TMAC

Technical Mapping Advisory Council Meeting
June 23-24, 2015

TMAC Members

Juliana Blackwell
Nancy Blyler
Richard Butgereit
Mark DeMulder
John Dorman
Leslie Durham
Scott Edelman*
Steve Ferryman
Gale Fraser
Carrie Grassi
Chris Jones**
Howard Kunreuther
Wendy Lathrop
David Mallory
Robert Mason
Sally McConkey
Luis Rodriguez
Javier Ruiz
Christine Shirley
Cheryl Small

Subcommittee Members

Doug Bellomo, U.S. Army Corps of Engineers
Ken Ashe, Amec Foster Wheeler
Dwayne Bourgeois, North Lafourche Conservation, Levee, and Drainage District
Maria Honeycutt, NOAA
Doug Marcy, NOAA
Patrick Sacbibit, FEMA
Jonathan Westcott, FEMA

Speakers and Briefers

David Bascom, FEMA
March Runner, Louden Tribal Council
Paul Rooney, FEMA
Roy Wright, FEMA

Government Attendees

Kathleen Boyer, FEMA, TMAC ADFO
Michael Bishop, FEMA IPT
Erin Cobb, FEMA IPT
Mark Crowell, FEMA, TMAC DFO
Ed Curtis, FEMA IPT
Sarah Devaney-Ice, FEMA IPT
Siamak Esfandiary, FEMA IPT
Marvin Fell, DHS
Christine Gallagher, NOAA
Michael Godesky, FEMA, TMAC ADFO
Juliette Hayes, FEMA IPT
Victoria Hill, DHS
Paul Huang, FEMA
Michael Nakagaki, FEMA IPT
Lynda Pilgrim, FEMA

Registered Public Attendees

David Conrad, Water Resources Policy
Susan Gilson, NAFSMA
Katie Hermann, Dewberry
Vikram Shrivastara, Dewberry
Velma Smith, PEW
Jeff Sparrow, Michael Baker International

Support Staff

Angela Bidnick, Booz Allen Hamilton
Kirsten Folkedal, Booz Allen Hamilton
Laura Karnas, Booz Allen Hamilton
Michelle McQueeney, J-M Global
Jen Marcy, Atkins Global
Krista Bethune Melnar, AECOM
Kimberly Rodgers, LeapFrog Solutions
Meredith Tull, Booz Allen Hamilton
Adam Warfield, Booz Allen Hamilton

**Indicates that the TMAC member also presented during the meeting.*
*** Joined via conference bridge on June 24, 2015.*

Purpose

The purpose of the meeting was to allow the Technical Mapping Advisory Council (TMAC) members to (1) discuss the report outs from the TMAC subcommittees, (2) discuss potential recommendations for the 2015 reports, and (3) discuss next steps for TMAC discussions and report development, particularly focusing on the annotated outlines for the Annual Report and Future Condition Report due in October 2015. Members also received briefings on the progress of the Federal Emergency Management Agency's (FEMA) Flood Insurance Reform Flood Mapping Integrated Project Team (IPT); and a tribal perspective.

June 23, 2015

Administrative Session

Welcome/ Administrative Items

Mr. Mark Crowell, TMAC Designated Federal Officer (DFO), welcomed members to the meeting. He thanked the National Oceanic and Atmospheric Administration (NOAA) and Ms. Juliana Blackwell, TMAC member, for hosting the meeting. Additionally, Mr. Crowell welcomed the FEMA IPT members. He then introduced Mr. Mike Godesky, FEMA, and Ms. Kathleen Boyer, FEMA, who serve as the TMAC's alternate DFOs (ADFO). Mr. Crowell provided an overview of the conference facility and proceeded with a roll call of TMAC members. Mr. Crowell reminded everyone of the *Federal Advisory Committee Act* (FACA) compliance provisions. He invited Ms. Blackwell to make opening remarks. Ms. Blackwell welcomed participants to NOAA and provided an introduction to the NOAA campus and it surroundings.

Process Schedule/ Meeting Objectives

Mr. John Dorman, TMAC Chair, provided an overview of the agenda and discussed the meeting's objectives, including: (1) presentation by the Annual Report Subcommittee authors to the full TMAC, regarding topic narratives and potential recommendations for the draft Annual Report; and (2) presentation by the Future Conditions subcommittee to the full TMAC regarding the draft Future Condition Report proposed narrative and potential recommendations. He noted that this meeting was a preparatory meeting and that nothing will be deliberated, nor adopted. He noted that any deliberations on advice or recommendations must be conducted in a public meeting.

Mr. Dorman discussed the various versions of the TMAC reports. He noted that the green version contains an outline and topic narratives. The orange version contains topic narratives and recommendations. The pink version contains all sections of the report. The red version is considered almost final and should only need wordsmith and grammar revisions.

Mr. Dorman discussed the schedule for report production, specifically:

- June 26, 2015: Narratives with TMAC meeting comments posted to SharePoint.
- July 1, 2015: List of proposed recommendations with assignments posted to SharePoint.
- July 9, 2015: Orange version of draft topic narratives loaded to SharePoint.
- July 16, 2015: Proposed recommendation write ups (orange version) posted to SharePoint.
- July 27, 2015: Final comments on orange version of topics and proposed recommendations ("pen down" date)
- August 2, 2015: Polling on proposed recommendations – closed.
- August 4, 2015: TMAC August Meeting – Review of pink version.

- August 17, 2015: Virtual TMAC Administrative Meeting – Final comments on proposed recommendations
- September 9, 2015: Virtual TMAC meeting to adopt final (red version) of reports.

Mr. Dorman also reviewed the status of previous action items from the May 2015 TMAC Meeting and noted that two items were still outstanding:

1. Mr. Scott Edelman, TMAC member, and Mr. Dorman will complete the task of filling out a subcommittee issue form on a representative issue for members.
2. Mr. Crowell will obtain more information from the FEMA attorneys and Committee Management Office (CMO) regarding the information that members may release to their organization.

