State of Texas Resiliency Working Group

Summary Report on April 27th, 2021 Virtual Meeting

Attendance

E'Lisa Smetana
Anand Puppala
Bales, Genevieve (FHWA)
Birt, Andrew
Brigida Gonzalez
Bruechert, Tom (FHWA)
Burns, Mike
Calvo, Eduardo R. (MPO)
Carlos Calle
Carlson, Todd
Catherine Wolff
Charles Airiohuodion
Chelsea Schultz
Christeen Pusch
Christi Bonham
Christie Gotti
Christopher Nelson
Cody Balzen (Guest)
Dan Rudge
Daniel Carrizales
Darcie Schipull
Fauver, Kirk (FHWA)
Frawley, Bill
Gage, Stephan
Gick, Brittney
Hofheins, Major
Ibrahima Tembely
Isbell, Allie
Jackie Ploch
Janie Temple
Javier Dominguez
Jeffrey English
Jeffrey Neal
Jessica Castiglione
Juan Pena
Karen Burkhard
Ken Vandyne
Kent McLemore
Kris Knoll
Laura Norton
Luis M. Diaz
Maley, Barbara (FHWA)
Mansour Shiraz
Maria Champine
Marty Boyd
Melany Rodriguez
Miller, Matt
Mohammad Al Hweil
Morgan, Justin (FHWA)
Overman, John
Perez, Sonia A.
Plourde, Harrison T.
Prozzi, Jolanda
Raymond Sanchez Jr
Robert MacDonald
Robert Ramirez
Sara Garza
Stephen Keen
Torcat, Adriana
Travis Muno
Van Slyke, Chris
Vo, Kathryn
Yuan,Faxi

Introductions
Jeffrey Neal made brief introductory remarks in reviewing the agenda.

Presentations

Texas MPO Resiliency Survey Results

Matthew Miller, Texas A&M Transportation Institute

Matthew Miller made the following key observations:

1. From survey results, the highest among the resiliency planning activities were the identification of alternative routes if vulnerable routes become impassible.
2. Lowest among them are determining risk likelihood or risk probabilities of extreme weather events.
3. On overall rankings parsed by small, medium, and large MPOs one item that went against the trend for small MPOs was number 14- Identifying weather trends and extreme weather events.
4. On the higher rank items, small mpo's went against the trend and did not identify as a higher ranked item, number 5, assessing asset vulnerability to climate change.
5. For metro MPOs everything came across as great. The lowest ranked item was 3.5 for identifying data for climate, extreme weather, and man-made events.
6. Medium MPOs placed a higher score on determining the 16, risk likelihood of major human-made events and 12/13 which is determining the regional response to major disruptions from extreme weather and man-made events. 16 may assume that this element falls along the traffic operations and the 7 major sources of unreliability which may filter in since medium MPOs are on the hook for CMPs as TMAs. 12 and 13 reiterate this focus for medium MPOs attributed to planning for resiliency for the recovery operations that occur around higher frequency human-made disruptions vs. the hardening of assets to effects of major disruptions from more infrequent extreme weather and climate change.
7. Comparing the top 5 resiliency activities among MPOs, we find that alignment between small and medium MPOs is achieved with identifying alternative routes if vulnerable routes become impassible as their number 1, while for large MPOs the first priority is developing an adaptable resiliency framework.
8. The top 5 scores compared against one another indicate that a step-by-step framework and a web portal with data and information gathered could be the next approach for the resiliency working group to focus upon.
9. In comparing geographic distributions among MPOs, N/NE favored number 3- the application of analytic strategies as their highest score.
10. The lowest score was found within coastal MPOs for 11 and 17: identifying primary human made regional factors and analyzing the impact of extreme weather events. The highest rank for coastal MPOs was 3.5 for assessing transportation vulnerability to climate change and extreme weather.
11. Central Texas MPOs favored 1 and 3
12. West Texas scores highest favored 1, 13 (estimating response to human made events), and 16 (risks of human-made events occurring), with 18 (risks of climate change/extreme weather) being among the lowest.

