FEMA, NOAA, USACE, and the U.S. Global Change Research Program developed after Hurricane Sandy to assist state and local officials and engineering and planning consultants during rebuilding efforts. He said that the SLR Tool consists of two components: the ArcGIS Online SLR map developed by NOAA and the SLR Calculator developed by USACE. The tool can provide siting and elevation guidance for post-Sandy planning and rebuilding and can guide Federal agency planning efforts. The tool also helps support scenario planning and increase the transparency of the level of risk acceptance underlying the expected rate of sea level rise this century. Mr. Crowell remarked that FEMA is currently supporting two proof of concept studies in San Francisco County, California, and Hillsborough and Pinellas Counties, Florida, that aim to produce SLR information for advisory purposes and further test if linear super-position is adequate for NFIP flood-mapping purposes. He told members that the link to the tool can be found through www.globalchange.gov.

Mr. Crowell explained how Biggert-Waters authorizes FEMA to consider climate change when updating FIRMs in sections 100215 and 100216. He cautioned, however, that Biggert-Waters is not prescriptive whether future conditions flooding should be used for non-regulatory informational purposes or regulatory purposes. He then concluded his presentation and introduced Mr. Neal.

Mr. Neal said that he would address how future considerations for climate change impacts insurance and provide a brief overview of how insurance touches the maps. When determining rates, he uses a frequency severity model and that the model considers all frequencies. He recognized there is sometimes confusion about this because there are policies grouped into rate classes that often fall along 1% lines. However, when calculating what the rate within the class is, he examines all possible events and assigns each its own statistical probability and weight. To determine rates, he leverages maps to see the zones, BFE, and other return periods that are sometimes part of studies to understand the full breadth of risk across zones. Mr. Neal acknowledged that policy holders have differing levels of risk, that there are some places where the hazard is shallow and will remain so indefinitely, and that a difference of 1% or 2% can place policy holders in different rate groups.

Mr. Neal explained how he derives expected losses as an actuary. Policies are currently calculated based on today's risk only and he relies on mapping information to provide an accurate risk picture. Mr. Neal said that there is a contingency load that is designed to cover remote risks and that there are numerous calculations on how the rates can correspond to the anticipated risks. He continued that when maps show increased risks, people have the option of grandfathering their existing structures so that they retain risk classifications (Zone and or BFE), which results in programmatic cross subsidies; however, all new construction must be compliant with the new maps. Grandfathering affects flood premium rates; however, FEMA does not have exact numbers, only estimates, on grandfathering, as it cannot calculate actual flood risk to certain properties (e.g., it does not have elevation certificates for structures that are outside the SFHA, or for pre-FIRM grandfathered structures). Mr. Neal briefly commented that Biggert-Waters and HFIAA impact insurance by adding a provision that policy holders that are newly mapped into a special flood hazard will start with a low risk preferred risk policy premium, which will increase no more than 18% year. Additionally, a second provision impacts how policy holders are grandfathered into rates and requires FEMA to clearly communicate current risk information to policy holders.

Ms. Sears discussed how risk and climate change has been addressed in broader Federal policies over the past several years. She said that the President issued an executive order (EO) to underscore the importance of accounting for climate adaptation in their policies. For DHS and FEMA, this included having the NFIP study future risks. The political environment was not supportive of these efforts until after Hurricane Sandy, after which climate change became a significant focus of the Administration. She recalled a June 2013 speech where the President discussed his full climate adaptation agenda and action plan, which included a series of activities he wanted agencies to focus on. In 2013, the President issued a second EO on climate change, EO 13653, Preparing the United States for the Impacts of Climate Change. The EO also established two new Federal organizations: an interagency Climate Preparedness and Resilience Council to identify opportunities to better consider future risk for climate change and a State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience to inform Federal climate preparedness and resilience efforts. Ms. Sears noted that the President's agenda was divided into three areas: carbon mitigation, climate preparedness and adaptation, and international affairs. FEMA

is responsible for the second area on preparedness and adaptation. She also explained several of FEMA's other policy initiatives related to the TMAC's focus area. In addition to supporting the Administration's larger initiatives, the agency is also examining how future risk is addressed in mitigating hazards and climate change exercises. The presenters then concluded their remarks and opened the floor to questions.