Style Guide

Mr. Scott Edelman, Future Conditions Subcommittee Chair, discussed the proposed style guide for the reports, which includes a Word document template, letterhead, and presentation template. He noted that these templates were developed based on FEMA's report template. Mr. Edelman said that the style guide and templates have been posted to the TMAC SharePoint site and he encouraged members to provide feedback.

Future Conditions Report

Mr. Edelman presented the topics and associated proposed recommendations for the Future Conditions Report developed by the Future Conditions Subcommittee. He explained that prior to the meeting, annotated mark-ups (AMU) were sent to TMAC members and subject matter experts (SME) for review and comment. Mr. Edelman described the various ways members can comment, and encouraged the section authors to resolve differences in opinion with other members. He explained that technical support staff will be helping to capture and incorporate all comments into the draft reports.

[Following are overviews from the chapter authors of the Future Conditions Report]

Mr. Crowell discussed Section 4*, Background*, noting that this section provides background as to how FEMA sees future conditions through the National Flood Insurance Program (NFIP) and discusses the legislative history and how to recognize future conditions. He mentioned that this section might include a table regarding the community rating system sea level risk and erosion activities and cited the 2000 Heinz Center report that highlights that if FEMA does not recognize long term erosion it will encounter problems in the future. Mr. Edelman noted that this section introduces the idea of uncertainty and that the issue is discussed in later sections. Mr. Gale Fraser, TMAC member, said that laws and regulations may also be considered a source of uncertainty.

Mr. Crowell said that some of the information in this section may be better suited for an appendix. Members asked if it was appropriate to include recommendations in this section, and agreed that recommendations in Section 4 should be incorporated elsewhere in the report. Members also agreed that the background information should be consistent with the background information in the Annual Report. Mr. Dorman noted that the TMAC must ensure that the Future Conditions Report explains the difference between day-to-day uncertainties and future uncertainty. Members also discussed existing studies that incorporate uncertainty or erosion, such as the Hurricane Sandy sea level rise tool that provides a tool for rebuilding and showing inundation, and pilot studies in San Francisco that look at the modeled approach of incorporating sea level rise and comparing that with the bathtub approach.

Ms. Christine Shirley, TMAC member, recommended addressing channel migration zones, noting that they are a source of erosion that people on the west coast would like to see modeled. She also noted that with regards to the future development conditions, there is a Code of Federal Regulations (CFR) related to erosion zones (E zones) and asked if it could be used to map E zones. Mr. Crowell responded that the

CFR contains contradictory language. Mr. Edelman recommended that the CFR information be included in Section 7, *Future Approaches*.

Mr. Luis Rodriguez, TMAC member, spoke on the challenges FEMA faces in maintaining flood hazard maps to reflect the current conditions, especially given the factors of uncertainty. He suggested the TMAC develop a recommendation regarding the maintenance of flood hazard maps, given the variability and constant change.

Mr. David Mallory, TMAC member, said that Section 4.3, *FEMA's Current Policy for Mapping Future Coastal and Riverine Conditions*¸ does not mention future land use and future flood risk that is expanded because of population growth and development. He suggested developing a recommendation addressing single purpose use for current rate maps.

Mr. Steve Ferryman, TMAC member, provided an overview of Section 5, *Future Conditions and Changes in Floodplains*. He said that this section covers various topics including human caused versus climate caused changes, accuracy and uncertainty in mapping, the importance of maps in illustrating risk in a way that can be easily understood, land use and flood plain management, building design and construction, population growth and development changes, natural changes, and design elevations for future conditions.

Mr. Fraser expressed concern around quantifying uncertainty since it is inherently unpredictable and suggested expanding on this issue. He also questioned how the Council would be able to know where future development is going to occur for the creation of a future design elevation layer. Mr. Edelman explained that demographics can predict where people are likely to move and said that when looking at life and safety issues, the Council should take advantage of demographic work and land use planning that most communities have, showing where communities are focusing their growth. Mr. Fraser reminded the participants that there are various factors that affect demographics and those factors can differ greatly from State to State. Ms. Shirley noted that demographic trends can inform where current trends are taking population growth, but cannot tell how to influence the changing trends. She suggested developing a policy statement that directs people to move away from hazardous areas. Mr. Edelman reminded participants that that flood insurance is voluntary when no federally-backed mortgage is involved and that land use authority is delegated to the States. Ms. Shirley said that FEMA could communicate and provide materials to help people understand the risk through the Community Rating System (CRS) and risk tools. The group highlighted the importance of communication that is effective and simply communicated, so that homeowners can understand the risk. Mr. Rodriguez suggested that the TMAC develop a recommendation regarding quantifying or communicating uncertainty. He said that a recommendation to use data to effectively communicate would be useful.

Members discussed the placement of the proposed recommendations in the report. Mr. Edelman said that the recommendations should be included in the section discussion. In addition, the recommendations should be summarized at the end of the report.

Mr. David Mallory, TMAC member, discussed Section 6, *Future Data Needs*, and noted that this section covers data that is needed to incorporate future conditions into the mapping process and has proposed recommendations throughout the section. Ms. Wendy Lathrop, TMAC member, said that the section frequently refers to long-term; however, long-term is not defined. Participants agreed that it would be useful to define long-term, noting that the definition could be different depending on the issue.
Mr. Kunreuther stressed the need for detailed, specific, and consistent metrics when talking about the data required for the maps. Mr. Dorman suggested the report also speaks to where there are gaps in the data in order to show what might be missing. Ms. Shirley emphasized the need for local governments to have simple tools to anticipate the effects of decisions in future development and land planning use.
Members discussed the data needed and Mr. Mallory noted that there is a vast amount of technology and data out there, and as flood studies take a long time, and technology changes a lot during the time of a study, the group needs to consider when additional information becomes the enemy of disseminating the information and maps. Mr. Mark DeMulder, TMAC member, said that the report should be more focused on the needs rather than trying to predict technology. Mr. Edelman suggested adding a section in the

report to account for innovation and adapting to changes in technology and innovation. Mr. Dorman recommended extracting the anticipated needs outlined in the Future Conditions Report and discussing them in the Annual Report.