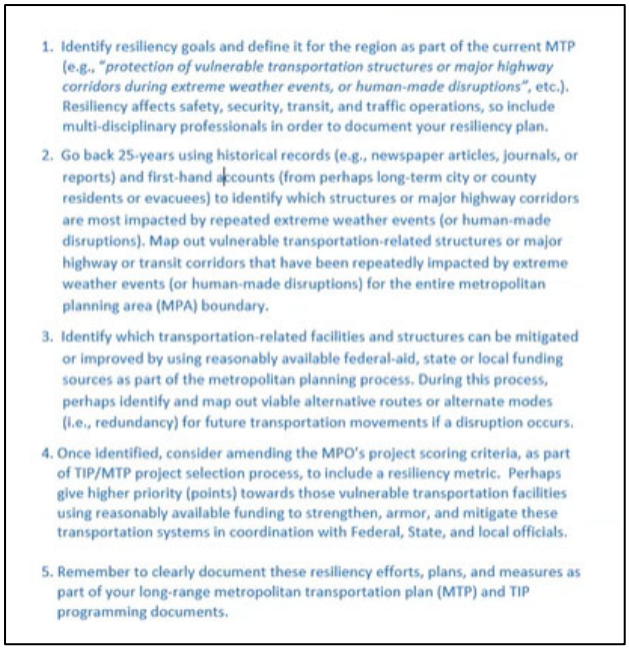
13. TTI used poll everywhere results to determine how MPOs considered the short, medium, and long term of each of the ranked 18 items. This can be used to further prioritize items that fall within a short term ranking to filter through all of the 18 items.
14. From poll everywhere results, web portals, and development of geographically distributed sub-groups for listening sessions and development of resources geared to pertinent ranked resiliency activities/elements were 100% agreed upon as paths forward by live survey respondents.
15. 100% of the respondents are interested in developing separate, stand-alone resiliency plans and this could be a topic covered in the individual listening sessions with geographic groupings to further sketch out the scope of such stand-alone plans.
16. Poll everywhere results revealed that MPOs mainly ranked items lower because they did not have the resources to cover them. Those ranked higher, were done so because they were a higher need, not because they were already achieved or delivered upon.

Proposed Basic Resiliency Framework Action Plan

Kirk Fauver
FHWA

Kirk Fauver made the following key observations:

1. This five-step framework combines survey results with what we see around the nation with what other MPOs have done to address and incorporate resiliency into their planning efforts.



1. Identify resiliency goals and define it for the region as part of the current MTP (e.g., *"protection of vulnerable transportation structures or major highway corridors during extreme weather events, or human-made disruptions"*, etc.). Resiliency affects safety, security, transit, and traffic operations, so include multi-disciplinary professionals in order to document your resiliency plan.
2. Go back 25-years using historical records (e.g., newspaper articles, journals, or reports) and first-hand accounts (from perhaps long-term city or county residents or evacuees) to identify which structures or major highway corridors are most impacted by repeated extreme weather events (or human-made disruptions). Map out vulnerable transportation-related structures or major highway or transit corridors that have been repeatedly impacted by extreme weather events (or human-made disruptions) for the entire metropolitan planning area (MPA) boundary.
3. Identify which transportation-related facilities and structures can be mitigated or improved by using reasonably available federal-aid, state or local funding sources as part of the metropolitan planning process. During this process, perhaps identify and map out viable alternative routes or alternate modes (i.e., redundancy) for future transportation movements if a disruption occurs.
4. Once identified, consider amending the MPO's project scoring criteria, as part of TIP/MTP project selection process, to include a resiliency metric. Perhaps give higher priority (points) towards those vulnerable transportation facilities using reasonably available funding to strengthen, armor, and mitigate these transportation systems in coordination with Federal, State, and local officials.
5. Remember to clearly document these resiliency efforts, plans, and measures as part of your long-range metropolitan transportation plan (MTP) and TIP programming documents.