Mr. Mason asked Ms. Sears about the link between the two organizations established by EO and the TMAC. Ms. Sears replied that one of the interagency tasks from the groups was to examine federal flood risk reduction standards listed in EO 11988, Floodplain Management. The organization has not yet released any recommendations. As the BFE is the basis of that Federal standard, Ms. Sears said any revisions to that (e.g., those from the TMAC) will have an impact.

Mr. Jones asked about the authority granted in 44CFR sec, 60.23 and 60.24 to map mudslide and flood-related erosion zones, and if those had been used by FEMA in the past. Mr. Crowell indicated that only flood-related dune erosion has been performed during flood studies up to now. He also asked if a future conditions study was ever conducted for riverine environments. Mr. Crowell said that a riverine study had been performed, and regarding E-Zones, Mr. Crowell stated that FEMA has not considered mapping E-Zones based on future conditions erosion.

Mr. Jones asked Ms. Sears if FEMA is considering extending freeboard beyond the SFHA. She replied that FEMA is examining both vertical and horizontal boundaries.

Ms. Lathrop said that Mr. Crowell noted Congress did not pursue recommendations in the 2000 Heinz Report and asked if FEMA is restricted on the activities it can undertake without Congressional mandate. Ms. Sears replied that FEMA's authority varies by topic; many topics are within the Agency's discretion and interpreted through policy or regulation. Ms. Pilgrim noted that the TMAC's recommendations should focus on the actions the TMAC wishes FEMA to undertake instead of how the action should be accomplished.

Mr. Dorman asked if legislation currently requires FEMA to incorporate SLR projections into the FIRMs. Ms. Pilgrim said that FEMA rulemaking governs this interpretation. Mr. Bellomo noted that FEMA is authorized—but not mandated—to do so and that its activities may be restricted by resource constraints.

He also asked Mr. Neal to expand on how FEMA derived its rating curve. Mr. Neal replied that within any particular rate class, FEMA must pay attention to the full flood frequencies, which it does by examining the distribution of policy holders. As an actuary, he considers whether or not the map touches the curve; if it does not, the rates need to be adjusted.

Ms. McConkey asked if climate change impacts will be considered in urban areas. Mr. Neal said that as far as coverage, FEMA covers any event that falls within the definition of flooding; it is not a determination of what is/is not accounted for on the maps. Mr. Bellomo noted that this topic has been brought up in several forums and asked Mr. Neal to discuss qualifying events. Mr. Neal said an event must have two or more structures impacted by overland water for FEMA to reimburse for damages.

Ms. Sears also noted that the NFIP maps do more than just inform the NFIP, but that they also inform other federal activities.

Ms. Shirley asked if E-zones can be applied in channel migration areas, and if the law allows rates to be used to encourage or discourage certain actions in high risk areas. Mr. Neal said the legislation requires rates to be actuarial, while best practices tell us that the entire system needs to be considered in rates. In Biggert-Waters, there was a lot of controversy over rates and FEMA had a difficult time helping communities accept their current risk. FEMA faces an even bigger challenge in communicating future risk. Mr. Bellomo added that increasing rates to change behavior is not appropriate, but that rates may be changed if there is an increased risk.

Mr. Kunreuther asked Mr. Neal to discuss how FEMA discusses rates and risks with homeowners. Mr. Neal said that in general, FEMA does not have rigorous analysis of individual uncertainties and how these

uncertainties aggregate. Additionally, precision with risks and rates may not be beneficial to property owners in the long run, and that they can still deliver meaningful risk products with a low, medium, and high rating system.

Ms. McConkey asked if there were future thoughts about changing pricing rates or structures. Mr. Neal said FEMA is currently supporting a study on the topic.

Mr. Dorman asked if the predictions from the 1991 sea level rise study have come to fruition. Mr. Neal replied that curves are likelihood curves and that FEMA is not trying to look too far into the future to inform rates. The maps should show future risk for regulatory purposes.

Mr. Mallory asked if there was a difference in coverage if people experience excessive rainfall. Mr. Neal reiterated that the cause of the damage needs to match the definition of a flood. For example, a sewer backup caused by a flood is covered, but other causes or events are not covered.

Maintaining, on an Ongoing Basis, Flood Insurance Rate Maps and Flood Risk Identification

Mr. Godesky introduced Mr. Sacbibt to discuss the status of the flood map inventory, an overview of FEMA's flood map assessment process, a review of performance measures, and inventory analysis considerations.

