



FEMA

# TMAC

Technical Mapping Advisory Council Meeting  
March 10-11, 2016

## TMAC Members

Juliana Blackwell  
Nancy Blyler  
Richard Butgereit  
Mark DeMulder  
John Dorman  
Leslie Durham  
Scott Edelman  
Steve Ferryman  
Carrie Grassi

Chris Jones  
Howard Kunreuther  
Wendy Lathrop  
David Mallory  
Robert Mason  
Luis Rodriguez  
Christine Shirley  
Cheryl Small

## Government Attendees

Kathleen Boyer, FEMA, TMAC DFO  
Mark Crowell, FEMA, TMAC ADFO

Lynda Pilgrim, FEMA

## Registered Public Attendees

Janghwoan Choi, Stream Methods  
David Conrad, Independent Consultant  
Susan Gilson, NAFSMA  
Gilbert Jones, Dewberry

Scott Schelling, Baker International  
Tamara Spielvogel, National Association of Home Builders  
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

## Purpose

The purpose of the meeting is to allow the Technical Mapping Advisory Council (TMAC) members to deliberate on the draft topics and potential recommendations to be incorporated in the *2016 TMAC Technical Review Report* and the *TMAC 2016 Annual Report*.

**March 10, 2016**

## Welcome/ Call to Order/ Roll Call

Ms. Kathleen Boyer, TMAC Designated Federal Officer (DFO), welcomed members to the meeting. She then introduced Mr. Mark Crowell, Federal Emergency Management Agency (FEMA), who serves as the TMAC Alternate DFO (ADFO). Ms. Boyer proceeded with a roll call of TMAC members and provided an overview of the Adobe Connect virtual meeting functions. She reminded everyone of the *Federal Advisory Committee Act (FACA)* compliance provisions. Ms. Boyer thanked the Council for their participation and turned the meeting over to Mr. John Dorman, TMAC Chair.

## **Process Schedule/Meeting Objective**

Mr. Dorman provided an overview of the agenda and said the objective of the day's meeting was to allow TMAC members to (1) review and provide direction on the *2016 TMAC Technical Review Report* definitions, scope, outline, report sections, and subject matter experts (SME); (2) review and provide direction on the *2016 TMAC Annual Report* topics, scope, outline, SMEs; and (3) discuss the report tasks, schedules, and logistics.

## **2016 Technical Review Report Discussion**

Mr. Scott Edelman, TMAC member, reviewed the potential report committee members and SMEs. He also reviewed the *2016 Technical Review Report* outline and noted that the document will be approximately 80 pages. Mr. Edelman said that, given the delivery schedule, the TMAC may not be able to spend a lot of time researching specific items. In these situations, the report committee can recommend that the TMAC examine it in a future annual report or that FEMA perform the research. Mr. Edelman also noted that if the TMAC provides recommendations in this report it will only be to enhance the program's credibility. Ms. Wendy Lathrop, TMAC member, suggested that these recommendations be called "recommendations for future enhancement of the program". Participants noted that the timeline was aggressive and Ms. Christine Shirley, TMAC member, said that while the TMAC should not abandon the *2016 TMAC Annual Report*, it must focus on the *2016 TMAC Technical Review Report*.

## **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. While the public was offered the opportunity to speak, no comments were received.

## **2016 Technical Review Report Discussion**

Mr. Robert Mason, TMAC member, questioned how the *2016 TMAC Technical Review Report* and the *TMAC 2016 Annual Report* align. He noted that the annual report will likely include a summary of the progress of recommendations from the *TMAC 2015 Annual Report*. Additionally, the report could provide additional information on the 2015 recommendations. He asked how this report relates to the *2016 TMAC Technical Review Report*. Mr. Dorman said that the *2016 TMAC Technical Review Report* will identify gaps and may relate to recommendations that the TMAC already generated in 2015.

Participants reviewed the report schedule and authorizing legislation. Ms. Carrie Grassi, TMAC member, said that the legislative language should be included in the document. She explained that the program is technically credible when the program is applied the way it is designed. Mr. Chris Jones, TMAC member, said that FEMA will not have the funding to perform detailed studies everywhere and he questioned what level of detail is required for the program to be considered credible. Mr. Luis Rodriguez, TMAC member, said that it might be interesting for the TMAC to discuss if FEMA is utilizing the right variables in considering the level of detail in studies.

