

# Louisiana Supply Chain & **Transportation Council**









# Louisiana Supply Chain & Transportation Council

# FINAL REPORT AND RECOMMENDATIONS

To

The President of the Senate

The Speaker of the House of Representatives

The Chairperson of the House and Senate Committees on Transportation, Highways, and Public Works

Secretary, the Department of Transportation and Development

March 1, 2019

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# LETTER FROM THE CHAIRS



# Capital Region Planning Commission

Ascension • East Baton Rouge • East Feliciana • Iberville • Livingston • Pointe Coupee • St. Helena Tangipahoa • Washington • West Baton Rouge • West Feliciana

February 27, 2019

Senator John A. Alario, Jr. President of the Senate

Representative Taylor F. Barras Speaker of the House

Honorable Members of the Senate Transportation, Highways and Public Works Committee

Honorable Members of the House Transportation, Highways and Public Works Committee

Department of Transportation Secretary Shawn Wilson

Senate Concurrent Resolution 9

Dear Honorable Members of the Louisiana Legislature and Secretary Wilson:

In response to Senate Concurrent Resolution 9, we submit for your consideration a report containing the work, findings and recommendations of the Louisiana Supply Chain Transportation Council (SCTC).

This report and the information contained within are made possible by Restore Louisiana funding from HUD via the Office of Community Development (OCD).

OCD notified the SCTC in September 2018 that it would receive funding to complete this report and work on six of the eight critical tasks that the SCTC identified in order to complete its mission. As such, it can continue its work through at least March 2020, and we expect to secure funding for work beyond

While work on completing our critical tasks is still in progress, we believe that you will find this report useful in drafting legislation, setting policy and identifying issues that merit further investigation.

The members of the SCTC believe that federal and private entities are increasingly eager to invest in resiliency rather than pay a greater price for disruptions and in recovery. To our knowledge there is no other group in the U.S. that brings together state, federal and private sector freight and supply chain stakeholders to work on resilience. That fact puts Louisiana ahead of other states in obtaining federal and private resilience investments. For these reasons, and the fact that the SCTC has funding through March 2020, we request that another resolution be drafted to recognize the Chain Transportation Council for 2 years, with a report due prior to the 2021 session of the legislature.

Sincerely,

Carmack M. Blackmon

CARMACHA. BEACKMON

Co-Chairmen of the Louisiana Supply Chain Transportation Council

CMB/JCS:dpw

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# **EXECUTIVE SUMMARY**

The Louisiana Supply Chain Council (SCTC) was created from a recovery strategy identified following DR-4263-LA. The strategy called for experts of the public and private sectors to work together on key aspects of increasing resilience in Louisiana road, water, and rail transportation.

The concept of a public-private partnership came about through face-to-face interaction between ERSF, DOTD, and LED at an event sponsored by NDRF and State of Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) to encourage dialogue between state and federal agencies involved in recovery. ERSF subsequently scheduled an initial meeting in mid-August 2016 with DOTD, LED, the Infrastructure Recovery Support Function of NDRF, and the U.S. Department of Transportation to discuss implementation of an initiative named the Louisiana Supply Chain Transportation Council (SCTC).

Since its inception, the council has continued to seek new funding and programs to ensure the strength and resiliency of the supply chain in Louisiana. The SCTC will continue to meet regularly and work diligently on the ultimate goal of the development of a 20-year transportation resilience and competitiveness plan to both strengthen transportation and enhance resilience of the Louisiana supply chain and commercial transportation system.

This Louisiana Supply Chain Council Report is being published based on requirements of SCR9 and SCR99. The report that follows provides the Louisiana Legislature with a snapshot of the work of the SCTC since its creation in 2016. This report is divided into six primary parts.

The first part of the report provides an overview of the SCTC and how it was initially created following the two major flood events of 2016. The History of the SCTC includes the initial people and agencies involved and recounts how the SCTC identified its primary The history also included a high level summary of the SCTC's activities over the tasks. last two years.

The second part of this report is focused on the two Senate Concurrent Resolutions that were passed by the legislature in the 2017 and 2018 Regular Session of the Legislature. These two Senate Concurrent Resolutions provide the SCTC's membership, its mandate to develop recommendations for improving the supply chain post disasters, and a requirement to publish a report to be provided to the House and Senate, along with relevant committees.

