TMAC

Technical Mapping Advisory Council Meeting
August 10 – 11, 2016

TMAC Members

Juliana Blackwell
Nancy Blyler
Richard Butgereit
Mark DeMulder
John Dorman
Leslie Durham
Scott Edelman
Steve Ferryman
Carrie Grassi
Suzanne Jiwani
Chris Jones
Howard Kunreuther
Wendy Lathrop
David Mallory
Robert Mason
Javier Ruiz
Christine Shirley
Cheryl Small

Subject Matter Experts

Theresa Johnston

Government Attendees

Laura Algeo, FEMA*
Kathleen Boyer, FEMA, TMAC DFO
David Bascom, FEMA*
Mark Crowell, FEMA, TMAC ADFO
Michael Nakagaki, FEMA, TMAC ADFO
Lynda Pilgrim, FEMA
Rick Sacbibit, FEMA*

Registered Public Attendees

Gib Jones, Dewberry
Doug Bellomo, USACE*
Christina Larwill, Dewberry**
Scott Schelling, Michael Baker International
Jeff Sparrow, Michael Baker International**
John Sun, Stream Methods

Support Staff

Heidi Carlin, AECOM
Kirsten Folkedal, Booz Allen Hamilton
Laura Karnas, Booz Allen Hamilton
Jen Marcy, Atkins Global
Krista Bethune Melnar, AECOM
Meredith Tull, Booz Allen Hamilton
Adam Warfield, Booz Allen Hamilton

**Attended Day 1 Only*
***Attended Day 2 Only*

Purpose

The purpose of the meeting is to allow the Technical Mapping Advisory Council (TMAC) members to review and discuss potential recommendations for the *2016 TMAC Annual Report* and to receive presentation from FEMA on the status of the TMAC's 2015 recommendations.

August 10, 2016

Welcome/ Call to Order/ Roll Call

Ms. Kathleen Boyer, TMAC Designated Federal Officer (DFO), welcomed members and participants to the TMAC Virtual Administrative Meeting. She then introduced Mr. Mark Crowell, Federal Emergency Management Agency (FEMA), who serves as the TMAC Alternate DFO (ADFO). She also introduced Mr. Michael Nakagaki, FEMA, as a new ADFO. Ms. Boyer proceeded with a roll call of TMAC members and provided an overview of the Adobe Connect virtual meeting functions. She congratulated the Council on the submission of the *TMAC 2016 National Flood Mapping Program Review*, which was officially submitted July 6, 2016, for the FEMA Administrator's consideration. The Administrator is reviewing the report and considering his decision for national mapping program certification, as mandated under section 24 of the *Homeowner Flood Insurance Affordability Act of 2014* (HFIAA). The report will be delivered to Congress along with the FEMA Administrator's certification package as required under law. The report will also be publicly published online at www.fema.gov/tmac. Ms. Boyer thanked the Council for their participation and turned the meeting over to Mr. John Dorman, TMAC Chair.

Meeting Objectives

Mr. Dorman provided an overview of the agenda and said the objective of the day's meeting was to allow TMAC members to (1) hear from primary authors for the *TMAC 2016 Annual Report* and receive Council input on each topic and (2) receive three presentations from FEMA regarding the status of the recommendations from 2015.

Mr. Dorman congratulated the Council on the submission of the *TMAC 2016 National Flood Mapping Program Review* and thanked Mr. Scott Edelman, TMAC member, for leading the effort. Mr. Luis Rodriguez, TMAC Member, clarified for the Council that the *TMAC 2016 National Flood Mapping Program Review* will not be publicly posted until the Administrator has had sufficient time to review.

2016 Annual Report Discussion

Mr. Richard Butgereit, TMAC Member, opened the discussion on chapter 1, *Framework Data Management Plan*. He informed the Council that he currently has a one-pager with notes on the topic and relevant sections pulled from the *TMAC 2015 Annual Report*. He informed participants that has been working with Mr. Paul Rooney, FEMA, and Mr. Rick Sacbibit, FEMA, about this topic and noted that he would like them to come to provide the TMAC with a presentation on the topic. Mr. Dorman asked if there are any recommendations in this topic; Mr. Butgereit said the only recommendations would be supporting recommendations from the *TMAC 2015 Annual Report.*

Mr. Dorman reminded the TMAC that FEMA Administrator Fugate asked for additional recommendations regarding the acquisition of topographic data and building and structure information. Mr. Rodriguez said that the *TMAC 2015 Annual Report* recommendations did not express a strong enough need for high resolution elevation data for flood hazard maps, and that Administrator Fugate believes high resolution data will improve the technical credibility of the program. Mr. Butgereit said that he thinks FEMA's recent guidelines addressed the issue of good elevation data, but suggested adding a paragraph to this section to stress its importance.

Mr. Mark DeMulder, TMAC member, suggested emphasizing multi-agency light detection and ranging (LiDAR) acquisition with adequate funding. Since agencies coordinate budget initiatives, it is easier to fund a program when multiple agencies request funding for that program. Mr. David Mallory, TMAC member, suggested that the TMAC recommend standing up a multi-agency group to coordinate funding for topographic data. He also expressed concern regarding the low-population areas that still have high risk and the ways to get the underlying dataset into these rural areas. Ms. Nancy Blyler, TMAC member,

said that the recommendation should specifically state that the money for the multi-agency topographic data acquisition be put into a combined funding stream, instead of distributed to individual agencies.