Mr. Edelman said that the TMAC plans to ask FEMA for its definition of certification. Mr. Rodriguez said that the TMAC can reference FEMA's program description for information regarding certification and technical credibility. Mr. Jones said that the Council should focus on determining what is meant by "technically credible" and that it does not require them to define certification. He defined technically credible as having a structure and process in place that, when applied, results in products that provide information regarding the accuracy, precision, and resolution appropriate to the evaluated area.

Participants also discussed definitions of the following terms and concepts: quality; the national flood mapping program; technically credible flood hazard data; all areas where flood insurance rate maps are prepared or updated; concept of best value; and concept of why the mapping program can never be

completed. With regards to the phrase “all areas where FIRMs are prepared or updated”, Mr. Jones said that “updated” could be considered current maps and not necessarily future maps. Mr. Rodriguez agreed and said the TMAC should stress this point. He added that FEMA also updates through Letters of Map Revision (LOMRs) and asked if the TMAC should make a decision about looking at this process, in addition to the mapping process.

Discussing the concept of “best value”, Mr. Howard Kunreuther, TMAC member, said that it is important to determine what “best value” means. He said that the TMAC needs to be clear on the definition and what the Council means in terms of costs and benefits. Mr. Steve Ferryman, TMAC member, suggested reviewing FEMA’s defined processes. Mr. Dorman added that this relates to the TMAC’s recommendation regarding a five-year plan that speaks to which streams to study.

Next, participants discussed the concept as to why the mapping program can never be completed. Mr. Kunreuther said that the TMAC should highlight the importance of continually reviewing maps rather than saying the program can never be completed. He asked if this section will include information with regards to the National Flood Insurance Program (NFIP). Additionally, participants noted that it may be useful to define what structured-based risk is in this section.

Discussing section 5, *Review of FEMA’s Flood Hazard Mapping Program – Flood Mapping Program Structure*, Mr. Jones said that mapping the 2015 TMAC Annual Report recommendations may be distracting. He recommended focusing on the program’s structure, process, and outputs. Participants agreed to include any 2015 recommendations in an appendix; however, references to 2016 TMAC Annual Report recommendations should still be included in the body of the document.

Mr. Dorman said that FEMA needs a plan-driven structure including an organization structure. Mr. Edelman said that the TMAC should avoid discussing how FEMA is specifically organized. Mr. Dorman stated that many regions do not use the same methods for standards, guidelines, and processes. He asked if the organizational structure would impact how guidelines and standards are carried out if FEMA has autonomy in the regions, and if this would impact the technical credibility of the program. Mr. Jones said that it is important to focus on the gaps that prevent a quality product from being produced rather than FEMA’s organizational structure. Mr. Rodriguez suggested that this section focus on the structure of the program rather than FEMA’s organizational structure. Participants discussed if quality assurance/quality control (QA/QC) was part of this section. Mr. Jones said it should be included as organizations may need to have QA/QC reviews. He added that structure may refer to resources. Mr. Kunreuther agreed and said that this should also mention the resources of the public and private sector. Mr. Rodriguez questioned if this was referring to the capacity and capability for personnel to perform work and explained that the program has different avenues (e.g., Cooperating Technical Partners (CTPs), contractors, etc.) to produce work. Mr. Edelman said that FEMA may not have the best way to produce products; however, that does not mean that the program is not technically credible.

Mr. Rodriguez said that FEMA must look at the structure in a way that allows it to learn things in advance, understanding the needs and scope, and then partner with others to perform the work. Mr. Jones added that this process may help inform how to fine-tune the structure of a particular flood study update. Mr. Kunreuther said that the TMAC should help FEMA use different methods by showing them what worked in the past and how to move forward.

Participants discussed section six, *Review of FEMA’s Flood Hazard Mapping Program – Flood Mapping Program Process*. Mr. Kunreuther commented that if TMAC is going to highlight the issue of transparency, it also needs to highlight the role of uncertainty. Mr. David Mallory, TMAC member, asked if this section should be called due process as it refers to the legal process of adopting maps after the preliminary maps are issued. Mr. Kunreuther asked if the topic more so refers to the decision process, rather than due process. Mr. Mallory responded that the TMAC could speak to the transparency in the mapping process. Mr. Dorman noted that there is both the map study process and due process for mapping. He also said that this topic refers to the TMAC recommendation looking at the study production management process, which covers the entirety of the mapping process.