The third part of this report provides an overview of each of the four transportation modes and their significance in Louisiana. This section is followed by a summary of the three proposals for funding that have been submitted by the SCTC in 2018, two which were partially awarded and are providing the foundation in which the SCTC will answer its primary tasks and provide recommendations on improving the resiliency of the supply chain.

The last two parts include an overview of the next critical steps for the SCTC, which includes acquiring an additional two years of authority by the Legislature and some initial recommendations that have been developed as part of the ongoing work conducted by the SCTC.

The last two years have proven to be fruitful and have already generated funding for the SCTC to conduct research on the identification of single points of failure for the transportation system in Louisiana. With the continued support of the Legislature and the participating members of the SCTC, important work in the creation of a more resilient supply chain can be achieved. This work will be important in helping identify and prioritize future projects to help ensure the supply chain is not disrupted during future events.

# HISTORY OF THE SUPPLY CHAIN TRANSPORTATION COUNCIL

#### **Background**

Louisiana possesses an abundance of natural and man-made transportation assets which form overlapping networks that are vital to Louisiana's economy. These systems are vulnerable to the same hazards as the people and property of Louisiana. This was demonstrated in March 2016, when Louisiana endured two 1,000-year rain events that flooded 80% of the parishes in the state. The flooding led to Federal Disaster Declaration DR-4263-LA. Key stakeholders who were contacted by the Economic Recovery Support Function (ERSF) of the National Disaster Recovery Framework (NDRF) during compilation of the Mission Scoping Assessment (MSA) to support the disaster declaration, stressed freight-flow stoppage caused by closure of Interstate 10 at the Louisiana-Texas border and portions of Interstate 20 and Interstate 49 during and following the flooding events. Impacts were exacerbated by closure of an additional 400+ U.S. and state highways and parish (county) and local roadways, some of which were impassable for extended periods of time.

The Mission Scoping Assessment also learned of the almost month-long closure of two Class-I railroads, Kansas City Southern and Union Pacific. With these railroads out of service, numerous other short-line and connecting railroads were impacted in a ripple effect. Waterborne commerce was also impacted, with extended closure of the J. Bennett Johnston Red River Waterway and the Ouachita River Waterway due to silting. These two rivers provide water for some of the state's most productive farmland and connect to the Gulf of Mexico via the Mississippi River. In summary, DR-4263-LA flooding resulted in significant disruption to commerce throughout Louisiana. These disruptions were reported as a key finding in the Mission Scoping Assessment.

After a Mission Scoping Assessment is completed, a Recovery Support Strategy report is compiled. For the DR-4263-LA declaration, one of the recovery strategies identified was for experts, public and private sector, experts to work together on key aspects of resilience in road, water and rail transportation. The primary action step of this strategy was to "Form a supply chain network to engage businesses and agriculture interests in support of transportation resilience and enhanced transportation systems, in partnership with the Louisiana Department of Transportation and Development (DOTD)" and Louisiana Economic Development (LED), ERSF's primary state partner in the DR-4263-LA recovery effort.

The concept of a public-private partnership came about through face-to-face interaction between ERSF, DOTD, and LED at an event sponsored by NDRF and State of Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) to encourage dialogue between state and federal agencies involved in recovery. ERSF subsequently scheduled an initial meeting in mid-August 2016 with DOTD, LED, the Infrastructure Recovery Support Function of NDRF, and the U.S. Department of Transportation to discuss implementation of an initiative named the Louisiana Supply Chain Transportation Council (SCTC). During the meeting, the rain began to fall that resulted in a second flooding event that resulted in a second flood disaster declaration, DR-4277-LA. During the meeting, Louisiana DOTD provided ERSF with contact information for the Louisiana Freight Advisory Council as a potential starting point for SCTC membership.

#### Leadership

Disruptions created by the DR-4277-LA disaster (August 2016 Floods) caused a twomonth delayed in action to form SCTC. However, the disaster experience also created more incentive to form the council and work together. As the situation began to stabilize, an initial outreach effort was made in November 2016 to contact individuals recommended by DOTD via email. The initial emails in this effort read as follows:

I am reaching out to you because Eric Kalivoda, Assistant Secretary of the Louisiana DOTD gave me your name due to your participation on the Freight Advisory Council. I am currently working under a contract with the U.S. Department of Commerce Economic Development Administration, coordinating agency for the Economic Recovery Support Function under the National Disaster Recovery Framework, to work on economic recovery from March and August flooding events.