Mr. Steve Ferryman, TMAC member, said that states should also be included in leveraging data acquisition. Mr. Dorman said that the 3-D Elevation Program (3DEP) leverages states, but is unsure if that includes the private sector. Mr. Edelman suggested including a case study on North Carolina discussing how much acquisition costs and what the effective cost is to the taxpayer in order to show how partnering with private utilities can save money and to suggest a private/public partnership in acquiring LiDAR. Mr. Rodriguez responded that FEMA has been looking for ways to be more strategic with investments and how to utilize alternative funding streams.

Ms. Nancy Blyler, TMAC member, led the discussion on chapter 6, *Standards and Guidelines for Data, Models, Analysis, Mapping Products and Residual Risk*. Ms. Blyler expressed the difficulty in writing conceptually about flood hazards, therefore flood inundation maps were used as a tangible example of a lack of standardization and data sharing. The US Army Corps of Engineers (USACE) is partnering with the United States Geological Services (USGS) and the NOAA National Weather Service on several programs that develop flood inundation maps. These maps are often produced but not used effectively. Ms. Blyler suggested that the TMAC include recommendations that promote the work that is already being done and look at how FEMA can effectively use flood inundation maps in its programs. Mr. Edelman noted that the Council could benefit from a webinar explaining flood inundation maps in more detail.

Mr. Chris Jones, TMAC member, suggested that the focus may need to be on Flood Insurance Rate Maps (FIRMs) and the FEMA mapping process, and how FEMA can bring in knowledge from other sources. Ms. Blyler responded that the purpose of the chapter is to demonstrate a lack of standards. Members commented that the chapter would discuss 1-Dimensional and 2-Dimensional modeling and when to pick the right model. Ms. Blyler suggested changing authorship if the Council intends for this chapter to have in-depth modeling information. The Council discussed what information is needed for chapters six and seven and how to differentiate flood hazards versus flood risks. Mr. Doug Bellomo, USACE, commented that the intent of chapters six, seven, and ten is look at the location-specific hazards, then structure-specific risk, and finally how to calculate the risk when looking at the staged frequency curve.

Members discussed and agreed to revise the chapters as: chapter six, *Transition from 1% Annual Chance Flood Determination to Location-Specific Flood Frequency: Standards and Guidelines for Data, Models, Analysis, Mapping Products, and Residual Risk*, led by Ms. Blyler and chapter seven, *Structure Specific Flood Risk Determination: Standards and Guidelines for Data, Models, Analysis, Mapping Products, and Residual Risk,* led by Mr. Jones.

Flood Mapping Program Update

Mr. David Bascom, FEMA, and Mr. Rick Sacbibit, FEMA, briefed the TMAC on the current status of updates to FEMA's flood mapping program, FEMA's receipt of the *TMAC 2016 National Flood Mapping Program Review*, and the status of national flood mapping program certification. Mr. Bascom provided an overview of FEMA's receipt of the 2015 TMAC reports, the recommendation evaluation framework and assessment. Addressing the TMAC recommendations is one of the top priorities for the mapping program as the recommendations have helped to inform the 2016 mapping priorities. Other mapping priorities include: (1) continue to proactively manage the stream mile inventory; (2) continue to purchase LiDAR through the 3DEP program. Increasing FEMA's investment in LiDAR helps to improve the accuracy of maps and reduces the amount of time it takes to map; (3) reduce (and potentially eliminate) the portion of the inventory that have not yet been determined to meet the flood hazards standards (i.e., "unknown" miles); (4) eliminate the paper map inventory so that FEMA's entire inventory is modernized; and (5)

conduct large scale automated engineering analysis, which will increase efficiencies in validating studies and identifying available flood risk data.

Mr. Bascom said that FEMA is leveraging standard operations to address TMAC recommendations where applicable. FEMA identified recommendations partially or wholly addressable through the Guidance and Standards maintenance cycle. Recommendations related to the Cooperating Technical Partners (CTP) are being addressed through established initiatives to enhance the CTP program, such as the CTP Collaboration Site, the CTP Community of Practice (CoP), and the CTP Program Feedback Survey.

Mr. Sacbibit said it is the right time for transformational changes to the National Flood Insurance Program (NFIP) and meaningful changes must account for the investments that have already been made and the projects currently underway. Transformational changes will require engagement at multiple levels, including both Federal partners and communities. FEMA identified three common, foundational elements for transformation of the flood mapping program, as envisioned by the TMAC, including: (1) expanded use of LiDAR; (2) model-backed coverage; and (3) digital display. FEMA identified the *TMAC 2015 Annual Report* recommendations that would be supported by investment in each foundational element. These elements support the maturity of a mapping inventory that is digitally available, was mapped using LiDAR, is backed by mapping models, and enables mapping for multiple frequencies. These elements are necessary for targeted 2D modeling, future conditions enhancements and efficient development and delivery of useable flood risk tools and products.