Members discussed the timeliness of the issuance and production of the maps. Mr. Rodriguez said there would be value in recognizing the tensions between the timeliness and the requirements. FEMA must comply with regulatory and legal requirements in the map-making process. He said that there is a required administrative process as well as requirements on the program to afford time for reviews and engagement with the community. Mr. Mallory added that the previous recommendation on moving to a digital platform could fit under this section. The TMAC could look at how moving to a digital platform would affect the time taken to produce the paper products and the time the quality review process adds to the length of time of the studies. Mr. Edelman said that there needs to be a balance between making sure that communities have enough input, and getting credible products out fast. Getting a product out quickly does not help with the credibility of a product. He also mentioned that the TMAC could look at how Letters of Map Amendments (LOMA) and LOMRs are created and shown on the map. Mr. Mallory responded that when a user goes to the map service center and enters an address, the user will see a representation of a paper map, but it will not show the LOMR. The user has to go to the National Flood Hazard Layer (NFHL) to view those changes. This is another impetus for moving to a digital platform.

Mr. Edelman asked what the TMAC thought about the transparency and communication uses and if they wish to have a recommendation on this topic. He questioned if there are enough updates during the process of the map study. He noted that this discussion is related to the communications that are released when the final product comes out and if those communications are credible. Mr. Kunreuther responded that the *Homeowners Flood Insurance Affordability Act of 2014* (HFIAA) Section 28 requires FEMA to clearly communicate full flood risk determinations to individual property owners regardless of whether their premium rates are full actuarial rates. Mapping will be a critical component on meeting that requirement.

Mr. Dorman said that the studies may take longer than five years to complete, and that adds to a perception of a lack of credibility. FEMA encourages meeting with stakeholders multiple times in order to mitigate that perception. If there are one to two touch points for meeting with the community, and the products are generated in a timely manner with the appropriate data that is needed, that is the end goal. More touchpoints should not be added. Ms. Leslie Durham, TMAC member, said that FEMA has added two to three new steps in the process; however, the problem is that the same thing is communicated each time to the public and therefore adding additional steps does not help technical credibility, it only confuses the public. Mr. Kunreuther responded that the public may want to hear what their risks are and what they can do about it. The issue is what information FEMA points out to the community.

Mr. Edelman said that the major sections will stay the same but the subtopics and organization can be modified. He also suggested that a table including applicable NFIP reform items related to process, FEMA's reported status, and TMAC's comments and response and suggested placing the table in the appendix. Mr. Edelman asked the Council if it should make recommendations about where each level of study (i.e., decision of no study, approximate study, limited detail, detail) is appropriate. Ms. Lathrop opined that she does not believe this topic belongs in this report, and that topic has a lot to do with available resources. Mr. Dorman said that the TMAC must provide some level of detail on this topic since this report talks about producing credible products. The TMAC needs to propose a methodology, whether they affirm an existing methodology, propose something new, or reference something in the *2016 TMAC Annual Report*. Mr. Edelman responded that this topic might be too in depth for inclusion in the *2016 TMAC Technical Review Report* due to time, but the Council could suggest that FEMA does this or the TMAC could include the topic in the *2016 TMAC Annual Report*.

The Council discussed if they should make a recommendation on the budget or funding. Mr. Jones noted that the TMAC should focus on credible products, rather than a credible program, and focus on the data and products produced. Members agreed that they need to put constraints around this report and any issues they want to dive into more detail around, they can include in the *2016 TMAC Annual Report*.

Members discussed the issue of timeliness and waiting for community input, suggesting that the process might need to be different depending on the area being studied. Mr. Jones noted that this is a best value concept. At some point, a decision needs to be made on what amount of time, money, and resources is

worth spending to get a particular result. Mr. Rodriguez noted that this was discussed in the *2015 TMAC Annual Report* and rather than looking for another recommendation in the *2016 TMAC Technical Review Report*, the TMAC should reference the *2015 TMAC Annual Report* and have more discussion about particular needs.

The Council discussed the topic of FEMA not updating FIRMs with light detection and ranging (LiDAR). They noted that FEMA should not be making maps in areas without LiDAR and high resolution digital elevation models. Mr. Rodriguez noted that high resolution data is critical and should be in the *2016 TMAC Annual Report*. Mr. Dorman responded that the *2016 TMAC Annual Report* includes a framework data management plan that will include this topic.

Participants discussed section 7, *Review of FEMA's Flood Hazard Mapping Program – Flood Mapping Outputs*. Members reviewed the proposed outline, but no comments were made by the Council.