From your position with [representative's organization name], I am sure you are aware the referenced flooding events severely disrupted commerce throughout Louisiana. In addition to numerous road closures, two class one railroads were out of service for more than 30 days, and the Red and Ouachita Rivers were closed for an extended period. I'm sure you saw many other instances of commercial vehicles unable to move products due to road and bridge closures. To put some of the economic consequences into context, a typical barge operating on the Red River can carry the equivalent of 58 large semis. When closed to commercial navigation, businesses must use other modes of transportation, which are significantly less efficient.

To address these issues, one of the priority recovery initiatives is the formation of a Supply Chain / Transportation Council. The objective of this council is to increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events. Many groups have been formed to address transportation issues in Louisiana; however, the excellent work of these organizations is generally light in resilience to negative impacts to commercial transportation from disasters.

We are still in the process of organizing the council. Can I count on your participation? Please call me if you have any questions. I have also attached a summary of the council with more details, including examples of similar endeavors that have worked well in other states.

In addition, organizers reached out to the Committee of 100 for Economic Development, Inc., an advocacy organization representing over 250 of Louisiana's leading businesses. The CEO of the Committee of 100 agreed to join the Council and assist in recruiting key business and transportation organizations such as the Louisiana Motor Transport Association and the Ports Association of Louisiana. ERSF's primary state recovery partner, Louisiana Economic Development, played a key role in the Council's formation with ERSF supporting their effort, thus embracing the NDRF principle of local (state) primacy.

#### **Supply Chain/Transportation Council**

Goal: To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events.

- The council will be open to any public or private organization that is involved with or represents supply chain and/or commercial transportation interests. These include the Institute for Supply Management, Council of Supply Chain Management Professionals, and Supply Chain Council Louisiana Chapters, the Louisiana Trucking Association, and the DOTD Transportation Task Force.
- At an initial meeting, organizers and invited participants will discuss how the council should be structured, and define its mission and goals, from which specific activities may be undertaken. To assist in this effort, participants will be provided with case study examples and will discuss elements that may be applicable to Louisiana from examples of successful supply chain collaborative efforts such as:
  - 1. The North Texas Supply Chain Council, a partnership of government, academia, and industry intended to strengthen economic development, educational opportunities, and job creation. NTSCC has been active in pursuing grants and other resources to advance the competitiveness of supply chains in the region.
  - 2. The North Carolina Piedmont Triad Logistics and Distribution Roundtable, which is focused on transportation planning and logistics workforce training.
  - 3. The Columbus, Ohio Regional Logistics Council, whose mission is to improve the logistics infrastructure, foster a "logistics friendly" business environment, and bring more logistics technology to the region.
  - 4. The Mexicali, Baja California Mexico region's Logistics Council, which is working toward implementing an Intelligent Transportation System that provides predictive routing to avoid congestion in peak distribution hours.
- In addition, discussion of opportunities for collaboration between the public and private sectors, such as working together in determining highest priorities in road, rail, and water transportation routes, advocating strategic transportation investments in making priority routes more resilient, and exploring how companies may assist each other in keeping commerce moving among and between them in times of disaster.
- From those discussions, a facilitated session will be held to develop a five-year action agenda.
- Ultimately, the SCTC will develop a 20-year transportation resilience and competitiveness
  plan to both strengthen transportation and enhance resilience of the Louisiana supply
  chain and commercial transportation system.

ERSF received several positive responses to the initial emails to the individuals recommended by DOTD. One of the most notable early affirmative responses was from the Louisiana Railroads Association. At the suggestion of ERSF Field Coordinator Vicki Hendershot, Dr. Stanley (Stan) Napper, Vice President of Louisiana Tech University, was asked, and agreed, to be the initial Chairman of SCTC.

Other early members agreeing to join SCTC included:

- Louisiana State University, Stephenson Disaster Management Institute
- University of Louisiana-Lafayette National Incident Management Science and Technology (NIMSAT) Institute
- Ports Association of Louisiana
- Big River Coalition
- American Waterways Operators
- Louisiana Association of Planning and Development Districts

SCTC members represent all primary modes of surface and waterway transportation in Louisiana. Another important addition was the Stephenson Disaster Management Institute (SDMI) at Louisiana State University. SDMI data was utilized and cited extensively in ERSF's work on DR-4263-LA and DR-4277-LA.