Mr. Sacbibt first informed members that standard regulatory products consist of FIRMs; Flood Insurance Study Reports (FIS Reports); the FIRM Database; Letters of Map Change. For riverine engineering data, there are approximately 1.13 million riverine miles studied and mapped on FIRMs, and approximately 4 million riverine miles drain greater than 1 square mile. Of the 1.13 million miles, 20% of that is studied by detailed engineering methods and reference Base Flood Elevations on the FIRM. Regarding the current flood mapping inventory, he said that there are approximately 138,000 printed FIRM panels in circulation as of June 2014, many of which date back to the 1970s and 1980s; of this figure, 117,000 are modernized FIRM panels and 21,000 are paper format printed FIRMs. From a population standpoint, the inventory covers approximately 98% of the population. He also noted that once the maps are modernized, FEMA will only have 5% of the population covered by modernized maps. Mr. Sacbibt also added that there are 2,000 map revision requests submitted per year and not all get processed immediately; it averages 3-6 years from study initiation to map effective date. Detailed riverine studies cost approximately \$8,000-10,000/mile, while approximate studies cost approximately \$800/mile. Approximately \$250 million has been spent on coastal studies.

To assess the map inventory, Mr. Sacbibt discussed FEMA's statutory requirements, noting section 605 of the National Flood Insurance Reform Act of 1994 states "Once during each 5-year period (the 1st such period beginning on the date of the enactment of the National Flood Insurance Reform Act of 1994) or more often as the Director determines necessary, the Director shall assess the need to revise and update all floodplain areas and flood risk zones identified, delineated, or established under this section." Mr. Sacbibt said that after 5 years, FEMA's intent is to see if the maps still meet the existing needs, not that the data somehow expires.

Mr. Sacbibt discussed the CNMS database, which uses existing digital map data to inventory and manage flood map update issues and support Flood Insurance Rate Map revision and production planning activities. He shared a visual depiction of the flood mapping processes over five years, noting that it starts with an initial inspection. Projects may be extended or modified depending on resource constraints. Mr. Sacbibt also discussed NVUE categories to manage the mapping inventory, which fall into three categories: valid/NVUE compliant; unverified; or unknown. All valid/NVUE Compliant miles have an expiration date of 5 years. Failure to inspect an NVUE-compliant mile within the 5-year window will result in the mile being re-categorized as unknown. There are also currently 450,000 miles of inventory that need to be assessed or validated, mostly in non-model backed Zone A areas. In FY 2014, approximately 2,600 miles expire; in FY 2015, approximately 155,000 miles will expire; in FY 2016, an additional 310,000 miles will expire; in FY 2017, an additional 465,000 miles will expire and need reassessment. Furthermore, Mr. Sacbibt said that as of FY13 Q3, approximately 40% of the national

inventory is unknown and still needs to be assessed or validated. Coastal (shoreline) miles will also be subject to a 5 year expiration; however, all coastal studies are ongoing or recently completed, no coastal miles that will expire in the immediate future.

Mr. Sacbabit said that NVUE speaks to technical need, but it does not account for data accessibility, risk impact, or how resources should be prioritized for inventory maintenance. There are several factors not included with NVUE, such as populations within Unverified SFHAs; percentage of a region that is Risk MAP deployed, and Endangered Species Act considerations. He also discussed various regulatory and non-regulatory products that FEMA produces as well as flood risk datasets that support ad-hoc flood risk analysis and visualization. Mr. Sacbabit concluded his presentation and opened the floor to questions.

Mr. DeMulder asked about the workforce that carries out the inventory program. Mr. Sacabibit said that there are both government and contractors who assist with the mapping activities. State and local communities are also awarded grants to assist with map production. Mr. Bellomo added that contractors also ensure CNMS is updated.

Mr. Jones asked what fraction of mapping costs go toward regulatory versus non-regulatory products. Mr. Sacabibit said that production of non-regulatory products does not add to study time; however he will locate numbers and pass them to the TMAC following the meeting. Mr. Bellomo added that in some cases, non-regulatory products may evolve into regulatory products. Mr. Sacbabit said that there is an element of customization needed with non-regulatory products to the degree communities need different data.

Ms. Lathrop asked if Mr. Sacbabit could clarify what is considered a modernized mapping panel and what part of the local mapping is for areas that haven't been studied previously. He responded that modernized maps are those in a digitized format and supported by a database. Additionally, he said it was challenging to manage priorities around areas that have not been previously studied and that the only area where we clean sweep the studies is in the coastal environment. In riverine areas, FEMA may not have the resources to study the entire watershed. CNMS allows users to see the status of all stream miles in a particular area.