Discussing section 8, *Review of FEMA's Flood Hazard Mapping Program – Quality Control*, members noted FEMA's robust QA/QC process and discussed if the process results in technically credible maps. Members suggested adding a subtopic recommending that FEMA consider adopting ISO 9001 standards for Quality Control. Mr. Jones asked if ISO 9001 would change the product, or if it is simply a label put on the product. Mr. Edelman said that it changes how the product is checked and documented, so it enhances the perceived credibility. Mr. Jones noted that a technical audience might appreciate that process, but the public will not. He said that this might not be valuable and the Council needs to decide where to focus efforts on communication and education. The Council agreed that they need additional information regarding the ISO 9001 process.

Next, participants discussed section 9, *Review of FEMA's Flood Hazard Mapping Program – Metrics*. Ms. Lathrop noted that awareness is hard to measure and wondered if awareness is related to acceptance or understandability. Mr. Edelman responded that if a map is created and people are hearing about it for the first time from their insurance company, then there is no credibility for the map program. Ms. Lathrop said that people could choose to ignore the awareness methods that are already in place.

Mr. Rodriguez said that the TMAC has specifically talked about New, Valid, or Updated Engineering (NVUE). When the public asks about the quality of maps, FEMA responds with the NVUE measure as it tracks flood hazard miles across the Nation and ensures that the flood hazard information reflects what is actually happening on the ground. He recalled an action for a briefing to the TMAC on the NVUE process, looking at how FEMA performs NVUE measurements and what the implications are. Mr. Dorman said that in developing a five year plan, the TMAC needs a true understanding that helps define whether a stream study is valid for NVUE purposes. The *2016 TMAC Annual Report* will define metrics for understanding that process. There is credibility in having an agency have a clear set of measures and objectives that it is working toward and having an ability to track and work towards that. He noted that these metrics might not be the right ones, and that the TMAC needs to look at what is currently being tracked by FEMA and review that.

Council members discussed section 10, *Review of Legislative Objectives for Technically Credible Products*. Mr. Edelman suggested including the table of legislative requirements for the flood mapping program and the current status of meeting those requirements that FEMA provided to the Council. The TMAC could add columns to the table and include the Council's view on where FEMA is in meeting the legislative requirement. Ms. Durham noted there was considerable discussion in the last TMAC meeting on the status of the legislative requirements and a lot of members disagreed on FEMA's stated status. Mr. Edelman said there is an opportunity for TMAC and FEMA to work together on this topic to ensure there is no disagreement on the status. Mr. Rodriguez responded that the table in the program description was to spur dialogue with the TMAC and that there is a lot more detail behind the status of each requirement and what went into determining the status. FEMA will provide more detail regarding the status of each requirement.

Regarding section 11, *Other Considerations*, Mr. Rodriguez noted that he does not see prioritization as a topic for technical credibility. Mr. Edelman noted that the goal is to discuss the current and future process,

but there could be an opportunity here to talk about legacy products and that for credibility, a lot of legacy products need to be brought up to current standards. Members had no comments regarding section 12, *Summary*, or section 13, *Appendix*.

### **Next Steps**

Mr. Dorman asked the Council to send their one pagers for the *2016 TMAC Annual Report* that evening so that the Council can discuss topics for the *2016 TMAC Annual Report* in tomorrow's meeting. He noted that on the second day of the meeting, members will have an initial discussion about the outline and process, and then each topic author will discuss their one pagers. Mr. Edelman said that he will develop a list of SME briefings needed and distribute a list to the TMAC during the week of March 14, 2016. Mr. Rodriguez requested that the Council let FEMA know if there is a need for any specific briefings.

### **Adjournment**

Ms. Boyer thanked members for participating in the first day of the TMAC meeting and announced that day two of the TMAC meeting will resume at 10:00 a.m. on March 11, 2016.

## **Day 2: March 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 tips for using Adobe Connect. She then turned the meeting over to Mr. Dorman.

### **Meeting Objectives/ Logistics**

Mr. Dorman reviewed the virtual meeting procedures and the agenda for the day. He explained that the Council will review the one-pagers submitted by the *2016 TMAC Annual Report* authors and make suggestions and comments for the author. Mr. Dorman requested that the Council provide positive feedback, any additional points, and suggestions for SMEs.

### **2016 Annual Report Discussion**

Mr. Dorman announced that the Council will (1) review the *2016 TMAC Annual Report* outline; (2) review final lead author and writer assignments; and (3) receive brief-outs on the report topics.