2. Bill Frawley, Jolanda Prozzi, and Kirk Fauver developed this and sent it to several Texas MPOs to get their input.
3. Resilience covers many divisions and disciplines to document resiliency plans. So identifying everyone responsible is a good step.
4. Second step is go back 25 years and identify records and structures/major highway corridors most impacted by major weather events and human-made disruptions. So once identified we can map out which of these are heavily impacted within the metropolitan area boundary.
5. Third step is identifying which facilities can be improved using available funding sources within the metropolitan planning process. Prioritizing them in planning process to level that get listed in plan, and TIP, and mapping out viable alternative routes/modes/or other viable movements around disruptions.
6. Once identified, consider amending project scoring criteria including a resiliency metric perhaps giving points.

7. Document these efforts as part of MTP and TIP programming documents to meet FAST act requirements for MTP and TIP.

The audience had several questions for Kirk including:

1. *E'lisa Smetana, Abilene MPO: Going back 25 years using historic records will be difficult. Is there help doing it? How do we go about doing it? 25 years not sure our local newspaper has that online and since moved offices we don't even have a local office in Abilene.*
   Kirk, Matt, and Jeff Replied: Hoping can use TTI to supplement through an IAC with TxDOT to assist MPOs. That is one avenue. Other avenue is to look in your PL funds to see if have funds for outside vendors/consultants to help you do that work. It was envisioned to be a low-resource activity. FHWA has kept records on the type and variety of billion-dollar disasters to point where can get summaries of events back to 1980. States have similar resources that have finer detail down to region or county-by-county assessment. Also resources we can pull together that National Weather Service Forecast offices do for storm damages and have historical records of that online we can easily grab. I agree, its overall going to be a low-resource output, for those areas where we might not have that back history we can supplement with other information sources. Some events happening on a regional scale in one region may connect with other regions. The web portal can filter into this conversation in that case.
2. *Major Hofhein advised that universities with transportation engineering programs could be primary sources for us to go to?*
   Kirk Fauver and Jeffrey Neal Replied: And libraries often have publications, newspapers, articles that are on microfiche. So you can get assistance there. Thinking out loud. There are other options to find those articles. Idea is that you use this information to understand where are you're most vulnerable locations that are impacted frequently or assets damaged for various reasons. Helps identify where are most vulnerable locations. Other idea is perhaps to interview your district engineer and perhaps former district engineers who have been there a long time, maintenance foreman, maintenance district staff may provide you with better data/information on locations of repeat impact. Especially because once you locate those vulnerable facilities you can find out why- is it materials? Elevation? A variety of other factors of importance that need to be accounted for to truly get at how vulnerable they are and their criticality in resuming normal traffic operations.