# **Organization**

An organizational meeting for the Council was held February 21, 2017. The agenda for the organizational meeting was as follows:

- Welcome and Introductions
- Presentation outlining the need for a public-private partnership dedicated to more effective and resilient commercial transport in Louisiana
- Development of Mission and Strategies for Action
- Lunch and Development of Three-Year Goals
- Creation of Working Groups
- Call to Action Delivered by Michael Olivier
- Summary and Next Steps

A critical first step taken at the organizational meeting was ensuring that the most influential member organizations would be present and represented. The CEO of the Committee of 100 delivered a call to action as part of the agenda, which helped set the stage for future actions and gave a private sector prospective on the importance of the

work to be performed. Had this critical first meeting not gone well, the initiative might not have moved forward. With holidays and busy January schedules, the February 21st date was the earliest available to ensure maximum participation of influential members.

During the organizational meeting, members provided contact information, which was distributed among the group. This was critical to initiate communication, collaboration and networking.

The Mission statement adopted during the organizational meeting was taken directly from the ERSF Recovery Support Strategy: "To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events."

Based on further discussion among the group, eight areas of focus were defined:

- 1. Intrastate Transportation
- 2. Interstate International
- 3. Carriers Public/Private
- 4. Shippers Producers/Distributors
- 5. Interdependence/Cyber
- 6. Technology and Innovation
- 7. Human Resources Logistics
- 8. Communication/Collaboration

# **Member Engagement**

On March 7, 2017, the Director of the LSU Stephenson Disaster Management Institute (SDMI) emailed ERSF and active members of SCTC outlining eight critical tasks for SCTC to consider undertaking. The eight tasks are summarized as follows:

- 1. Identify known single points of failure for all transportation nodes: Triggers, impacts, alternatives
- 2. Identify known single points of failures that have experienced repetitive flooding.
- 3. Identify single points of failure of interdependency infrastructure.
- 4. Identify governing authorities across the state impacting transportation.
- 5. Consolidate all known transportation nodes mapping data.
- 6. Identification of future disruptions.
- 7. Establish on the fly routing during disasters.
- 8. Support all the universities in the state by providing a list of research priorities to enhance resiliency for the transportation sector.

With the SDMI Director's permission, his email was forwarded to the entire SCTC. This endorsement of the eight tasks by such an influential member has provided SCTC with a sense of purpose. The assembled membership, coupled with a proposed workplan/task list generated by another SCTC member, generated increased interest. After the organizational meeting, and additional recommendations by SCTC leaders, the following organizations were added to SCTC's membership:

- Louisiana Chemical Association
- U.S. Department of Transportation
- Department of Homeland Security Critical Infrastructure Region VI outreach coordinator
- Department of Homeland Security Protective Security Advisor for Louisiana
- Department of Homeland Security Critical Infrastructure HQ supply chain working group

A conference call on March 9, 2017, helped solidify areas of focus and adoption of the initial plan of work recommended by the LSU SDMI director. The agenda for the call was as follows:

- Roll and Introductions
- Introduction of new members
- Areas of Focus outlined during organizational meeting
- Establishment of Committees
- Action Steps
- Adjourn

The call was well attended, with 17 SCTC members participating. Including ERSF team members and representatives from other recovery support functions and FEMA a total of 25 attendees participated in the call. A review and affirmation of SCTC's mission statement of "To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events" was a key outcome, as the mission statement will lead / govern projects moving forward. The eight areas of focus were also affirmed by SCTC members during the call. The SCTC Chairman discussed attending a recent cyber security forum that featured a presentation by an SCTC member representing the Department of Homeland Security Critical Infrastructure Unit. The Chairman also spoke of the organizational meeting where proposals for partnerships between state universities were discussed. He announced that he had invited a department head at Louisiana State University to address the next scheduled meeting of SCTC on these matters. The SDMI Director also led a discussion on his recent email

outlining the eight proposed actions for SCTC to undertake. The call concluded with a robust discussion among the members. All agreed that the areas of focus and tasks outlined are comprehensive, appropriate and productive for SCTC.

After the conference call, at the request of the SCTC Chairman, ERSF began to share documents and data on Louisiana Transportation and other best practices. A Dropbox account was established, and SCTC members were advised the information could be transferred to them by other means if their organization did not support or allow Dropbox.

After the organizational meeting and March 9th call, activities and membership of SCTC began to be noticed by FEMA leadership. The following article was placed in the March FEMA Region 6 Newsletter.