Mr. Doug Marcy, NOAA, provided an overview of Section 7, *Future Approaches*. He noted that members recommended discussing Presidential Policy Directive 8, *National Preparedness*. Mr. Dorman said that this relates to the Federal coordination as well as the Federal Flood Risk Management Standard (FFRMS) as they roll out grants and funding and how to support it. Participants agreed that it was important to address; however, they suggested moving it to a different section of the report.

Members discussed the risk management philosophy and whether deterministic or scenario approaches are more appropriate for flood risk estimation. A potential suggestion was to work with communities to help them decide which scenario approach to utilize for their maps. Mr. Kunreuther noted that there is robust literature on decision making, and that having a variety and range of scenarios could help provide perspective and guidance to communities. Mr. Ferryman said that while consistency is important, it is more important to ensure that it is used to reduce risk. Mr. Rodriguez noted that there are over 22,000 communities in the NFIP and affording the opportunity of choice through a scenario approach would be difficult to manage. He also suggested that recommendations should not be too prescriptive as it takes away the flexibility to implement and adapt the recommendation for FEMA's implementation. Additionally, the Council needs to clarify if they intend to change the Flood Insurance Rate Maps (FIRMs) to include future conditions, as there is a complex regulatory process that accompanies FIRMs.

Annual Report

Mr. Dorman once again reminded members that they are in an administrative session in which they may discuss, but not deliberate on the recommendations. He said that all recommendations are proposed recommendations, and deliberation can only be done during the open sessions.

[Following are overviews from the chapter authors of the Annual Report]

Ms. Leslie Durham, TMAC member and Annual Report lead, opened the Annual Report discussion for Section 5, *2015 Topics*. Mr. Robert Mason, TMAC member, discussed Section 5.10, *Federal Partner Collaboration*. He acknowledged that there are a number of data sets that go into building a floodplain map, which makes it challenging to display all the information in a central location. Mr. Mason proposed building a graphic to show the different parts of data sets, identifying major data bases, models, methods and the different coordination mechanisms that exist. Ms. Nancy Blyler, TMAC member, discussed studies that the subcommittee examined for recommendations on interagency coordination and suggested that the TMAC utilize the National Academy of Public Administration (NAPA) Study recommendations on interagency coordination as a starting point. Ms. Shirley also suggested the Silver Jackets model, which is a forum for Federal, State, local and tribal agencies to coordinate on flood related issues, as a model for Federal partner collaboration. She noted that this particular model has the benefit of developing relationships between local and Federal resource managers. Mr. Kunreuther asked how detailed the recommendations would be with regards to suggesting which particular agencies coordinate and their roles. Ms. Blyler responded that in 2015, they are looking to identify existing programs and agencies. Mr. Richard Butgereit, TMAC member, suggested including State and local collaboration, as those partnerships are also addressed in the legislation.

Mr. Dorman discussed section 5.11, *Maintenance Funding*, including what it costs to perform flood risk analysis, the operational cost of FEMA, the five year life cycle costs, flood map funding needs, and costs of maintenance of identification and assessment. Mr. Rodriguez suggested the TMAC consider the cost components of engaging the public and communities as the legislation emphasizes significant engagement with the community. Participants discussed the issue of communities that have their own mapping studies that they send to FEMA, but the studies get stalled at FEMA due to lack of funding. Mr. Rodriguez suggested that if the TMAC proposes a recommendation surrounding funding of community map submissions, the Council should consider predicting how many studies come in and how FEMA should prioritize the studies. Mr. Edelman referenced the Association of State Floodplain

Managers' study on the cost of a maintenance program for updating all maps, and suggested that the Future Conditions report emphasize the importance of the maintenance of maps. This emphasis could help Congress understand why map maintenance needs to be funded.

Public Session

Call to Order/ Roll Call

Mr. Crowell announced that Mr. Godesky will act as the DFO for the remainder of the TMAC meeting. Mr. Godesky discussed the meeting operations and said that there is a public docket for the meeting. Discussing the public comment period, Mr. Godesky said if public participants are interested in providing a comment, they should register at the registration desk. He provided a FACA compliance reminder and noted that 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 at www.fema.gov/tmac. Mr. Godesky took roll call of TMAC members and then introduced the TMAC Chair, Mr. Dorman.

Mr. Dorman reviewed the agenda, announced the presentations scheduled for the afternoon, and noted that the Council would continue to discuss the Future Conditions Report and the Annual Report and that members should look for gaps in the outline and identify areas of duplication between the two reports.

Annual Report

[Following are overviews from the chapter authors of the Annual Report]

Ms. Sally McConkey, TMAC member, discussed Section 5.1, *Annual Core Data Models Methodologies*, which sets the basis for several recommendations and highlights gaps in models and methodology. Mr. Kunreuther suggested that this section could highlight the aspect of uncertainty in models. Ms. Shirley noted that the link between uncertainty and accuracy and precision must be carefully defined. Under Section 5.1, there is a proposed recommendation for FEMA to initiate a study to develop guidelines for parameter selection and quality assurance checks to achieve consistency and quality assurance protocols for review of calibrated models for flood studies, supported by an academic investigation. Mr. Edelman noted that a lot of similar studies have already been done, and that FEMA does not fund research, so asking for FEMA to do research would be a big change. Ms. McConkey suggested that FEMA should look at the parameter selection for models, and not the comparison of models. Mr. Rodriguez reminded the participants that they should be aiming for a balance of both accuracy and precision. Many recommendations in 5.1 regard Coastal Hydrology and Hydraulics and stem from findings in the "14 Points of Light" paper, which Ms. Maria Honeycutt, NOAA will post on the TMAC SharePoint site for reference.

Ms. Durham provided an overview of Section 5.2, *Annual Flood Risk Assessment*, which covers flood hazard identification national coverage and maintenance, and addresses parts of the country that do not have special flood hazards identified. Participants discussed adding issue statements at the beginning of each section to help tie the section to the legislation and to TMAC's goals. The members discussed standards for map updates, map changes versus revisions, and identifying hazards regardless of whether or not it is mapped.