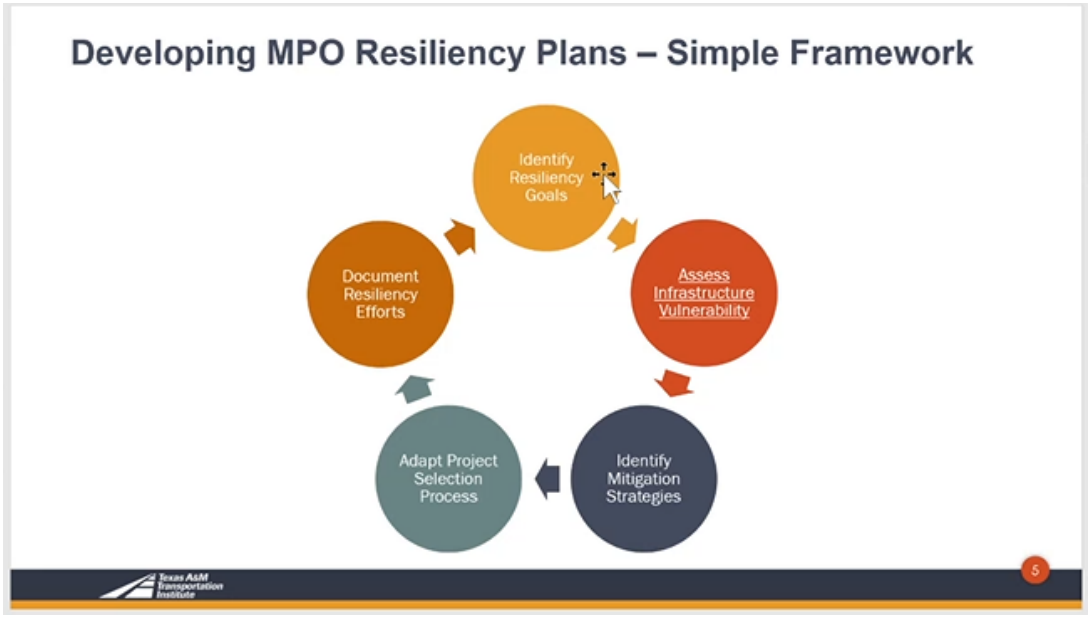
Data and Tools to Assist in Developing Metropolitan Planning (MPO) Resiliency Plans

Jolanda Prozzi and Andrew Birt
Texas A&M Transportation Institute

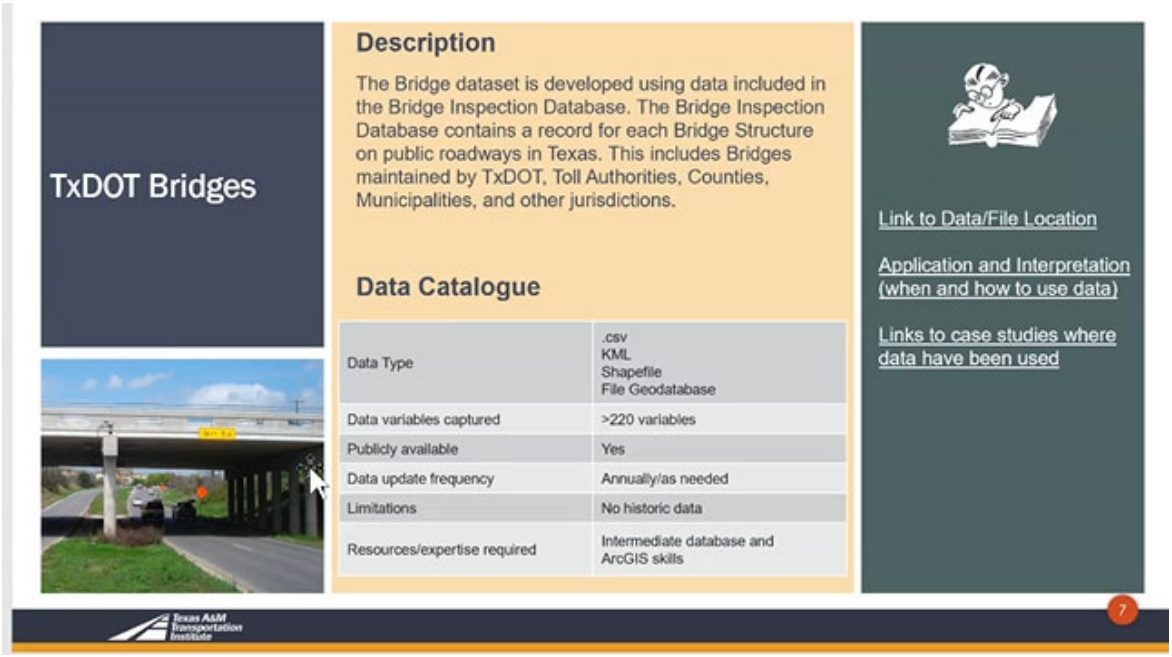
Jolanda and Andrew made the following key observations:

1. Responding to two issues: 67% of survey responses identified the need for data, and applying it to incorporate in resiliency planning. 56% of survey responses identified the need for tools and methods to analyze regional transportation system risk.