#### Innovation and Collaboration Promote Resilient Transportation in Louisiana

Temporary composite roadways that can be quickly placed a few feet above flooded-out sections of highway and later removed, and shallow-draft barges that will navigate silted waterways, are two of the innovative ideas to increase transportation resilience being explored in Louisiana.

During the 2016 floods, many sections of Louisiana's Interstate system closed, halting truck commerce. River silt left barges unable to navigate and inland ports turned silent. Trains stopped running. As each of these systems struggled to recover, the idea of integrating communication and collaboration between all these systems, and companies that utilize them, was born.

Helping to link material and human resources into a functioning collaborative network, the Interagency Recovery Coordination Group Economic Recovery Support Function (ECON RSF) team worked with high-level local leaders to create the Louisiana Supply Chain/Transportation Council, a collaborative group tasked with resolving transportation problems before the next incident.

According to Co-Chairmen Dr. Stan Napper and Gary LaGrange, the goal is to make the entire transportation system more resilient by calling together top-level officials from state and federal agencies, academic institutions, and private sector leaders to develop pre-disaster communications plans, research and develop innovations, and create inter-modal agreements. Under statewide leadership, the council endeavors to be a success that other states can follow.

The next meeting of SCTC was held at Louisiana Economic Development offices on March 30, 2017.

The second meeting of SCTC was led by Chairman Stan Napper. Dr. John Pardue of Louisiana State University gave a presentation on a Proposal to the Department of Homeland Security for establishment of a Center of Excellence in Critical Infrastructure Resilience, submitted by a consortium of Louisiana-based universities. He also stated that he would be willing to be a resource to SCTC, and had information pertinent to the eight areas of focus. In addition, the presentation highlighted resources of Louisiana universities that SCTC could leverage to move initiatives forward. SCTC Member Jeff McKee, National Protection and Programs Directorate of the Department of Homeland Security for Louisiana, gave a presentation on the DHS Regional Resiliency Assessment Program (RRAP). Mr. McKee provided SCTC with information on resources for potential projects from the eight areas of focus. The final presentation was given by LSU SDMI Director Brant Mitchell. Mr. Mitchell summarized ideas on how SCTC could be leveraged to move the goal of increasing supply chain/transportation resiliency forward, suggested additions/deletions of recommended actions, and leadership and resources available for each task. Following the presentations Dr. Napper led a discussion of which agency would be best suited to lead SCTC going forward and the establishment of an executive committee and committee structure. The Council decided to request that Louisiana Department of Transportation and Development (DOTD), which has a newly appointed multi-modal director, lead the efforts going forward.

A synopsis of the meeting serves as a guide that may be useful in documenting the critical second meeting of a new recovery initiative.

# **Organization and Execution**

The SCTC Executive Committee, formed during the March 30th meeting, consists of the following:

On April 28, 2017, the first meeting of the Executive Committee was held at Louisiana DOTD headquarters. During this meeting, the resignation of Chairman Napper was announced, as he had taken a new position out of state. Co-Chair Gary Lagrange agreed to take over as Chair, and Cathy. Gautreaux, of the Louisiana Motor Transport Association, agreed to become Co-Chair. Dr. Les Palmer of the GIS Department at Louisiana Tech was nominated to replace Dr. Napper on the Council. A seamless transfer of leadership so early in a new initiative is critical. Leadership from key members of the Executive Committee, such as Committee of 100 CEO Michael Olivier, in reinforcing continuity was a deciding factor in the successful transition.

A unified goal the Executive Committee adopted was to ultimately have a system of letting freight movers know which routes are open as opposed to only listing which ones are closed. The Executive Committee was also informed of DOTD's multi-modal office and requested that DOTD representative Chris Collins engage the new director of the multi-modal office for the SCTC. To gain more recognition, as well as enhance SCTC's role, it was suggested that a resolution be drafted to be passed by the legislature.

- Cathy Gautreaux, Louisiana Motor Transport Association Co Chair
- Gary Lagrange, Ports Association of Louisiana Co Chair
- Chris Collins, Louisiana DOTD
- Sherri McConnell, Louisiana Economic Development
- Brant Mitchell, Stephenson Disaster Management Institute (LSU)
- Michael Olivier, Louisiana Committee of 100 for Economic Development

Another suggestion was that the six committees initially proposed be consolidated into three:

- 1. Executive Committee, which will assume the duties of the Collaboration and Partnerships and Organization and Membership Committees, under Chair LaGrange and Co-Chair Gautreaux.
- 2. Geographical Information and Analysis (unchanged), under Brant Mitchell and Les Palmer.
- 3. Technology and Innovation, incorporating the Interdependent and Cyber committee, under University of Louisiana Vice President Dr. Ramesh

Adopted tasks from initial meetings of SCTC were assigned to the following committees.