Mr. Dorman reviewed the report topics and the lead and supporting authors assigned to each topic. The report will be approximately 150 – 160 pages, with each one-pager topic constituting ten pages of content in the report. Mr. Carey Johnson, Kentucky Division of Water, and Mr. Tim Murphy, SME, will provide subject matter expertise to the Flood Hazard Identification and Risk Assessment: Study Process Management topic. Mr. Dorman clarified that each lead author will be the responsible entity and be the individual that will write the content, but they can leverage their supporting authors. Supporting authors are volunteers that can help as much as they are able; however, they are not responsible for delivering the content. Ms. Krista Bethune, AECOM, and Ms. Jen Marcy, Atkins Global, will provide technical support, providing research and assistance as needed, for the *2016 TMAC Annual Report* and the *2016 TMAC Technical Review Report*, respectively.

Mr. Dorman discussed the proposed report outline and asked if the TMAC should place all of the recommendations in one section of the report. Ms. Lathrop responded that both reports should include a section that includes extracts the recommendations and a reference to where the recommendations are contained in the report. Ms. Durham asked if each of the topics should address the particular data needs in order to help explain implications and roll up into the framework for the data management plan.

Mr. Jones responded that the data needs would also apply to the database digital display and communications topics. Mr. Dorman noted that the Council will glean the data requirements from each of the nine topics and reflect those data requirements in the framework, as well as in a list of all data that needs to be collected and maintained by FEMA, or leveraged by local government. Mr. Kunreuther strongly supported having the recommendations in one place, and noted that the challenge is going to be linking all of the topics together and suggested that the TMAC show there is a strategy as opposed to having ten separate topics. Mr. Dorman asked the Council if there is a need to have a separate section that speaks to data requirements. Mr. Edelman also asked whether the Council wants to have a placeholder in the report for a summary of the *2016 Technical Review Report*. The Council proceeded to review the report topics and the one pagers each report author submitted.

The first topic the Council reviewed was “Framework Data Management Plan”, led by Mr. Butgereit. Mr. Butgereit reviewed the proposed content and research needed for the section. He said that there are existing documents in the FEMA library regarding data management and spatial coordination, as well as State coordination Standard Operating Procedures (SOPs) that the Council can utilize. The members can leverage information from FEMA’s Risk Mapping, Analysis and Planning (MAP) site. He noted that most of his ideas are focused on State and local coordination, and he needs to reach to his supporting authors to work on the federal coordination piece. He suggested reaching to Mr. Paul Rooney, FEMA, and Mr. Rick Sacbbit, FEMA, to leverage as SMEs.

Mr. Rodriguez said that the topic seems too broad in scope. Several members agreed. Mr. Dorman said the intent is there is a need for topographic data across the country, but that is only one piece of core data that is necessary. This topic will be a discussion of what level of accuracy, detail, etc. is needed in order to provide FEMA a proposed list of datasets that need to be funded in order to be technically credible. Mr. Rodriguez responded that the scope expands beyond that notion; prioritization methodology and a five-year flood hazard data plan are different than a list of core data. Mr. Butgereit said that he thinks it is important for the Council to talk about the guidelines and SOPs for states and suggest that they are transitions to something that is live and publicly accessible that can leverage map services, State clearing houses, etc. With the explosion of geographic information system data and data sharing, FEMA can make sure the SOPs are not stale. In order to do that, the Council needs to set the stage with how things are now. Mr. Butgereit noted that the topic should also focus on data layers that are not very well addressed. For instance, if FEMA moves toward structure based risk assessments, then there will need to be a higher priority on building footprints and elevation. Mr. Rodriguez said that he sees value in developing direction or guidance for FEMA to look at for SOPs and standardization of data sharing.

Mr. DeMulder commented that the Council has the opportunity to highlight gaps that exist so that FEMA can go forward with additional requests for funding for data that is needed. Ms. Grassi suggested this topic might support some of the broader recommendations that come after it, and it might make sense to have this topic at the end of the report. Mr. Dorman noted that stream information will be critical and Mr. Butgereit said that it will be included in the topic. Mr. Jones suggested linking this topic to the recommendations from the *2015 TMAC Future Conditions Risk Assessment and Modeling Report* to ensure the Council is not missing any data they may want to capture.

### **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. While the public was offered the opportunity to speak, no comments were received.