Ms. McConkey said that a Risk MAP project has a significant amount of upfront costs (e.g., that of community engagement) in addition to the cost of gathering and analyzing the data. She said it would be important for the TMAC to understand those costs and activities. Mr. Bellomo replied that FEMA has data on this and that a certain amount of administrative activities and outreach, such as Federal Register notice publication, are mandated by the law. In the process of map modernization, there has been a nominal increase in outreach (map modernization has 96% engineering and 4% outreach costs, while Risk MAP has 93% engineering and 7% outreach costs). The change in the dollar amount is relatively small, yet it is having a significant impact on the focus of the discussions we are having with communities. Ms. McConkey noted that in Illinois no new engineering studies had been initiated in the past two funding years, only various types of outreach was funded. Mr. Ferryman noted that was also true for Ohio. Mr. Bellomo stated that these were national averages.

Mr. Dorman said that the TMAC's current conversation underscores the need for maps to become completely digital, reducing cost and time. He asked how much of the CNMS data is being used to inform budget requests. Mr. Bellomo replied that FEMA began map modernization and distributed funds based on flood risk but that it has also begun to consider other elements such as local leverage/opportunities, need, and existence of strong topographical data, among others. CNMS is a factor.

Ms. Durham said that non-model backed Zone As are in the unknown category, which does not seem to send the right message to the public and that FEMA may want to consider a nomenclature change to avoid a negative connotation. Mr. Sacbabit replied that there is pending guidance on inspecting Zone As. Their evaluation is not as rigorous as the checklist, but the inspection process accounts for significant changes in the hydrology and topography.

Mr. Butgereit said that the model has to be within guidance but topography also needs to be available, noting some discrepancies between the information on the checklist versus the information Mr. Sacbibit presented. Mr. Bellomo stated that FEMA will reexamine the checklist and that TMAC should make recommendations if it feels the checklist could be improved.

Ms. McConkey asked where the unstudied miles reside in the inventory and stated that she has seen development expanding into areas that have never been mapped. Mr. Sacbibit said FEMA is examining how to best categorize them. Mr. Bellomo reiterated that 98% of the U.S. population resides in the boundaries of a FEMA map panel, but that the remaining 2% will still carry a significant cost.

Mr. Jones asked how FEMA factors levee accreditations into mile certification. Mr. Sacbibit said FEMA is considering it and how it relates to the LAMP process. Flood control structures are C4 on the list.

Delegating Mapping Activities to State and Local Mapping Partners

Mr. Godesky introduced Ms. Algeo to discuss mapping activities with State and local partners. Ms. Algeo said that the Cooperating Technical Partners (CTP) Program is an innovative, collaborative approach among FEMA, participating NFIP communities, Tribal Nations, regional and State agencies (including State Universities) and non-profit associations who wish to be more active in the NFIP. When the program started in 1999, it focused on only on mapping but has evolved over time to address larger space issues and regional issues, as well as help FEMA with awareness and outreach. The goals of the program are to strengthen and increase the effectiveness of the NFIP through fostering partnerships for the purposes of reducing flood losses and promoting community resiliency; support NFIP-participating States and communities and reduce the long-term effects of future flood losses; and encourage and formalize cooperation to enhance partners' existing technical capabilities and resources to improve flood hazard and risk assessment data.

Ms. Algeo told TMAC members that CTPs must meet a set of criteria codified in statute to participate, including being an NFIP participating community (in good standing); a State, local, regional agency whose activities support floodplain management and flood mitigation actions in NFIP-participating community; or a non-profit association whose primary mission supports the goals and objectives of the NFIP. CTPs must have existing processes & systems (supported through non-federal funds) to complete program activities. She said that CTPs are selected based on their expertise, knowledge of the NFIP, experience completing programmatic activities, and their unique relationship to communities and individuals who benefit from NFIP activities and products. She explained that the benefits of being a CTP include helping develop customized maps; receiving increased recognition for floodplain mapping activities it is undertaking; receiving additional resources from FEMA, including access to data, technical assistance and grants, and access to additional training and mentoring resources.