Mr. Bascom said that to set the stage for implementation of the remaining TMAC recommendations, FEMA will first focus on addressing *TMAC 2015 Annual Report* recommendations 2 and 3, which recommend FEMA develop a national 5-year flood hazard and risk assessment plan and prioritization process that aligns with program goals and metrics. FEMA will remain closely engaged with the TMAC to inform implementation of the recommendations that require greater clarity from the Council. Mr. Bascom noted that the FEMA Administrator will likely certify the flood mapping program mid-September 2016, as required by Section 17 of HFIAA.

Mr. Dorman asked where FEMA stands on the implementation of all of the recommendations and noted that it seems that the transformative recommendations will not be implemented until after 2017.
Mr. Bascom stressed that the implementation of the TMAC recommendations is a priority for FEMA. Federal Insurance and Mitigation Administration staff view the TMAC's recommendations as an opportunity to make transformative changes, acquiring better support, gathering better data and flood frequencies, looking at how to redesign the risk rating structure, and better leveraging partnerships and enhanced communications.

Mr. Howard Kunreuther, TMAC member, noted that the NFIP is being reauthorized in 2017 and there is an opportunity to look at recommendations and prepare a response to the recommendations that demonstrates to Congress how critical the mapping program is to the NFIP going forward. Mr. Rodriguez commented that much of the conversation surround reauthorization has to do with insurance, privatization, and affordability. There has not been any discussion regarding specific elements of the mapping program that indicates the mapping program will change. The Office of Management and Budget (OMB), the Appropriations Committee, and Senate Banking Committee have requested a briefing about the TMAC, which may be the start of Congress' considerations for mapping in reauthorization. Mr. Kunreuther responded that good maps are central to a good insurance program; without accurate maps, there cannot be accurate insurance rates. Affordability and privatization are also directly related to mapping.

Ms. Cheryl Small, TMAC member, said that some members of the House of Representatives struggle to see the value of maps and what the maps are used for. Some people think that the private sector can replace FEMA's mapping. Mr. DeMulder recalled that the language in the last reauthorization bill did not originate with FEMA. The TMAC is in a position to make an impression on and educate the Congress. Mr. Ferryman suggested that the TMAC highlight the value of the maps and how their various purposes when talking about the core stakeholders in Chapter 2 of the *TMAC 2016 Annual Report*. Mr. Mallory reminded the Council that one of the main purposes of the TMAC's 2015 recommendations was to move FEMA

away from the in-versus-out mentality for mapping, and that needs to be implemented to move toward risk-based insurance.

Mr. Dorman asked FEMA for an implementation timeline for each recommendation from the TMAC's 2015 reports. Mr. Rodriguez noted that FEMA's leadership intent for 2017 addresses and incorporates the transformational elements from the TMAC recommendations. There are realities facing FEMA in its ability to implement the more transformational elements, but FEMA has to start somewhere in order to shift and make changes. FEMA will start with important items, such as high resolution elevation data.

Mr. Crowell updated the Council on the implementation and path ahead for the *TMAC Future Conditions and Risk Modeling Report* recommendations. He reviewed the seven primary recommendations and their implications. Mr. Crowell focused on recommendation 1 as the key recommendation. By calling for FEMA to provide future conditions flood risk products, tools, and information for coastal, Great Lakes, and riverine areas, recommendation 1 is the most substantial of the recommendations. All subsequent recommendations support the implementation of the first recommendation. The details provided in many of the sub-recommendations are important to consider, but the focus should be on the high-level goals laid out in the primary seven recommendations. He explained that as the primary recommendations are implemented, so will many of the detailed sub-recommendations.

Mr. Crowell reviewed the major future conditions studies that have been performed for the NFIP since 1977. Topics covered coastal erosion, sea level rise (SLR), riverine erosion, and all future conditions. He then reviewed past, current, and proposed SLR pilot studies. SLR pilot studies partially address *TMAC Future Conditions and Risk Modeling Report* recommendations 3 and 6. The goals of the pilot studies are to (1) work closely with coastal communities to produce SLR information for advisory purposes; (2) further test adequacy of the "bathtub approach"; (3) investigate how to consider long-term erosion along with SLR-induced inundation; and (4) investigate tidal as well as riverine areas.

Mr. Crowell outlined the members of the Federal Coordination Group for SLR Pilot Studies, as well as FEMA's analysis framework for SLR pilot studies. FEMA is fully or partially addressing many sub-recommendations for *TMAC Future Conditions and Risk Modeling Report* recommendation 3 through this analysis framework. Mr. Crowell discussed a matrix outlining the seven main *TMAC Future Conditions and Risk Modeling Report* recommendations and their sub-recommendations and how FEMA is currently addressing or planning to address each recommendation, as well as a conceptual time frame for implementation.

Mr. Crowell said that by requesting that FEMA add future conditions assessments, modeling and mapping, the TMAC is requesting that FEMA drive and push both the state of the science and the state of application of the science on a broad scale. It may be possible to implement individual sub-recommendations, and in some cases FEMA is already doing that. However, it is unlikely that this would lead to appreciable progress in implementing recommendation 1. For this reason, the individual implementation of sub-recommendations is not recommended unless their implementation accomplishes other program goals.