Executive Committee	Geographical Information and Analysis	Technology and Innovation + Cyber and Interdependent
4. Identify governing authorities across the state impacting transportation	<ol> <li>Identify known single points of failure for all transportation nodes.</li> <li>Identify known single points of failures that have experienced repetitive flooding.</li> <li>Identify single points of failure of interdependency infrastructure.</li> <li>Consolidate all known transportation nodes mapping data.</li> <li>Identification of future disruptions.</li> </ol>	<ul> <li>7. Establish on the fly routing during disasters.</li> <li>8. Support all the universities in the State by providing a list of research priorities to enhance resiliency for the transportation sector.</li> </ul>

Other information and support requested by the Executive Committee included:

- 1. Providing best practices information on other transportation resilience organizations;
- Engaging the Volpe Transportation Unit within the U.S. Department of Transportation to discuss assistance in obtaining Small Business Innovative Research Grants for innovations such as high capacity / shallow draft barges and composite temporary roadway raising devices;
- 3. Obtaining critical transportation resiliency plans, such the earthquake plan for the Port of Los Angeles; and
- 4. More detailed information on road, rail and port closures in the 2016 floods gathered by ERSF.

On May 19th, 2017 the Louisiana Legislature passed Senate Concurrent Resolution 99, which formally authorized the creation of the Supply Chain and Transportation Council. SCR 99 enumerated what Federal, State, University, and private sector entities should participate in the Council and charged the Council with submitting a report of its findings and recommendations to the Legislature and Secretary of DOTD by February 1, 2018.<sup>1</sup>

The Supply Chain Transportation Council met four more times in 2017, in June, August, November, and December. During that period much work was done toward completing the tasks that the Council set for itself. All Council members have committed to working in a committee. The GIS Committee has a webpage with the basic framework of maps created that will be needed to identify the points of failure and interdependency as laid out in the critical task #3. The committee continues to work with Council members to gather the necessary data to identify points of failure, consolidate other existing maps, and identify future disruptions. The Technology Committee is building upon and advancing work done by the University of Louisiana Lafayette Informatics Research Institute on evacuation fuel demand modeling to establish on the fly routing for freight carriers during disasters. The Technology Committee is also planning to explore issues related to cybersecurity of transportation and logistical infrastructures, owned and operated by public and private sectors that contribute to regional supply chain resiliency.

The Council has enjoyed participation and attendance from representatives of 11 of the 17 entities that were identified by SCR 99. Moreover, the council continues to identify new transportation, infrastructure, economic development and resiliency stakeholders to contribute to its mission. The Council has been joined and briefed by representatives from Senator Bill Cassidy's office, the Cyber Innovation Center, DOTD's Intermodal Commissioner, the Department of Homeland Security, and the Governor's Office.

However, the Council's progress toward creating a report has been slowed by a few circumstances outside of its control. The recovery experts of ERSF that provided the original guidance and administration for the Council were assigned to other missions sooner than had been anticipated due to Hurricanes Harvey, Irma and Maria. The 2017 hurricane season further demonstrated the vulnerable position Louisiana is in and illuminated another aspect of that vulnerability, expertise in recovery is a finite resource.

<sup>&</sup>lt;sup>1</sup> Members listed in SCR 99: LA Department of Transportation and Development, LA Department of Economic Development, Governor's Office of Homeland Security and Emergency Preparedness, Office of Community Development, Ports Association of Louisiana, Louisiana Motor Transport Association, Louisiana Railroads Association, Big River Coalition, American Waterways Operators, International Air Cargo Association, Committee of 100 for Economic Development, Louisiana Association of Business and Industry, Louisiana Chemical Association, U.S. DOT, U.S. Army Corps of Engineers, Economic Development Administration, LA Association of Planning and Development Districts, The Board of Regents.