Ms. Carrie Grassi, TMAC member, expressed her point of view from a local Cooperating Technical Partner's (CTP) perspective on the flood mapping life cycle. She said that currently, it is not a transparent process, and that she would like to have more transparency regarding what is taken into account in the flood mapping life cycle assessment and to discuss whether these factors are satisfactory or whether the factors need to be expanded, reduced, or changed in some way.

In relation to the mapping process and cycle, Mr. Rodriguez informed participants that FEMA is moving away from using the term "non-regulatory products" and prefers to use "flood risk products". Flood risk products help communicate risk and help people better understand risk. Discussing the flood risk studies,

Mr. Rick Sacbibit, FEMA, informed participants that FEMA's policy and guidance is to map to one square mile. Ms. Shirley also said that dealing with Letters of Map Change (LOMC) is a huge problem and it should be discussed.

Mr. Kunreuther suggested that the Flood Risk Assessment section needs to be modified to further discuss the topic of uncertainty. He explained that the section only depicts how FEMA has been dealing with uncertainty; however, there are several different types of uncertainty, in models, randomness and epistemic, within institutions, laws, and policies. He said that the Council needs to decide how to incorporate uncertainty into flood risk assessment. Mr. Kunreuther explained that how the report talks about uncertainty will guide a lot of decision making that takes place with regards to policy. He further noted that how the TMAC messages the communication of the uncertainty, and frames the issues that deal with uncertainty, is important. Mr. Rodriguez noted that the communication piece is important because if the public does not care about uncertainty, but simply whether they are in or out of the SFHA, it will not make a difference. Mr. Edelman noted that effectively communicating the uncertainty is important because people are making life and property decisions around the data provided and if the uncertainty is not expressed, people will treat the data indicating "out of the SFHA" as representing a safe zone, when the data provided is not exact, but an average.

Mr. Fraser said that the section talks about State discharge data; however, he noted that there should be further discussion on rainfall runoff models as these models differ and have uncertainty. Mr. Mallory said that in the western United States gage data is sparse and they often rely on rainfall run off. He recommended using calibrated gage data.

FEMA Flood Mapping Program Integrated Project Team (IPT) Presentation

Mr. Dorman introduced Mr. David Bascom, FEMA, and Mr. Paul Rooney, FEMA, to present on the progress of FEMA's IPT. Mr. Bascom and Mr. Rooney reviewed the legislative mandates that FEMA is working to address, which ultimately establish a technically credible national flood mapping program, certified by FEMA's Administrator, in coordination with TMAC, per the *Homeowner Flood Insurance Affordability Act of 2014 (HFIAA)* Section 17. The legislative mandate for FEMA's flood mapping program comes from the *Biggert-Waters Flood Insurance Reform Act of 2013 (BW-12)* Section 216, and includes four key areas: (1) mapping; (2) standards; (3) communications and outreach; and (4) community remapping requests.

Mr. Rooney said that the IPT has analyzed the requirements against the existing mapping program (Risk MAP) to establish a baseline of compliance. The current baseline is mixed, with Risk MAP already addressing or partially addressing many elements of the law, while some new requirements are not yet addressed through Risk MAP. The IPT has provided the TMAC with a copy of the IPT crosswalk analysis/baseline assessment for review and feedback. This baseline helps establish priorities and develop strategies for what can be done in the short and long term.

According to Mr. Bascom, there are several considerations and drivers that the IPT will need to factor in as it develops the program description, including: the budget, TMAC reports and recommendations, NFIP re-authorization, and policy verses rulemaking decisions. The IPT plans to formally submit the program description to the TMAC for technical review, which will provide the basis for the FEMA Administrator to certify the program as technically credible. Technical credibility does not necessarily equal full implementation of all provisions of BW-12 Section 216 or the TMAC recommendations- some of those provisions and recommendations may take years and significant investments to achieve. The goal is to show that FEMA has a technically credible program that will continually evolve and improve.

Mr. Bascom and Mr. Rooney explained the next steps for the IPT, including: identifying high-level strategies; engaging partners and stakeholders as needed; identifying potential guidance and standards for November 2015 and May 2016; and identifying the short-term actions that the IPT might take (through guidance, policy, and products) to address legislative requirements. Ultimately, the IPT will produce a notional program description that builds upon the existing program, focuses on the changes and additions

to address legislative requirements, and will serve as the basis for the FEMA Administrator to certify the program.

Mr. DeMulder asked if FEMA has analyzed to see what has caught Congress' attention over the course of its history that made them give large increases in funding, and where FEMA has been successful in delivering their message to Congress. Mr. Rooney said that although there has been no definitive analysis, the CTP program was a step forward; stakeholder frustration with the practical problem of how maps are not working in communities made a whole coalition come together to push to infuse more money into the mapping program. Mr. Bascom provided more insight on the differences between standards, guidance and best practices, to help give a framework for the recommendations TMAC will give to the IPT. He also noted that they are evaluating feedback on how to better identify risk and get better rates, and that the communications and outreach portion will require a significant investment of time and energy.

Mr. Mallory asked how the FEMA Administrator can certify the mapping program in a year if many elements require rulemaking. Mr. Bascom explained that the program certification is a one-time certification that satisfies the legislative requirement of a technically credible mapping program. It establishes a baseline so that FEMA can make larger scale shifts over time and build toward the appropriate expectations. TMAC members requested that the IPT provide clarification of what "technically credible" means and requested that the IPT share the notional description, as it is being developed, with the TMAC, and Mr. Bascom agreed to keep the TMAC Members informed of the IPT's progress.

Remarks from FEMA's Deputy Associate Administrator for Insurance and Mitigation, Roy Wright

Mr. Dorman introduced Mr. Roy Wright, FEMA Deputy Associate Administrator for Insurance and Mitigation, to address the TMAC. Mr. Wright acknowledged TMAC's newest SME, Ms. March Runner, who traveled from Alaska to attend the meeting. He also thanked the additional SMEs that have joined the Council since Mr. Wright last spoke with the TMAC, in September 2014.