Ms. Algeo continued that to receive Federal funds, the CTP must comply with grants management laws, regulations, and terms and conditions; have demonstrated capability and capacity to perform, implement or contract program activities; have the ability to achieve program performance metrics; and perform and manage flood mapping activities in FEMA's Mapping Information Platform. They must also maintain processes and systems for completing activities under the program; have an ongoing commitment to flood hazard identification and mapping activities; have a unique ability to develop and maintain relationships with NFIP stakeholders and whole community; their work must adhere to statutory and regulatory requirements and program standards; and cooperate and coordinate with project team members. There are three different types of formal CTP agreements: partnership agreements, mapping activity statements and statements of work, and cooperative agreements. To become a partner, interested organizations must agree to a series of stipulations and can contact their regional CTP coordinator for information. There are three types of CTPs (regional, State, tribal/community, or non-profit associations) with differing levels of involvement.

Ms. Algeo explained that funds get distributed through CTPs through cooperative agreements. Activities eligible for funding include program management and community engagement and risk communications.

She said that funding varies annually depending on the Federal budget. Ms. Algeo concluded her presentation and opened the meeting to questions.

Mr. DeMulder asked how many CTPs FEMA currently supports. Ms. Algeo said there are over 400 CTPs and that in FY14 FEMA has provided approximately \$40 million in funding for them. He also asked if the CTPs could collectively lobby Congress for additional funding for the program. Ms. Durham said that ASFPM recently established a subcommittee on CTPs and Mr. Dorman added that most States lobby Congress on this issue individually.

Mr. Dorman noted that North Carolina has integrated mapping, NFIP, and hazard mitigation activities, but that this has not occurred at the national level. He asked how that process could be streamlined. Mr. Bellomo replied that FEMA's Risk Analysis Division encompasses mapping, dam safety, HAZUS, and mitigation planning across multiple stakeholders (e.g., SHMOs, EMs, Dam Safety Officers, NFIP coordinators). He agreed that these activities should be integrated and that Risk MAP tries to emphasize these connections at the state level.

Ms. Durham commented that States have spent a lot of money developing the data that is eventually used in Risk MAP projects that is not reflected in our partner contributions. She asked if this funding could be reflected in the Blue Book. Mr. Bellomo said that that FEMA could consider doing so.

Mr. Fraser asked about the number of miles under CTP purview and if FEMA could comment on the CTP's role in CNMS. Mr. Bellomo did not have a clear understanding of the number of miles under CTP purview and noted that it is not a mandated activity. Some CTPs that are involved are state level CTPs and participation depends on capability.

Mr. Jones asked what percent of the population falls under the CTP umbrella, what percent of flood policies are in CTPs, and what the potential is for additional CTPs; what would the impact be if there were to CTPs? Mr. Bellomo said that the percentages have not been calculated. He also cautioned the TMAC about making significant recommendations to the CTP program; if the TMAC over-prescribes where the capacity and capability does not exist, it could be damaging. He continued that he is not sure of the impacts to the mapping program without CTP support.

Mr. Kunreuther asked if FEMA could provide examples of successful CTPs and why they are considered top performers so that others could use them as models going forward. He also inquired about metrics to measure CTP performance. Mr. Bellomo encouraged the TMAC to leverage the State and local level CTP representatives' expertise regarding CTP performance. Additional CTP SMEs could be invited to participate in the TMAC if necessary.

Ms. Lathrop asked if FEMA ever encourages a CTP to reduce its scope due to poor performance. Ms. Algeo said that partners are occasionally asked to reduce their activities, but it is infrequent. Instead, FEMA works with the CTP closely to ensure all CTPs are performing well before grant money is deobligated.

Mr. Mallory asked what pieces of the CTP program are mandated by law. Mr. Bellomo said that the program was not created from legislation and that the statutory authority originates from the National Flood Insurance Act. Mr. Mallory wondered if there was any benefit to codifying the CTP Program to help strengthen it. Mr. Bellomo asked that the TMAC instead try to make recommendations that can be implemented through existing Executive Branch authorities.

Public Comments

The TMAC received two public comments prior to the meeting, attached as appendices. During Day 2 of the meeting, the following comment was offered:

- David Conrad, no affiliation: Mr. Conrad said he was pleased to see the TMAC meeting today and learning of its reconstitution was an exciting development. He wanted to offer words of

encouragement to the TMAC members and understands that reconstituting the council was so important to members of Congress and to FEMA. It was apparent as Congress developed Biggert-Waters from 2007-2012 and continued to be important when HFIAA was later enacted. Mr. Conrad believes that Congress intentionally gave TMAC members latitude because it appreciated that flood hazard communication, mitigation and management is increasingly important as we look to the future, particularly addressing factors such as growing urbanization of watershed areas, climate change, and constrained budgets. He stated that the roots of the problem date back to the 1990s. He said that in the 1990's, he helped publish a study on repetitive losses. At that time his organization found that 2% of the properties resulted in 40% of the claims made and 20% of repetitive loss properties were located outside specialized properties. Twenty years since the study, there are twice as many repetitive loss properties. Mr. Conrad urged the TMAC to focus on big questions and consider where we need to be in decades ahead. Congress created an opportunity to solicit recommendations from experts to help shape the program as well as influence the government's awareness efforts to address larger climate and other geographic questions. He stated that the TMAC's reports and recommendations could be among the most important contributions to flooding programs this decade. He also advocated that the TMAC consider building elevation data during its deliberations; he posited that if FEMA had a much stronger database of BEs, how it might affect mapping and risk identification.

Path Forward

Mr. Bellomo provided a brief recap of the meetings discussions and key themes, including future conditions, uncertainty, timing consistency, partnerships, communications, and standards. He also reviewed the action items captured throughout the meeting. Mr. Bellomo also committed to distributing the presentations to the TMAC members a few days in advance of the next meeting, with the caveat that they may change the day of the meeting as final adjustments are made. He then passed a gavel to Mr. Dorman to symbolize Mr. Dorman's leadership of the council as its new chair.

Mr. Dorman asked each member to participate in three of the legislative requirements working groups. He also asked that as members are working in these working groups, they keep in mind if their findings and/or proposed recommendations are efficient, relevant, and accurate, and if they improve the perceived confidence and resulting acceptance of users/stakeholders of the data, models, and risk assessment information. Members should also identify SMEs and organizations that should brief the council for the next meeting. He also asked that members each draft a 2-3 paragraph summary on where the future of the mapping program lies over the next 10-20 years to help inform the TMAC's direction.

Mr. Dorman said he would like to hold the next meeting in November or December 2014, as possible. Members should please review their calendars for available dates. Ideally, he would like the TMAC to meet every other month and working groups to convene as needed. Meetings are determined in consultation with the DFO and constrained by budget availability and other factors. Public meetings must allow time for public notice publication of the Federal Register Note and receipt of public comments registry. FEMA said it anticipated two in-person meetings per year. Participants discussed the travel restrictions on meetings; FEMA will look into the number of in-person TMAC meetings that participants may have. In the event that travel is not supported, FEMA will set up a conference call line and possibly activate additional Adobe Connect licenses, as possible. Participants discussed the requirement that non-refundable plane tickets be purchased, and that less expensive tickets could be purchased as a way of getting more meetings out of the TMAC travel budget. FEMA stated that TMAC members are required to use National Travel to make all travel arrangements for TMAC meetings.

Adjournment

Mr. Bellomo, Mr. Dorman, and Mr. Godesky thanked members and adjourned the TMAC meeting

Action Items

- FEMA will provide copies of presentation slides and materials to TMAC members.
- FEMA will establish a SharePoint or other document sharing site for TMAC members.
- FEMA will provide members with additional information/documentation on:
 - Coordinated Needs Management Strategy (CNMS)
 - Regulatory and non-regulatory products and associated cost breakdowns as possible
 - Summary of Fees charged to a flood policy holder
 - FEMA Strategic Plan and implementation plans and timelines
 - Trends data from Floodplain Boundary Standard Quality Review
 - FEMA's recent analysis of costs associated with mapping production versus community engagement
 - Whether statute or regulation limits FEMA from addressing future conditions
 - The origin of its mandatory insurance purchase requirements
 - An overview of FEMA and the Federal Government's initiatives as they pertain to climate change from Ms. Rachel Sears, Senior Policy Advisor
 - The 1999 *Riverine Erosion Hazard Areas Mapping Feasibility Study*
 - Top performing CTPs and any best practices they follow/share, as possible
- TMAC members will consider:
 - Different subject matter experts they wish to have participate on the council's subcommittees;
 - A brief 2-3 paragraph summary of the future mapping environment, submitted to Mr. Dorman; and
 - Their availability for a November or December 2014 meeting.

Appendices

- TMAC Meeting Agenda
- TMAC Meeting Presentation Deck
- Public comment received from Eileen Fretz Shader, American Rivers, and Monty Schmitt, Natural Resources Defense Council.
- Public comment received from David Chang, North Carolina State Department of Transportation.

Certification

I hereby certify that, to the best of my knowledge, the foregoing minutes are accurate and complete.

John Dorman
TMAC Chair