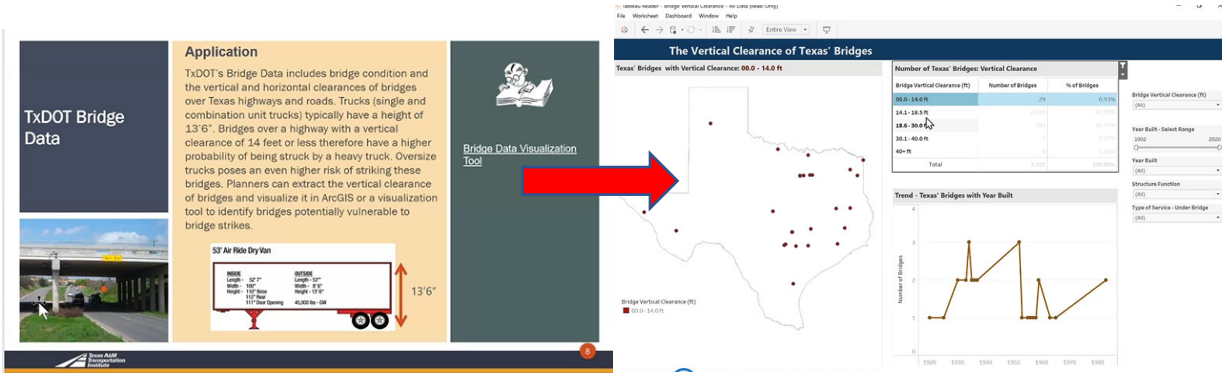
2. Jolanda detailed a concept to design the web page on the 5 step framework with a landing page based on the framework.



3. Within the landing page one would click on the framework to take the MPO user to further lists and issues, which may include bridge strikes and a landing page on use of bridge data.



4. One additional click on the application/interpretation link within would bring MPO to a page on how its used, that also contains a bridge data visualization tool useful statewide.



5. Andrew made comments linked to how information and resources on flooding disruptions can be used within this web portal concept.
    a. He described how H-GAC work done to merge LIDAR-based elevation data with RHINO and flood data enabled a complex data set which could be made available on a web portal.
    b. Andrew described Atlas 14 data to examine storm impacts but that the data was not usable for planning purposes. That there is an opportunity in the web portal to render this data usable for MPOs involved in planning for resiliency.
6. Andrew detailed HGAC (https://datalab.h-gac.com/resilience/) and Texas Air Quality websites (https://txaqportal.org/analytics) as web portal examples of how more complex data sets can be rendered into something highly functional and easily usable for planning purposes.
7. Andrew advised key considerations for data portals are: A) assembling data in one place; B) cataloguing and inventorying data; C) simplifying cleaning data; D) developing host tools for real time analysis and visualization; and finally E) developing associated case studies and use frameworks.
8. Develop something useable by MPOs, defensible to stakeholders and agreed to by leadership in TxDOT and the commission as the authoritative source for transportation resiliency planning, (e.g., something akin to the Texas 100 most congested reports).

The audience had several questions for Jolanda and Andrew including:

1. *Matt Miller asked among MPOs given examples of flooding and bridge strikes and some of the data that needs to be boiled together, what other high priority data would be first in line or first in queue to put into this web environment?*
   Jeffrey Neal replied: Primary attempts started with identifying vulnerable and critical facilities are the key. Understanding the weather events causing disruptions, considering locations these disruptions, and details about system elevation, connectivity issues, and other attributes tied to these events. The resiliency research tool for H-GAC really provides a lot of those data types you would need that does go to a level of sophistication some MPOs need to build up for. It really provides a great starting point when looking at sea level rise, storm surge, and flooding as primary events you are trying to deal with. We can come up with similar information for wildfire, drought, events like that we can identify data and necessary resources to build up to same level of sophistication that H-GAC has done with storm surge, flooding. Perhaps our primary push is to find those data sources.