According to Mr. Crowell, transitioning from an applied science agency to an agency that also performs scientific research and its application is significant. Erosion analysis and prediction (long- and short-term) and SLR prediction will push the state of the science. To accomplish these recommendations, dedicated FEMA staff should design the program and coordinate and vet it with other Federal agencies and research scientists. Any time future scenarios are mapped, the political blowback can be strong, so dedicated staff will also be needed to proactively and reactively manage communications and messaging. Addressing this recommendation will also require a significant investment of money in active fields of research, which FEMA has not historically done on this scale. It will also require an immense amount of time, as the state of the science cannot be credibly changed overnight.

Mr. Crowell said that addressing *TMAC Future Conditions and Risk Modeling Report* recommendation 6, which directs the completion of pilot studies, provides a way to plan for and develop a program that can accomplish the objectives set forth in TMAC future conditions recommendation 1. Implementation of

recommendation 6 can be performed in a way that addresses the majority of the other recommendations and sub-recommendations found in the *TMAC Future Conditions and Risk Modeling Report*. Addressing the research, development, program planning, and implementation questions through a series of demonstration projects will lead to an efficient and effective program to provide future conditions flood risk products, tools, and information. Results from previously-initiated SLR pilot studies will be useful in addressing a number of the recommendations, and in some cases, inform them. However, to address the significant breadth of research needs identified in the *TMAC Future Conditions and Risk Modeling Report*, a more robust research and pilot effort will be needed. He explained that future conditions assessments cannot be tacked on the mapping program.

Mr. Crowell noted that there are several short-term steps to begin implementing recommendation 6. These steps would help develop the framework and mission of a dedicated future conditions program within Risk Mapping Analysis and Planning (Risk MAP). A separate program, independent of the regulatory map production, is needed to address the level of effort, coordination, and funding that is required by the future conditions mapping program proposed by TMAC.

Ms. Laura Algeo, FEMA, briefed the Council on the CTP program. FEMA is currently evaluating goals and objectives for the CTP program, developing an operations plan with a vision for the enhancement of the long term sustainability of the program, and different avenues to communicate and collect best practices for the program. Ms. Algeo reviewed the functions of the CTP CoP and the CTP Steering Committee. The mission of the CoP is to collaborate, innovate and ensure the long-term viability and success of Risk MAP program objectives for the CTP program through feedback mechanisms, collaborative learning, training, and term limits. She detailed the redesign and what users can expect from the Mapping Information Platform.

Ms. Algeo informed participants that starting in 2017, the CTP program is implementing new performance measures to help CTPs and FEMA improve project performance. These performance measures were developed a result of the working group's evaluation current program measures and metrics. The CTP program also includes a collaboration center and monthly newsletters for participants. Ms. Algeo reviewed the CTP project tiers, the development of a five-year operations plan and associated goals, and the CTP program training plan competency model. Mr. Mallory noted that FEMA has implemented several of the TMAC's recommendations and thanked Ms. Algeo for the update.

2016 Annual Report Discussion

The Council discussed chapter 9, *Future Conditions Demonstration Projects for Coastal and Riverine Areas*, led by Ms. Juliana Blackwell, TMAC member. Mr. Crowell will provide the Council with information regarding completed and ongoing future conditions pilot mapping projects. He noted that the Puerto Rico Pilot Study was considered a proof of concept study, and other pilot studies are still ongoing. Mr. Dorman suggested the Council recommend FEMA complete the remaining studies. Mr. Edelman said this section should focus on what needs to be included in the pilot studies, what questions need to be answered and what standards are needed. Ms. Leslie Durham, TMAC member, said this is an opportunity to tease out what needs to be learned from the pilot studies and how it can be added to a national program.

Mr. Jones said the Council should identify gaps, as well as how future conditions can be incorporated into flood mapping. Mr. Butgereit asked what future conditions would look like on a flood map. Mr. Dorman replied that this should be explored as part of the pilot studies and demonstrated how future conditions could be displayed in a digital environment.

The Council discussed chapter 10, *Flood Risk Rated Insurance – Documented Dependencies with Flood Hazard and Risk Data, Models, Methodologies*, led by Mr. Kunreuther. This section of the *TMAC 2016 Annual Report* highlights the importance of accurate flood hazard maps to provide relevant information through flood risk rated insurance to residents in flood prone areas as to the flood risks they currently face. Mr. Kunreuther said that this topic is intended to answer the question of how much insurance would be if it reflected the risk. Ms. Christine Shirley, TMAC member, warned that insurance premiums include other fees and the Council should focus on the risk rather than monetary issues. Mr. Dorman noted that

chapter 2 discusses flood risk communication and chapter 10 is on how to calculate flood risk insurance. Mr. Edelman said that the calculations are too complex. Ms. Shirley stated that this section should discuss the issue of getting information to potential homeowners earlier, prior to closing on a house.

Mr. Ferryman suggested the Council could explain the different between the actuarial rate and what the policyholder is paying, along with the additional fees. Mr. Kunreuther said that the average annual loss is an important component in risk rating. People need to recognize the value of their flood insurance policy, what their loss would look like, and what is their average annual exposure. Ms. Shirley said the Council should focus on smaller mitigation measures people can take besides elevation.