Mr. Wright spoke about the evolving mapping program that will continue to change to address flood insurance reform and TMAC recommendations, and FEMA's insurance program and processes that will continue to change in response to reform legislation and to better meet customers' needs and expectations. He noted that these changing dynamics make TMAC's job more difficult, as they are trying to make recommendations to programs that are constantly evolving. Mr. Wright said that this also provides the TMAC with tremendous opportunity for both FEMA and the IPT to help communities understand their risk and take action to change their risk profiles.

Mr. Wright said that FEMA asked IPT members to attend the TMAC meeting to discuss the work FEMA is doing inside of FEMA to address the mapping requirements that Congress gave FEMA in BW-12 and HFIAA and to have IPT members listen in on the TMAC deliberations. In the end, there will be one single mapping program that can be certified by the Administrator as a technically credible mapping program. He explained that while one of the primary purposes for the mapping program is to inform and support the flood insurance program and help to establish flood insurance rates, the vision is that FEMA products help communities and individuals understand their risk, and help them to make decisions and take actions to reduce their risk and change their risk profiles. Mr. Wright said that though the TMAC may not be able to address every element of the national flood mapping program in its first year, the Council can still communicate what it sees as the future trajectory for the mapping program. Mr. Wright invited the members to share any recommendations with FEMA so that they can continue to work on recommendations, formal or informal.

Mr. Wright responded to questions from members regarding his thoughts on uncertainty and uncertainty in risk communications. He noted that uncertainty is very difficult to understand, and nearly impossible to communicate at the level at which a user can understand it. He said that currently there is an "in versus out" in terms of rate setting, but there needs to be a credible product in terms of risk communications that is usable for the communities and homeowners. Mr. Wright encouraged members to focus on the

outcomes and not to be too doctrinaire about it, noting if an outcome is too complex it will not be useful. He explained that there needs to be a way to appropriately communicate risk, noting that FEMA's flood mapping program is a national program and the program needs to respond to the realities on the ground.

Tribal Perspective

Mr. Dorman thanked Mr. Wright for his presentation and introduced Ms. Runner to provide a tribal perspective. He noted that this is a particularly important stakeholder that the TMAC has not yet heard from.

Ms. Runner spoke about the Louden Tribe and the harsh environment they live under in the isolated interior of Alaska. She spoke about a devastating flood in 2013 that resulted in no loss of life because the tribe people are river people and know how to survive. Ms. Runner said that the flood maps had not been updated since 1974 and when surveyors came in, they could not determine the flood level. Ms. Runner noted that the tribe has learned that Federal agencies do not talk to each other, causing confusion and conflict, and they dictate instructions rather than listening to the people in the community. She suggested that FEMA talk to people at a level they can understand and then listen to what they have to say. The tribe knows where the flood level is because they know the area and the history of flooding there.
Ms. Runner also recommended that FEMA come in with translators, know who is in charge ahead of time, talk patiently and at a level the average person can understand, and encourage people to speak their opinions. She said that she was frustrated to hear the TMAC discuss hazard areas as areas they should encourage people to avoid and explained that in reality many people will not leave their homes.
Ms. Runner said that the realities of where her tribe lives are serious and the response time is dependent on the tribe, and their reliance on FEMA is secondary.

Future Conditions Considerations

Mr. Edelman led a discussion regarding topics that FEMA should consider if the Future Conditions Report is adopted. Mr. Rodriguez suggested that the maintenance of future conditions maps should be called future conditions data, so that it does not limit FEMA to producing future conditions data in a flood map. Mr. Kunreuther emphasized that the TMAC needs to communicate in a way that people are willing to take protection before a disaster happens. Ms. Grassi suggested that the recommendations be driven by how they should be used, what the implications are for the user, and how they can be best understood by the public. The group discussed risk based premiums, affordability of risk based premiums, and the reality of people who have lived in high risk areas for a long time and will not move.

Public Comment Period

Mr. Godesky 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. Mr. Godesky 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. While the public was offered the opportunity to speak, no comments were received.

Clarification on TMAC proposals

Mr. Dorman introduced Ms. Lynda Pilgrim, FEMA, to provide clarification and information to the TMAC members, as a fulfilment of an action item from the last meeting to obtain more information from the FEMA attorneys and CMO regarding information that members may release to their organizations. She explained that a subcommittee is subject to the same requirements as the parent committee. Although subcommittees are not subject to FACA, their delegated responsibilities come from the parent committee. She said that once any information is made publicly available, the information can be disseminated to anyone. TMAC members agreed that draft suggestions should not be circulated widely, as things may significantly change, and there should be version control on the reports.

Adjournment

Mr. Godesky thanked participants for the discussion and said that the meeting was to reconvene at 8:00 a.m. on June 24, 2015.

Day 2: June 24, 2015

Administrative Session

Administrative Comments

Mr. Godesky opened the meeting, provided an overview of the facility, and took roll call of TMAC members. He then introduced Mr. Dorman to facilitate the remainder of the day. Mr. Dorman welcomed the TMAC members and IPT attendees, and reviewed the agenda. He reminded the group that this portion of the meeting is an administrative session, and only discussion, not deliberation, is permitted. Additionally, Mr. Godesky noted that all recommendations are considered proposed recommendations until deliberated upon and voted upon by the full TMAC in a public session.

Annual Report

Ms. Durham led the group through the presentation of topics and associated recommendations in the 2015 Annual Report, by authors for Council feedback.

[Following are overviews from the chapter authors of the Annual Report]

Mr. Ken Ashe, Amec Foster Wheeler, reviewed Section 5.5, *Flood Hazard Identification and Risk Assessment – Production (Process, Time Cost Requirement).* He noted that there are several topics under this section including the current process and prioritization of flood hazard identification and flood insurance studies; risk assessment; performance metrics and milestones for map modernization and Risk MAP; and recommendations for time and cost efficient generation and process management of flood hazard risk data, models, assessments and displays. This section also includes a description of CTPs and their processes, FEMA non-regulatory products, and various descriptions of what is involved in a risk assessment.