2. *Major Hofheins stated that we are at the same age-old issue of staff and funding. If we can get at a portal that won't take us a month to boil down- great. But if we have to take it further and boil it down for use in planning it enters staff constraints and resource limitations picture. So it would really need to be usable at the portal level and something that can be brought into a planning document for use before TAC and Policy boards.*

General Discussion on Working Group Direction

A) Establishing TxDOT Resiliency Point of Contact

1. Jeffrey Neal advised that if we establish a TxDOT point of contact that:

a. a lot of work MPOs do will better inform asset management and planning needs on the part of TxDOT districts and divisions.

b. Someone we can work with in terms of data and how we connect with data TxDOT already has.

c. Someone who helps MPOs get access to TxDOT information on pavements, bridges, elevations of structures, as-built drawings,

d. Someone who helps facilitate conversations with district or area office engineers as resources especially when it comes to identifying weather events and damage to infrastructure.

e. Someone who can collaborate on use of regional or statewide databases and applying their use to a larger scale for on-system or NHS facilities.

f. Perhaps there is some shared funding approach to this teaming up with TxDOT.

2. *Matt Miller asked if anyone from TxDOT is willing to offer a response on who is the point of contact on this resiliency topic?*

Janie Temple with TPP Traffic analysis replied that TxDOT really needs a host of people to cover the resiliency needs of the working group. She further advised that there really needs to be a coordinator (TxDOT?) assigned to pull in the various staff and data resources TxDOT maintains. For example, as builds and elevations coming from another group than some other things mentioned like flooding and air quality.

3. *Jeffrey Neal asked if there is a TxDOT group or team feeding into the TAMP that also covers resiliency aspects. Could we have conversation with folks who represent different pieces of the TAMP group that could also inform resiliency?*

Janie Temple replied that this TAMP group may be an approach that could work. She recommended the Texas Resilience Working Group submit a request to Peggy Thurin and David Freidenfeld cc'ing Janie Temple and Michael Chamberlain to pose the question on who would be the resiliency coordinator to pull together various TxDOT resources.

B) Listening Sessions with Regional MPOs

1. Matt Miller advised that the idea for smaller geographical region listening sessions is to cover some of the topics related to A) prioritizing resiliency ranked items for resource development, and B) web portal

developments tied to funding a web portal, and its design, and C) 5 Step Framework discussion and place in prioritizing ranked items and web portal.

N/NE: NCTCOG, Waco MPO, Tyler MPO, Longview MPO, Texarkana MPO, Sherman Denison MPO, Wichita Falls MPO.

W: San Angelo MPO, Laredo MPO, Amarillo MPO, Lubbock MPO, PBMPO, EPMPO, Abilene MPO

Coastal: CCMPO, RGVMPO, VMPO, SETRPC, HGAC

Central: AAMPO, CAMPO, KTMPO, BCSMPO

2. Major Hofhein with San Angelo MPO- agreed that coming to consensus is difficult in a large group setting and supports smaller listening sessions with an aim to reassemble together once we have individual regional consensus as path forward on developing a web portal and agreed to division of MPOs by geographic regions.

3. Cameron Walker with PBMPO: supported listening sessions.

4. Jeffrey Neal liked the N/NE Texas area as set up.

5. Dan Rudge with Bryan College Station indicated to check with Waco staff on whether they want to be in North/NE or Central region.

6. Kirk Fauver advised to add resiliency portal discussion as an agenda item to the listening sessions, and within it- what types of resiliency analysis questions do we want addressed in the design of the web portal- e.g., asset management, long term vs. short term resiliency issues beyond naturally occurring extreme weather events.

7. Within portal discussion, ensure a resource or resiliency staff contact page is added for each MPO and stakeholder agency, like FHWA, TxDOT divisions, districts, municipalities, and counties.