Public Comment

Ms. Boyer announced that, per FACA, members of the public are provided the opportunity to provide oral and written comments on the issues to be considered by the TMAC. She requested that speakers limit their public comments to no more than two minutes and said that the public comment period will not exceed 20 minutes. While the public was offered the opportunity to speak, no comments were received.

Next Steps

Mr. Dorman thanked the Council for their participation and turned the meeting back to the DFO.

Adjournment

Ms. Boyer thanked meeting participants and announced that the meeting will resume at 8:00 a.m. on August 11, 2016.

August 11, 2016

Call to Order/ Roll Call

Ms. Boyer opened the second day of the meeting. She took roll call, reminded participants of FACA compliance stipulations, and reviewed facility logistics. She then turned the meeting over to the Chair. Mr. Dorman reviewed the meeting procedures and the agenda for the day, noting the meeting objectives for the day are the same as day one.

2016 Annual Report Discussion

Mr. Dorman provided an overview of chapter 5, *Database-Derived, Digital Display Implementation Plan*, and requested input on the draft recommendations in this section. Mr. Jones said that he appreciated the three-tiered approach. He added that enhanced and enhanced-plus risk should include riverine, in addition to wave crest, wave run-up, dune erosion, and coastal issues. Mr. Jones said that when defining still water, the TMAC should be careful with defining depth. Mr. Kunreuther questioned what it would take for FEMA to implement the topic's associated recommendations. Mr. Dorman said some things are already in place and that the TMAC is not encouraging FEMA's workflow process to change dramatically. Therefore, it is important to find a way to utilize digital databases. Mr. Rodriguez said that FEMA has a lot of experience implementing the Mapping Information Platform (MIP); however the system is not perfect. He said that the TMAC's recommendations will help lead to a database-derived system. Mr. Dorman said that he envisions a phased approach with states gradually being added to the system.

Ms. Blyler questioned the Department of Homeland Security's (DHS) rules regarding putting data on FEMA servers. Mr. Dorman responded that DHS and FEMA will not adopt data outside of their database. Ms. Blyler suggested that the TMAC be more specific about the types of data needed for a data model with functions. Discussing the recommendation in section 1.3.1, *Overview*, Ms. Durham asked if the topic should align more with the recommendation. She said that the section needs more concrete examples and information regarding the type of data needed to implement into databases. She added that aspects

of this chapter are touched on in chapter 2, *Effective Communications of Hazard and Risk,* and that the sections should be tied together.

Mr. Mallory said that the move to digital database driven products means that everything changes because FEMA's system is currently based on paper products. This impacts the MIP, workflow, quality control, and Key Performance Indicators (KPI), among other things. Participants noted that the post-preliminary description should remain in this chapter, but that the TMAC may wish to add additional detail on how the process would change. The Council questioned if FEMA could provide grants to move towards platforms like those in North Carolina, Virginia, Florida and Alabama. Mr. Dorman clarified that Alabama, Florida, and Virginia use local versions and that they send their updates separately to be uploaded to the system. Mr. Dorman and Ms. Durham will discuss how the mapping process changes when doing a digital-only display. They will provide an approach and outline the observed impacts.

Ms. Shirley said that the TMAC must consider that Risk MAP is moving into a multi-risk environment. She added that there needs to be a user interface that allows users to ingest the information provided and then use it for hazard mitigation and other uses. Mr. Jones said that point-and-click functionality gives as much functionality as one desires. He suggested that it would be beneficial for FEMA to keep everything available. Mr. Dorman questioned if the table describing functionality in section 1.2.2, *Web Services*, should be expanded. Ms. Suzanne Jiwani, TMAC member, suggested highlighting other states that have been working with technology like that in North Carolina. Mr. Ferryman responded that Louisville, Kentucky is doing similar work and suggested someone from Kentucky brief the TMAC on the topic. Mr. Dorman said that currently, the database must be changed in order to fit into FEMA's database and therefore it is important to define base criteria. Mr. Edelman said that since North Carolina has a super-set of data, the TMAC could recommend using North Carolina as a model and provide details on this in the body of the document.

Ms. Blyler said that the TMAC should recommend the interaction between a state and national system. She added that the Council should not recommend a complete standardization, but rather a way to feed information into a national system with metrics. Mr. Dorman questioned if there should be a national system. Ms. Blyler responded that if there is such a system, it should be basic. Mr. Rodriguez said that a national database model and standards already exist. If a state uses a separate database, it must find a way to fit their database into the national framework. Ms. Carrie Grassi, TMAC member, recommended that the TMAC include stronger language regarding the importance of understanding the users' needs in section 1.5.1, *Nationwide Digital Display*. The TMAC agreed to include information from the *TMAC 2015 Annual Report* into this section. Mr. Edelman said that FEMA's standard model will need to be updated based on the TMAC's transformational recommendations. He added that some of these updates will impact data modeling. Mr. Mallory reminded participants that in *TMAC 2016 National Flood Mapping Program Review* the TMAC recommended that FEMA move to a database system. Ms. Shirley said that going digital provides an opportunity to look at the National Flood Hazard Layer and determine what core products are needed. Mr. Dorman said that this topic was discussed in the *TMAC 2015 Annual Report* and that the TMAC should not speak about how to do this. Mr. Rodriguez suggested referring the 2015 recommendation and adding a callout box to the 2016 report as to why this should be done. Mr. Ferryman noted that the communication piece at the end of each section could include this information.