### **2016 Annual Report Discussion**

Next, the Council discussed “Effective Communication of Hazards and Risk”, led by Mr. Ferryman. He started the conversation by providing a brief introduction on the purpose of the topic and showing how it ties to recommendations in the *2015 TMAC Annual Report*, specifically recommendation fifteen. For the identification of core stakeholders and their respective hazard and risk data information, Mr. Ferryman

used the table from last year's report and included: lenders, flood zone determination companies, insurance agents, floodplain managers, surveyors, design professional, engineers and the public. Ms. Lathrop noted that surveyors are design professionals and the list should also include property owners and developers. Mr. Ferryman noted that he is researching risk communication but needs more direction from the Council. One subsection addresses FEMA's Risk MAP program and how the program communicates risk. Mr. Ferryman explained that he is only one person in a single State and the program is implemented ten different ways across the regions and even differently within states and regions.

Mr. Jones said that the concept of communication to users is important because if the TMAC cannot solve this problem, then nothing else matters. FEMA will use the Community Engagement and Risk Communications (CERC) contract to help deal with risk communications and he suggested that a representative provide a SME briefing. Mr. Kunreuther said that he can assist with risk communication research and that there is a framework for risk communication across all topics. The Council discussed what this topic should include and noted that the *2015 TMAC Annual Report* addressed how risk is communicated and said that the 2016 report should focus on what level of accuracy the risk communications products have for the core stakeholders. Mr. Rodriguez added that *Biggert-Waters Flood Insurance Reform Act of 2012* Section 216, contains specific requirements regarding risk communication and educating communities on risk. He added that FEMA is shifting how they are aligned to address these communication requirements. Mr. Kunreuther noted that the challenge is the number of different stakeholders and the Council should focus on what kind of data and information people need to know about and how to get that information across so people pay attention to it. Ms. Grassi added that not only are property owners a stakeholder, but future property owners should also be considered.

Mr. Ferryman asked for clarification if the intent is to identify the core stakeholders, their needs, how FEMA is currently communicating the information and include a recommendation on how to communicate better, keeping in mind the legislation. Mr. Dorman responded that he would get together with the topic author and supporting authors and work on getting content together to report back to the Council.

Members then discussed the topic, "Transition Plan from 1% Annual Flood Determination to Structure-Specific Flood Frequency Determination", led by Mr. Jones. He said that he approached this topic from the point of view of what users does the Council want to reach with more detailed flood hazard information than presently provided. There are flood studies that produce information that never make it to the map. Additionally, flood zones are classified broadly, and they do not capture frequency, spatial variation and some hazards. The Council needs to bring in a SME from the lending and insurance industry and real estate world as those stakeholders need to be involved and understand the multi-frequency geospatial data produced. Mr. Jones also suggested asking Mr. Andy Neal, FEMA, to explain how rates are determined now using the available information.

Mr. Butgereit expressed excitement about this topic and said the Council might want to think about adding other ways of communicating depth, velocities, and the like. In some communities, there are flood inundation maps that may be used as a starting point for thinking about these things. Mr. Jones agreed and said the Council should also look at how other countries do things. Mr. Kunreuther said the communication and data framework fit naturally with this section and noted that the challenge is getting people to appreciate why it is necessary to move in the direction of structure specific flood frequency. Mr. Rodriguez agreed that this is an exciting topic as this is where FEMA is heading, and noted that there is synergy with the risk communications topic, urging Mr. Ferryman to stay connected with this topic. He also let the Council know that FEMA is initiating an effort to look at the way FEMA underwrites and prices flood insurance and risk rating is one of the pieces FEMA is looking at. Mr. Jones requested that Mr. Rodriguez join his subcommittee call and talk through the topic further, to make sure that all the issues are on the table and then begin an outline.

Next members discussed the topic "Flood Hazard Identification and Risk Assessment: Study Process Management" led by Mr. Dorman. He reviewed the proposed outline and noted that the Council needs to discuss this topic with someone at FEMA that works with the Mapping Information Platform (MIP). Mr. Rodriguez said that he hopes to see some content in this section with regards to the value that statutory, regulatory and non-regulatory steps add to the process. There are areas where FEMA has not

required something by law, yet it increases the technical credibility because FEMA is engaging with communities in a broader way. Mr. Dorman agreed that having transparency and giving communities opportunities to provide input is always an additive to technical credibility and the perception of credibility.

Mr. Dorman noted that he had thought about including the issue of tracking multiple projects and scalability issues, but had not thought through different watersheds. Mr. Butgereit said that it seems that FEMA has looked at the hydrology and hydraulics for a watershed as part of a series of flood studies, but the Council should encourage doing them together and show that as advantageous. Mr. Dorman said that FEMA does support and advocate doing studies on a watershed basis, but the MIP is not friendly for use with a larger river basin approach. Mr. Rodriguez responded that the Risk MAP program has a requirement for watershed, which is to do the work at a HUC-8 level. That is a key measure that FEMA reports out on.