Mr. Edelman suggested that the TMAC focus this section more on what the Council wants done differently in the flood hazard identification and process rather than a report out of what FEMA already does. He also said it should focus on what the metrics should be going forward on a national scale. Mr. Kunreuther echoed Mr. Edelman's thoughts, and suggested that the challenges with FEMA's Hazus program, a standardized methodology for estimating potential losses from earthquakes, floods and hurricanes, should be discussed. He also noted that there is material from the Future Conditions report can be used to support this section. Ms. Durham noted that some of the language from Section 4.1, *Embrace a Fully Digital Environment*, would be beneficial to insert into this section. Ms. Lathrop said that the graphic in Section 4.1 regarding FEMA's process may be better suited for Section 5.5

Mr. Dorman added that the intent of this section is to communicate the need to improve the production process as it is currently too long. He said that the Council needs to clarify what the required statutory products are and how there can be a change from the burdensome cartographic process to a digital process. Mr. Dorman suggested that this section be changed to "Flood Production" or look into how to reshape this section. Members suggested the Council reframe the section to be about the flood mapping process, and suggested that the strategic viewpoint belongs under a section surrounding maintenance of the maps.

Mr. Mallory noted that community acceptance adds time to the process and he suggested adding language to the section regarding the time spent to convince communities to embrace new maps. Mr. Ashe questioned if the TMAC should focus on an effective end date for the process. Mr. Mallory

noted that there is an end date for the regulatory process; however, there is a parallel process regarding floodplain management and risk that the community can use. Mr. Dorman said that the TMAC should incorporate the timing between when a map becomes preliminary and when it is revisited. He also recommended that the report contain language on the project management prioritization of which areas get studied, and include this in the process. Ms. Durham suggested adding the prioritization language to Section 5.2, *Flood Hazard Identification*.

Mr. Chris Jones, TMAC member, discussed Section 5.3, *Flood Risk Assessment*. He noted that his assumption was that the TMAC was defining risk in terms of loss. Mr. Jones said that given that assumption, it is important to discuss who should conduct risk assessments and who is in the position to develop and maintain the hazard information that is requested. Mr. Jones explained that on a national level, there can be a reasonable risk assessment broadly provided, but there is a concern that risk assessments become less accurate as they get down to the individual level, and that FEMA might not be in a position support this. Mr. Jones suggested that FEMA focus on flood hazard identification and risk assessment on a large scale and provide assistance to States and communities that wish to map on the small scale. He also suggested including systematic evaluation of risk products, including who is using the products and whether or not they are helpful.

Mr. Kunreuther asked Mr. Jones how he would differentiate hazard and risk. Mr. Jones said that when he thinks of hazard he thinks of physical conditions that are acting upon areas or structures. With regards to risk, Mr. Jones said that he thinks of it in economic terms because it is what will ultimately drive decisions. He continued that there are several ways to express economic risk and it will depend on the type of analysis (probabilistic or deterministic approach). He noted that probability is involved in the analysis and it will help determine the nature of expression of risk.

Mr. DeMulder suggested clarifying what is meant by small and large scale, noting that this section is defining them differently than a cartographer would. In addition, Mr. Ferryman suggested that the TMAC determine what is meant by "go digital". Mr. Edelman suggested the Council include a series of definitions early on in the report, to ensure consistent terminology throughout the document. Ms. Shirley noted that the report should include the social vulnerability of risk, in addition to the economic and structural sense. She said that while FEMA should continue to perform hazard identification, FEMA also produces guidance for how to do risk assessment and it is important that the social and cultural aspects are not ignored in the guidance.

Ms. McConkey said that it is important to determine if the current flood risk products are useful and questioned if using level and scale is the appropriate approach. Mr. Mason agreed that discussing the degree, scale, and usefulness of the maps would be valuable, noting that North Carolina is successful in its approach because the State is conducting the assessments, not FEMA. Mr. Mason also stressed that the risk assessment is just one step in the process. Mr. Jones added that during a portfolio analysis, a large number of buildings are analyzed together which may lead to a less accurate analysis than if structures were analyzed individually. He explained that in component-by-component analyses, buildings are divided into their major components (e.g., foundation, structure, walls, etc.) and each component is reviewed with regards to the sensitivity to flooding, waves, and erosion, among other things. He said that this is a detailed engineering assessment; however, it is not feasible for a large number of structures. Mr. Jones said that a structure-by-structure assessment will likely lead to unmet expectations; however, an individual structure analysis may be a good long-term goal.

Mr. Edelman noted that there are three types of proposed recommendations: (1) statutory/legislative; (2) regulatory; and (3) policy. He suggested incorporating those themes through every recommendation in both the 2015 Annual Report and the Future Conditions Report. Because of the reauthorization bill, he suggested placing the legislative recommendations up front. In addition, Mr. Edelman recommended including a table to list FEMA's risk and hazard products and also suggested that the report include a case study.

Mr. Butgereit discussed Section 5.6, *Data Management and Leverage*. He noted that the recommendations in this section should be further developed. Ms. McConkey suggested they include the

idea of integrating with applications like Google Maps, with relation to data management. Mr. Edelman said that some CTPs are wary of the information that FEMA has in their geodatabase. He said that the TMAC could recommend that FEMA talk with States (e.g., North Carolina) about how the State completes their model. He suggested that the TMAC leverage SME presentations for information regarding people doing more than the national standard. Mr. Javier Ruiz, TMAC member, suggested that the Council could recommend that data is put into an application that is available for distribution. Mr. Mason said that there are efforts to better define hydraulics. He noted that the Army Corps of Engineers is also rolling out a system that includes mapping information. He said that there also a data initiative that the President is pushing to allow for contribution to time series data. Mr. Mason suggested that these efforts be discussed in the report.

Mr. Ferryman discussed Section 5.7, *Flood Hazard Risk Mitigation*, including: how maps are used in flood risk mitigation; personalizing mitigation risk at the local level; cost benefit analysis for current mitigation; and incorporating property specific flood risk information into mitigation planning. Mr. Mason stated that there seems to be a disconnect between the section title and text, noting that the section appears to be more about flood risk mapping rather than flood risk mitigation. The participants discussed the section's scope and Mr. Dorman said that the intent for this topic is to indicate that mitigation is a major component of the overall risk management cycle. He suggested that the Council should speak to how mitigation utilizes that data and the work that is done. Participants agreed that CRS should be included in this section, and it should address whether FEMA should be responsible for incorporating property-specific information into the mapping standards.