Participants discussed chapter 4, *Flood Hazard Identification and Risk Assessment: Study Process Management*, led by Mr. Dorman. Mr. Jones asked where the TMAC discusses Knowledge Decision Points (KDPs) and if they should also include intermediate data. Mr. Dorman confirmed that the TMAC will explain that coastal areas utilize the KDP process in this section. Ms. Durham suggested that the TMAC examine KDP forms to see if they have been updated to the new standard. Ms. Jiwani added that the section includes a recommendation to integrate the MIP and KDP processes.

Discussing the Federal Register process, Ms. Durham explained that projects have been delayed because of the processes requirements. Mr. Dorman added that there are ten counties in North Carolina that have had preliminary maps out for almost two years and they have yet to be finalized. Mr. Mallory agreed that his state has also experienced project delays due to the publication requirements. Ms. Durham said that the TMAC is recommending training as well as a better Federal Register process. Next,

participants discussed chapter 2, *Effective Communication of Hazards and Risk*, led by Mr. Ferryman. Mr. Jones said that this section must discuss quality in order to give the public a better understanding of the issue. Mr. Ferryman informed participants that Mr. Tim Murphy, TMAC Member, recently distributed possible case studies that the TMAC could leverage. Ms. Durham said that the TMAC has the opportunity to expand on the transformational recommendations from the *TMAC 2015 Annual Report* and how to better communicate flood risk to communities. She said that looking at Section 216 in the *Biggert Waters Flood Insurance Reform Act of 2012* (BW-12), the TMAC would be remiss to not change the communication message. Flood risk messaging needs to be framed in a way that property owners understand, showing how much it costs to take mitigation measures or not.

Mr. Robert Mason, TMAC member, noted that this section does not include a recommendation for change. He explained that the section mentions how it is important to inform the public on past floods and asked if there was a connection with a public campaign to inform people about the history of floods in a given community. Mr. Mason also suggested that the TMAC recommend that the multiple listing service (MLS) provide information regarding flood zones to better inform those looking to purchase a home.

Ms. Shirley suggested several recommendations that the TMAC could make, including: that the risks are shown graphically; more transparency regarding how flood zone determinations are made; for FEMA to create a fast, easy to use application to show the relation of a home to the flood zone. Mr. Edelman explained that the vision is to right click on the map and download or save the effective model. He added that there is a need to show people the appropriate model to use. Participants questioned if the TMAC could recommend adding flood assessment as a contingency for home buyers. Mr. Kunreuther said that getting this type of information across and the timing of communications is important. He added that quality information is also important in order to provide people with correct information. Ms. Theresa Johnston, Subject Matter Expert, explained that elevation information is not readily available for insurance agents and suggested that the TMAC recommend ways to easily obtain this information. Mr. Edelman responded that while obtaining specific insurance information is important, there may not be support for developing community-average elevation information. Mr. Ferryman suggested that the Louisville Metropolitan Sewer District brief the TMAC on its use of LiDAR to create ground elevation.

Ms. Grassi said that there are two things that need to be further discussed: (1) ease of use for public and new users; and (2) closing down the barriers for individuals. She noted that the user's perspective is important and suggested linking to real estate websites as a way to help disseminate information. Mr. Butgereit said that he has been unable to obtain this type of information and suggested that the TMAC make a recommendation on the issue. Mr. Jones said that a study was performed after Hurricane Ike, where people were using Google Street View to estimate damages and obtain elevation information. Mr. Jones will provide the TMAC with additional information regarding the use of Google during Hurricane Ike. He also suggested that the TMAC discuss the content that each user needs and recommended developing a table to contain hazard, risk, terminology, mitigation, cost, and benefit information. Ms. Wendy Lathrop, TMAC member, asked if messaging would contain information about how increased development can cause risk to an area and suggested using historic markers to illustrate risk. Ms. Durham said that the linear extent of floods should also be included, not just flood elevation.

Ms. Shirley said that the simplistic view of FloodSmart should be refined. Additionally, she said that she often gets requests for Letters of Map Revision for A Zone area without Base Flood Elevations (BFEs). She said that to obtain this information one most go through the engineering technical request link and suggested that the TMAC recommend that the process to obtain this information be sped up. Mr. Rodriguez suggested that this section include a matrix for the communications requirements listed in Section 216 of BW-12 and how to address those requirements. Mr. Ferryman said that he would recommend getting rid of Congressional approval, as it slows down the process. Mr. Rodriguez then suggested that the TMAC reflect on the impact of the High Water Mark campaign and ways to improve it.

Ms. Small said that communication is complex. She suggested that the TMAC develop a recommendation regarding how to get the attention of consumers in order to drive them back to the community or map and help them understand the risk. Ms. Small then suggested that the TMAC think about disclosure requirements and making them earlier in the home buying process, rather than at point of sale.