The Council then discussed the topic, “National 5-Year Flood Hazard and Risk Assessment Maintenance Methodology”, led by Ms. Shirley. She noted that her intention for this topic is to look at existing FEMA policies and guidance with respect to maintaining FIRMs and other Risk MAP products and then compare that to the FEMA budget cycle, data resources, and current practices. She added in the 2015 recommendation to evaluate the statutory need to review maps every five years and whether maps are actually being reviewed at that interval. She also wants to look at whether existing processes will get the nation to a fully digital national flood hazard layer any time soon. She has identified places in the mapping process that ignore low population and places with older paper maps and said she is not sure how they would get into the system with the current practice. In terms of SMEs, the Council will need more information about the Coordinated Needs Management Strategy (CNMS) and NVUE. Mr. Edelman suggested asking FEMA for a presentation on how metrics are calculated and how FEMA produced the *Multi-year Hazard Identification Plan* (MHIP) under the Map Mod Program. Mr. Dorman said that the MHIP was a significant component that allowed FEMA and its partners to understand what would be studied on an annual basis.

Mr. Rodriguez said that it is important for the Council to flesh out what they are intending to aim for with this topic. Mr. Dorman said that the *2016 TMAC Technical Review Report* discusses metrics and those metrics are tied to what may be considered technically credible because of the currency of updating products. One of the metrics could be a five-year plan because it is not what is going to happen between now and five years, it is an annual revolving plan that looks out five years. Mr. Mallory mentioned that in rural areas there is a lot of under-mapping and there should be a metric that incentivizes the addition of unmapped miles. Mr. Rodriguez said that is a great point because when looking at how FEMA prioritizes work and where resources go, it is largely driven by risk which is largely around high population areas. FEMA is not accounting for the smaller areas and insight is needed there. FEMA also fields the question of “when are you going to be done?” frequently, so FEMA is changing the communication to show that flood hazards change over time. There is a legislative requirement to understand and assess needs on a five year cycle and that means understanding the change conditions on the ground and addressing whether we need to update the map. There is a constant evolution of assessing needs and updating.

Ms. Durham suggested contacting the Association of State Floodplain Managers (ASFPM) as they are updating their publication regarding flood mapping the nation. She also noted there is an opportunity to help frame the discussion on how FEMA could begin to address some of the unmapped needs. Mr. Dorman suggested removing “5-Year” from the section title and Mr. Edelman responded that the concept of multi-year is very important, so communities have a horizon to look out on. Mr. Rodriguez agreed and said that one of the areas that FEMA is aiming to get better at is the multi-year effort of planning. Mr. Dorman noted that a critical component for this topic is criteria and methodologies and suggested Ms. Shirley work with Ms. Durham due to her experience with the MHIP. Ms. Grassi pointed out that the topic seems to only look at riverine and stream miles, and not coastal. Ms. Shirley agreed that most documents and guidance do focus on the first two, and she wants to discuss the gap that exists for coastal. Mr. Rodriguez said that a lot of documentation is focused on riverine miles, but this topic should also encompass coastal areas. He added that there is a coastal CNMS that FEMA is working toward, and that the Council should receive a briefing on this topic.

The Council discussed the topic “Database-Derived, Digital Display Implementation Plan - Tasks, Process, Schedule”, led by Mr. Dorman. Participants said it would be useful to talk with FEMA about their current buildout vision for application and systems. Council members discussed potential SMEs. Mr. Ferryman recommended a presentation from CERC. Discussing the definition of database-derived digital display, Ms. Lathrop requested clarification on basic display and enhanced display and questioned why enhanced risk was different. Mr. Dorman responded that everything is digital in a database; however, there may not be enough information in the existing inventory to pull out of a technical database for engineering models. He added that different models are based on data’s availability. Mr. Dorman said that basic displays would be rolled out across the country and additional information could be added to the database if it becomes available.

Mr. Rodriguez asked about strategy versus the individual pieces of a database structure. He noted that strategy might be about how to find a balance in bringing flood hazard data into database-derived and digital display. Mr. Dorman said that the TMAC should hear from SMEs on how to leverage the available data and how it may be possible to move towards a digital environment. Ms. Grassi asked if the report will discuss other recommendations related to the digital environment. Mr. Dorman noted that the TMAC will ensure that the recommendations are coordinated. He added that going digital makes moving away from the 1-percent-annual-chance-flood line easier. Mr. Dorman said he would revise this topic based on the Council’s input.