Ms. McConkey discussed Section 5.8, *Community of Users*. She explained that this section provides an overview of the uses of flood hazard and flood risk data, the application of flood risk products and the users the products serve, and an effective communication strategy to educate end users on the purpose and limitations of data and maps, in a way that people may understand it and are encouraged to take action. Participants agreed that this section should be moved to the beginning of the report so that the stakeholders are identified up front and effective communication can be emphasized. They also suggested placing the recommendations from this section in to other sections. Ms. Blyler said that while it is important to discuss ease of use and communications, the information may be buried in this section and therefore it may be more useful somewhere else in the report. The Council discussed developing a table to capture the products and users. In addition, Mr. Dorman suggested that the TMAC do not define standards in its 2015 report.

Ms. Shirley noted that the terms "floodplain" and "special floodplain" are used synonymously in this section and that they should be defined and used appropriately. She also cautioned the TMAC about endorsing special flood areas as proxies because these areas are not built with habitat in mind.

Participants discussed the use of terminology regarding precision and accuracy. Mr. Rodriguez said that if the TMAC is trying to reflect on accuracy needs, it is in conflict with what the TMAC has been saying regarding uncertainty. Therefore, he said it may be necessary to characterize the accuracy needs differently, such as reliable and credible flood hazard information.

Mr. Fraser noted that there are several items that the TMAC has yet to explore and there may be items that should be further explored (e.g., ice jams). Mr. Dorman suggested developing a table, or listing the items for future consideration in each section. The PTS contract support will insert a heading into the report noting that topics will be discussed in future annual reports.

Ms. Durham discussed Section 5.9, *Cooperating Technical Partners.* She explained that the section looks at how to leverage the contributions of CTPs and their capabilities, and how to strengthen the current program. Participants discussed how to encourage more funding for the CTP program, whether a block grant would be a better approach than a year-by-year funding basis, so that there is better development and maintenance of capabilities, keeping the skillsets up despite changes in funding.

Mr. Edelman said that this section is written as though the CTPs are at the State level and he noted that most CTPs are at the community level. Ms. Grassi suggested that instead of discussing measuring and

evaluating the program, the TMAC think about if there are things FEMA can learn from CTPs to improve their own mapping and mitigation programs. She noted that FEMA has the ability to view CTP performances and that there may be a better way to share information in addition to lessons learned and best practices. Mr. Fraser said that it would be useful to know what CTP covers what percentage of a community or population because there may be CTPs that are not very useful. He also recommended that the section contain additional background information on the proposed recommendations.

Public Session

Call to Order/ Roll Call

Mr. Godesky, opened the afternoon session of the TMAC meeting. He reintroduced the other DFOs, reminded the group of the facility logistics, and to direct any questions to the support staff at the registration desk. Mr. Godesky took roll and then turned the meeting over to Mr. Dorman. Mr. Dorman announced that the participants would continue discussing the remaining topics in the reports, and opened the floor to the members to provide comments on either of the reports where they have new ideas, or would like to request additional clarification or refinement. Participants offered several suggestions and comments regarding the 2015 Annual Report and the Future Conditions Report, including:

- The Annual Report Section 4.1, *Embrace Digital*, needs more direction and guidance on how to set the stage for overarching recommendations;
- The report should discuss further what the Council means by "go digital" and a digital environment, and if it should be called "embrace digital" instead;
- The TMAC should determine what terms need to be defined for both reports;
- Authors should note topics that should be included in future TMAC reports;
- Members should create a preliminary list of topics to discuss in the 2016 Annual Report;
- Authors should be careful about being too detailed and technical, and could potentially include a recommendation for FEMA to have plain language/communications for messaging to end users;
- Members should determine if there is value in being more prescriptive around who the target audience should be in dealing with uncertainty, and how that translates to the appropriate audience;
- TMAC members should keep in mind that both Congress and the Administrator are receivers of the reports; and,
- There is information in Future Conditions Report that would be useful and appropriate in the Annual Report, with regards to uncertainty. The Council should: (1) acknowledge there is uncertainty; (2) quantify uncertainty; (3) select an appropriate target for use; and (4) communicate the uncertainty.

Task & Schedule

Mr. Dorman walked through the TMAC report production schedule, noting that final comments on the orange version of topics and recommendations are due by July 27, 2015, and polling on potential recommendations will close on August 2, 2015. This will help clarify which of the proposed recommendations have the Council's vast agreement. The August 4-5, 2015, TMAC meeting will include a review of the pink version of the report, which includes all sections.

Mr. Rodriguez suggested that the TMAC create a list of the recommendations in a condensed version, or focus on the specific areas the Council thinks should be prioritized. Ms. Durham asked TMAC members to complete the recommendation proof template for the AMUs, which asks the writers to conceptualize

the recommendations by asking themselves critical questions. This AMU template has been provided to all members on the TMAC's SharePoint site.

Mr. Fraser mentioned the TMAC's vision and mission. Mr. Dorman said that the Council approved the vision and mission, subject to amendments. He said that if members feel as though these items need to be revised, they should send Mr. Dorman and Mr. Godesky about potential revisions.

Members discussed recommendations, noting that anyone can provide a recommendation for any section of the report. Mr. Ferryman asked if a recommendation would to go forward if it does not have proof. Mr. Dorman said that without proof, it may be difficult to implement the recommendation.

Report Committee Break-Out

Mr. Edelman discussed the Future Conditions Report and 2015 Annual Report, and summarized what will be included, and shared an overview of the report development process. He said that there will be a document management history with revision history, approvals, and distribution. Mr. Edelman noted that the Executive Summary will include the legislative mandate, policy terms, and considerations for future studies. The proposed introduction will include the charge from BW-12 in a call out box, and include information about the formation of the TMAC, mission and guiding principles, and program vision and goals.