Mr. Ferryman said that digital platform can also add success stories to the FIRMs. He explained that Ohio has a mitigation website that illustrates each mitigated home and that this could be added to the FIRM. Participants also discussed the language regarding Section 28 HFIAA, which requires FEMA to clearly communicate full flood risk determinations to individual property owners regardless of whether their premium rates are full actuarial rates. Mr. Rodriguez said that a Subject Matter Expert (SME) presentation regarding Section 28 can be arranged if needed. Mr. Ferryman said that he will review Section 28 and revise this section in more detail.

Next, participants continued their previous discussion on chapter 10, *Flood Risk Rated Insurance – Documented Dependencies with Flood Hazard and Risk Data, Models, and Methodologies*, led by Mr. Kunreuther. Discussing the role of flood risk rated insurance in encouraging investments in mitigation measures, Mr. Edelman questioned what the TMAC is asking of FEMA. Mr. Kunreuther replied that it would be useful to spread the cost over time so that individuals are not asked to pay the mitigation cost at once. He added that the participants should look at Connecticut's model. Ms. Shirley said that most people do not think about mitigation until after an event occurs. She suggested that the TMAC recommend that as pre-FIRM buildings come into the program, it would be nice to evaluate their elevation certifications and provide them with mitigation plan or suggestions for the building. Mr. Ferryman suggested that the TMAC recommend that FEMA coordinate with other Federal agencies to utilize existing programs in order to bring mitigation projects to the forefront.

Mr. Jones discussed a wind program that utilizes an insurance-based calculator. He suggested moving beyond flood and find mitigation programs. Mr. Ferryman reminded participants that Mr. Dorman said that North Carolina can calculate premiums to show mitigation alternatives. He suggested that the TMAC recommend that this mitigation piece is placed in a digital platform. Mr. Jones suggested that the TMAC look at the following Websites for additional information:

- http://www.floridadisaster.org/mitigation/RCMP/index.htm; and
- http://www.nytimes.com/interactive/2014/upshot/buy-rent-calculator.html.

Mr. Rodriguez said that the TMAC should develop a recommendation related to mitigation and risk rating and how it relates to the mapping program. Mr. Kunreuther commented that the reauthorization of the NFIP will likely include funding for an accurate mapping program. Ms. Blyler remarked that while the goal is for accurate data, people tend to focus on the maps. Ms. Lathrop commented that without good data, one cannot properly mitigate and obtain appropriate premiums. She informed participants that she had heard that FEMA would not accept historic structure mitigation options in a floating structure option in Louisiana. Mr. Edelman said that it was an interesting concept that the TMAC could explore in a future report.

Mr. Mallory stated that the TMAC should discuss the ownership of risk and it being based on accurate data in the introduction of the report. Mr. Kunreuther agreed and said that levees, dams, and residual risk should be discussed. Mr. Edelman suggested that the TMAC organize the section around the mapping program and data. He explained that the Nation will benefit by making the data available, adding that it could be the insurance companies or other organizations, and not necessarily FEMA, providing the information. Mr. Edelman continued that one should look at the volume in properties to obtain a positive cost-benefit ratio. Participants agreed, noting that future conditions and climate change may also come into the picture if better data is addressed.

Participants discussed the impact of communicating flood insurance risk rates to interested parties. Ms. Shirley said that the TMAC should address risk avoidance in this section. Ms. Lathrop explained that FEMA tried to move away from the 100-year flood language to percent chance; however, people do not understand the term. She added that using terms such as "minimal", "medium", and "large or big risk" is more useful for the public. Ms. Jiwani said that Ms. Ceil Strauss, State Floodplain Manager, State of Minnesota, has worked on plans for developing flood risk review and will provide the Council with this information.

Next, participants discussed chapter 3, *National Multi-Year Flood Hazard and Risk Assessment Maintenance Methodology*, led by Ms. Shirley. Mr. Rodriguez discussed the LiDAR recommendation and noted that the TMAC may need a SME presentation regarding why high-level data might not be good to have as a critical element. Ms. Shirley also suggested that the TMAC receive a SME briefing related to secondary elements. Ms. Jiwani said that she will ask the Region V Coordinated Needs Management Strategy (CNMS) expert to assist with writing this section. Ms. Lathrop said that the TMAC should communicate how the elevation makes something critical. Mr. Edelman said that the TMAC should note that the Multi-Year Flood Hazard Identification Plan (MHIP) looks at the future and where investments are made. Additionally, this chapter should discuss KPIs. Ms. Durham agreed and said that the purpose of this chapter was to provide context to recommendation 2 and 3 from the *TMAC 2015 Annual Report*. She added that the TMAC should examine the five-year plan and how to prioritize and maintain inventory.

Regarding CNMS, Ms. Durham expressed her concern as to how it is discussed in this chapter. She said that the recommendation leads one to believe that CNMS is broken but the purpose of CNMS is to maintain inventory and validity of data. Ms. Shirley explained that in Region X, CNMS is not used during the discovery planning process.