The TMAC then discussed the topic, “Flood Risk: standards and guidelines for data, models, analysis and mapping products”, led by Ms. Blyler. She said this topic was derived from the TMAC’s recommendation regarding transitioning to a structure-specific flood risk assessment. She added that some of the assessments should include structures and explained that North Carolina, Alabama, and Virginia are already doing this. Ms. Blyler said that when data is missing, one must develop methodologies using the population. Mr. Rodriguez said that this topic should also consider residual risk behind flood control structures. Mr. Mallory said that the *2016 TMAC Technical Review Report* will also discuss residual risk.

Mr. Dorman noted that the topic, “Cooperating Technical Partners: Metrics, Process and Delegation Methodology” would be led by Mr. Johnson. Participants had no further comments on this topic.

Next, participants discussed the topic, “Future Conditions Demonstration Projects for Coastal and Riverine Areas”, led by Ms. Blackwell. Council members expressed concern regarding uncertainty and Mr. Jones said that it is important to determine how to address existing conditions before layering on future conditions. Participants suggested focusing on what is happening with pilot projects, what else is needed and capturing best practices and lessons learned. The TMAC could then identify what it can recommend for FEMA to implement with regards to future conditions. Participants also recommended reviewing riverine pilots. Mr. Kunreuther informed the Council of a Princeton University study that is examining hurricane and coastal risk and suggested that the Council review its work. Participants also discussed several potential SMEs.

Participants discussed the topic, “Flood Risk Rated Insurance - Documented Dependencies with Flood Hazard and Risk Data, Models, Methodologies”, led by Mr. Kunreuther. He said that there may be a link between this topic and earlier topics and noted that risk communication would be essential. He also added that insurance is an important component of the mapping program. Mr. Rodriguez said that the topic appears to focus on risk communication. Mr. Kunreuther responded that insurance premiums are important to risk communication. Mr. Rodriguez agreed that premiums are important and recommended linking this discussion with Section 28 of HFIAA. Mr. Dorman suggested revising the topic title to be “flood insurance rating”. Mr. Jones said that estimates could be improved if people looked at the damage function and members said that this would be discussed in the future. Ms. Small said that if individual structure risk is examined, it is important to think about what it would look like on a regulatory map and how it would impact the lending community in terms of compliance and regulation. Mr. Kunreuther said that the map gives a notion of hazard but one must determine the individual property.

Mr. Rodriguez also informed the TMAC that FEMA is moving away from using the term “delegation” because it increases a vulnerability with the CTP program. Mr. Rodriguez will provide the TMAC with a term to use instead of “delegation”.

### **Next Steps**

Mr. Dorman reviewed the *2016 TMAC Annual Report* production schedule. Ms. Bethune will distribute the pens down dates for the report. Mr. Edelman noted that they have identified lead authors for every section in the *2016 TMAC Technical Review Report*.

Mr. Rodriguez said that FEMA’s priority is the *2016 TMAC Technical Review Report*. Mr. Dorman questioned if the TMAC should reduce the number of topics in the *2016 TMAC Annual Report* in order to have more resources available for the *2016 TMAC Technical Review Report*. Ms. Lathrop said that she did not want to eliminate topics; however, some of the topics could be combined. Mr. Edelman said that the report production time for the *2016 TMAC Annual Report* could be reduced allowing the Council more time to develop the content. Mr. Dorman said that he will work with Ms. Boyer, Mr. Edelman, and Ms. Durham to determine the timing of the reports.

### **Adjournment**

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

### **Action Items**

- Mr. Edelman will develop a list of SME briefings needed and distribute a list to the TMAC during the week of March 14, 2016.
- TMAC members should let FEMA know if there is a need for any specific briefings
- Mr. Dorman will revise topic 5 in the 2016 TMAC Annual Report based on the Council's input.
- FEMA will provide more detail on the Flood Mapping Program Description Appendix 2 and Mr. Edelman will set up a Subcommittee meeting to receive the briefing
- The TMAC will contact ASFPM to see if they are releasing a new Flood Mapping for the Nation report.
- Mr. Rodriguez will provide the TMAC with a term to use instead of “delegation”.
- Ms. Bethune will distribute the pens down dates for the 2016 TMAC Annual Report.
- Mr. Dorman work with Ms. Boyer, Mr. Edelman, and Ms. Durham to determine the timing of the reports.

### **Certification**

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



*John Dorman*  
TMAC Chair