Mr. Jones recommended capturing all presentations, and not just SME presentations, into a table. Participants agreed to develop a single table of presentations. Participants suggested that there might be too much information included and that several materials can be included in an appendix. Mr. Dorman said that there needs to be some context in the beginning of the report, therefore participants agreed that it might be useful to mention a presentation, then refer to the appendix for additional details. TMAC members also agreed that the meeting minutes and presentations do not need to be included in the appendix; however, an administrative record of the meetings could be distributed upon request. Several participants said that it may be useful to include this type of information on the public facing TMAC Website.

Break- Out Sessions

Annual Report Subcommittee

Ms. Durham said that during this session, the subcommittee was going to discuss the AMU organization, the order of the topics, and the overarching recommendations. She reviewed the AMU template and said that it would make sense to identify the objective up front and include why Congress should be interested in the topic and why the TMAC is addressing it. Ms. Durham said that this could be morphed into an issue statement in the report. She also explained that findings will lead to recommendations.

Discussing prioritization of recommendations, Mr. Doug Bellomo, United States Army Corps of Engineers, said that the TMAC should identify impacts from the program perspective. Ms. Blackwell said that it should be up to FEMA to determine if they can implement a recommendation; however she noted that the TMAC could provide additional prioritization and guidance in future reports. Mr. Dwayne Bourgeois, North Lafourche Conservation Levee and Drainage District, said that it is not the TMAC's position to guess what resources FEMA will use to implement recommendations; however he suggested that the recommendations could be compiled into a list of highest priority recommendations. Participants also discussed placing recommendations into categories as opposed to prioritizing them. Participants agreed to determine the approach once they have identified all of the potential recommendations.

Next, participants discussed the order of the topics and determined that the topics should be listed as follows:

- Community of Users (5.8)
- Flood Hazard Identification (5.2)

- Flood Risk Identification (5.3)
- Flood Hazard Risk Mitigation (5.7) - (change to cycle of life risk management)
- Flood Hazard Process (5.5)
- Core Data, Models (5.1)
- Uncertainty (5.4)
- Data Management and Federal Partner Collaboration (5.6/5.10)
- Cooperating Technical Partner (5.9)
- Maintenance of Funding (5.11)

Participants also discussed several terms that may require definition, including: hazard, risk, accuracy, precision, resilience, floodplain, special flood hazard layer, and resolution.

Mr. Jones also proposed the following changes to the report's overarching recommendations:

1. Deliver accurate products with reliable water surface elevations.
2. Orient products to stakeholder and user needs.
3. ~~Transition from flood hazard identification to flood risk at the property level~~. Create flood hazard products to facilitate risk assessment and mitigation actions.
4. Embrace digital.
5. Enhance State, tribal and local community engagement in flood study production.
6. Anticipate and adapt to changing conditions and technologies.

Future Conditions Subcommittee

Mr. Edelman led the Future Conditions subcommittee through their draft report, noting that while not all sections are refined, the goal is to format the report so that the items are actionable going forward. He explained the process of evaluating comments and asked the subcommittee to focus on proposing all recommendations by July 16, 2015. Mr. Edelman said that the recommendations should be actionable and divided into three categories: (1) statutory; (2) regulatory; and (3) policy implementation. Each recommendation should also include a general timeline for implementation. Participants were concerned about assigning an implementation timeline and therefore suggested that recommendations be assigned short-, mid-, and long-term timeframes so that the recommendations are not too prescriptive, but can still provide a road map for the program. Mr. Edelman explained that the Future Conditions report process differs from the Annual Report, and the report authors should be working toward a draft of the report by the August TMAC meeting, rather than focusing on the AMU format the Annual Report is developing. Mr. Edelman asked the participants to finalize their comments and proposed recommendations by July 9, 2015, aim to develop a first draft by July 20, 2015, and have the draft posted to the TMAC SharePoint site by July 27, 2015.

Public Comment Period

Mr. Godesky announced that, per FACA, members of the public were invited to provide written comments on the issues to be considered by the TMAC. No written comments were provided to the TMAC. Mr. Godesky invited members of the public to make any additional comments.

Mr. David Conrad, Water Resources Policy, provided the following comment:

> I expect that all who were here yesterday heard and appreciated the appeal from Roy to provide insight into how to meet community needs and identify a broader set of products that can help users other than insurance rate related concerns. Having a broader set of products for users has

been a continual theme in TMAC meetings. The appeal to meet community needs resonated with the idea of future uncertainty that FFRMS incorporates. It would be helpful to recognize this effort and provide appropriate commentary to provide the practical help that communities need.

HFIAA added additional requirements to BW-12 for nonstructural flood mitigation features, and those needs have not been addressed. One measure could be a program to help agencies make land use decisions for the future. I suggest looking at the EPA's report whose premise is that as we go forward with sea level rise, many shorelines will become increasingly hardened as a natural reaction to incremental changes, but in the long run it will have a major impact on the ecology of the shoreline and public safety. I am happy to make available additional material on that report, if needed.

TMAC Member Discussions, Next Steps

Ms. Durham summarized the Annual Report Subcommittee break-out discussion for the Council, detailing that the subcommittee reviewed the AMU format, categorized structural recommendations and heard feedback from FEMA IPT members. TMAC leadership reviewed how to use track changes in SharePoint and the expected deadlines for each report, and announced that clarification and instructions for the reports going forward will be sent out. The Annual Report Subcommittee discussed overarching goals and prioritization for those goals for incorporation in the Executive Summary. Members suggested that the subcommittee combine and group recommendations so that there are less recommendations that can be prioritized by which are most influential or best for the country.

Adjournment

Mr. Dorman and Mr. Godesky thanked Council members and Mr. Godesky adjourned the TMAC meeting.

Action Items

- Mr. Edelman and Mr. Dorman will complete subcommittee issue form on a representative issue for members.
- The PTS contract support will insert a heading into the report noting topics that will be discussed in future annual reports.
- Ms. Honeycutt will upload the "14 Points of Light" paper (Divoky et al.) on SharePoint.
- TMAC members will create a series of definitions and important terms in order to use them consistently throughout the report.
- TMAC members should complete the recommendation proof template for the AMUs,
- Committee leadership will send clarification and instructions for next step actions for members regarding the reports going forward.

Certification

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

John Dorman
TMAC Chair