Mr. Rodriguez discussed previous TMAC recommendations, noting that the Council already stated that FEMA should not stop at the five-year planning cycle. He informed participants that FEMA is currently changing the planning process and making it more comprehensive. Ms. Durham expressed her concern with not using the CNMS information from the *TMAC 2015 Annual Report*.

Discussing recommendation 3d, Mr. Edelman explained that in the past there was some overestimation due to data being unavailable. He stated that CNMS allows one to obtain better data. He continued that they are always pushing Congress to see value in the program and provide funding. Mr. Rodriguez said that Risk MAP deployment measures can be confusing and that the program was not designed for communicating the quality of flood hazard data. He added that FEMA has achieved the intent of the deployment measure.

Mr. Ferryman said that in 2015 the TMAC agreed that it would focus on the technical recommendations and not funding and that DHS and FEMA must determine the funding level. Mr. Mallory said that this is still the case, but that the TMAC is trying to avoid having a long list of items where Congress can ask FEMA why they are not doing certain things. Mr. Edelman said that the Administrator can report to Congress a lack of funding. Mr. Rodriguez explained that flood hazards change and that FEMA's goal is to achieve an 80 percent New, Validated or Updated Engineering target. For certain investments, one can maintain what they have achieved thus far or decline if the investment does not remain the same. FEMA wants to show the appropriators that with increased investment, it will see gains. Ms. Shirley said that while it is important to look at what FEMA needs, it is also to look at the needs of state and local governments. Mr. Edelman suggested that the TMAC examine how local communities look at this issue, explaining that it is difficult to look at data regarding watersheds. He questioned at what level of government this should be done and if it should be done at the county level.

Next, the TMAC discussed chapter 8, *Cooperating Technical Partners: Metrics, Process, and Delegation Methodology,* led by Mr. Mallory. Mr. Mallory said that this chapter should discuss the value of the CTP program. He added that the *TMAC 2015 Annual Report* discussed this; however, he would like to move the LOMC program out of the pilot phase. Mr. Edelman suggested incorporating Ms. Algeo's presentation into this section, nothing that she discussed the training program. He also suggested that the Council should state that since the *TMAC 2015 Annual Report*, FEMA has done several items related to this chapter; however, some items are not yet implemented.

Mr. Rodriguez said that FEMA has been engaging with OMB and the House of Representatives regarding how the mapping program is useful but that it needs additional funding. He questioned how FEMA is leveraging technology, innovation, and the CTP program. Mr. Rodriguez said that FEMA would benefit from linking the efficiency and innovation discussion with the CTP effort. Mr. DeMulder said that he sees the benefits of CTPs and thinks that they could be an effective lobbying group. He recommended that CTPs build a network in order to educate members of Congress on the mapping program. Mr. Edelman

agreed and said that the TMAC should emphasize the benefits of CTPs but also note that there is a cost associated with CTPs. Ms. Jiwani said that there is a correlation between insurance policies and Community Rating System (CRS), CTPs, and emergency management. Additionally, Ms. Durham said that CTPs should understand their role prior to signing up for the program. Mr. Edelman added that the CTP program is successful because participants want to be involved. Mr. Rodriguez added that TMAC should draw attention to the fact that CTPs leverage Federal grants rather than Federal assistance.

Public Comment Period

Ms. Boyer announced that, per FACA, members of the public are provided the opportunity to provide oral and written comments on the issues to be considered by the TMAC. She requested that speakers limit their public comments to no more than three minutes and said that the public comment period will not exceed 30 minutes. Mr. Jeff Sparrow, Michael Baker International, offered the following comment:

My name is Jeff Sparrow and I have a couple of quick comments. This morning in the discussion about communications, Scott and I were talking about the who and the what related to communications. Then it became about the how. I would suggest that we're communicating with people who aren't technical and aren't trying to hear the message we are delivering to them. Therefore how we deliver the message is where it becomes critical. We have been doing this for 50 years and we haven't moved the needle on reducing risk. If we keep doing the same thing, we will get the same result. Making a note in your recommendation would be valuable. The other thing is the discussion that John's been talking about and in last year's report related to going to a digital based platform. Historically, we've had FIRMs which is one product for the four legs of the stool. As we go towards digital based platforms, we can efficiently deliver products specific to that need. I think we need to think about what those products are that can be delivered specific to insurance or mitigation.

Next Steps

Participants discussed the remaining 2016 TMAC meetings. TMAC support staff will distribute a doodle poll for the October 2016 and December 2016 meeting dates.

Adjournment

Ms. Boyer thanked members for their participation and adjourned the meeting.

Action Items

- Mr. Crowell will provide the Council with information regarding completed and ongoing future conditions pilot mapping projects
- Mr. Dorman and Ms. Durham will discuss how the mapping process changes when doing a digital-only display. They will provide an approach and outline the observed impacts
- Mr. Jones will provide the TMAC with additional information regarding the use of Google during Hurricane Ike.
- Ms. Jiwani will provide the TMAC with information from Ms. Straus related to plans for developing flood risk review.
- TMAC support staff will distribute a doodle poll for the October 2016 and December 2016 meeting dates.

Certification

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

John Dorman
TMAC Chair