The Council also lost Co-Chair Cathy Gautreaux in November. She accepted a position in Washington D.C. with the Federal Motor Carrier Safety Administration. Jamie Setze the Executive Director of the Capital Region Planning Commission and President of the Louisiana Association of Planning and Development Districts was named Co-Chair to fill the spot left vacant by Ms. Gautreaux. In December Chair Gary LaGrange took an extended leave of absence from the council. Mr. Carmen Black was nominated and accepted the position of Co-Chair.

As the council progressed in its mission in 2017 it began to realize that the scope of its mission and the type of report needed to fulfill the requirements of SCR 99 would require more resources in the form of funding and man hours. It was decided to seek an extension on the deadline put forth by SCR99 and seek outside funding to generate a useful report. The council identified several promising sources from the private sector and federal government, including the National Center for Disaster Philanthropy and grant opportunities from the Federal Highways Administration Resilience and Durability to Extreme Weather Pilot Program.

In November, ERSF contacted Drew Ratcliff, who is working in an EDA and Office of Community Development - Disaster Recovery Unit funded position as the Regional Disaster Recovery Manager at the Capital Region Planning Commission - about assuming their role as administrators for the Council. Mr. Ratcliff worked alongside ERSF in FEMA's Recovery Support Function on the March and August Floods. Prior to that he worked for Genesis Energy, L.P. in Baton Rouge shipping hazardous bulk liquids by truck, rail, and ship, and as a Senior Public and Government Affairs Representative. Mr. Ratcliff has been allowed to devote a large part of his time to the council. His position provides needed stability and continuity for the SCTC and is tremendous utilization of already available federal resources along with the resources of the Capital Region Planning Commission. In addition, as of mid-January 2018 the U.S. Senate is to consider the Disaster Recovery and Reform Act (DRRA), which was passed by the House in December 2017. That DRRA indicates that the Federal government will be placing even greater emphasis on resiliency and represents the possibility of several billions of dollars being invested into resilient infrastructure projects.

The Council entered 2018 in a strong position to accomplish its goals and objectives of identifying vulnerabilities in Louisiana's supply chain and transportation infrastructure and identifying innovative ways to address those vulnerabilities. With an unprecedented range of transportation stakeholders meeting on a regular basis the Louisiana Supply Chain Transportation Council and may be the only one of its kind in practice in the U.S. As such it is unique position to leverage public and private resources and provide recommendations to the Legislature on creating a more resilient Louisiana economy. Objectives for 2018 were established by the council and include the following four objectives:

- 1. Secure report deadline extension and recognition of council by legislature for 2018
- 2. Secure funding to provide resources in support of completing the Council's eight critical tasks.
- 3. Begin work on completing eight critical tasks
- 4. Draft initial report for Legislature for submission in March 2019

2018 proved to be a productive year for the council. Under the sponsorship of the Capital Regional Planning Commission, the Council submitted three proposals, two which were selected for partial funding. The Capital Regional Planning Commission and LSU's Stephenson Disaster Management Institute received funding to initiate work on critical tasks #1 and #2. In addition, the Capital Regional Planning Commission and ULL's National Institute of Management Systems and Advanced Technologies, along with several other local and regional partners received partial funding to conduct research in transportation resiliency. Both projects are fully defined further in this report.

The council has also worked with the legislature which passed Senate Concurrent Resolution 9 during the 2018 Regular Sessions. The new resolution further refined the membership of the committee and established a requirement for the Council to publish its initial report on March 1, 2019. Throughout the year the Council has continued to be active in meetings with its membership, seeking opportunities for partnership and collaboration, and reviewing new technologies that promise to enhance transportation resiliency in the future.

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#### RESOLUTIONS

#### Senate Concurrent Resolution No. 99 of the 2017 Regular Session

SCR 99 of the 2017 Regular Session of the Louisiana Legislature states that "the flood events of 2016 highlighted critical points of failure in road, rail, and barge modes of transportation throughout the state..." and therefore authorized the creation of the "Louisiana Supply Chain Transportation Council (SCTC) to meet, undertake projects, and make recommendations to the legislature relative to improvements in commercial and workforce transportation, and to assist in making the Louisiana economy more resilient to disaster." SCR 99 lists several areas in transportation and supply chain for the SCTC to examine including "increase[d] effectiveness of relationships between local, state, and federal transportation agencies, providers of transportation, shippers and receivers of goods, and their employees, to ensure constant communication and robust pre-disaster recovery planning. SCR 99 provides that membership of the SCTC shall include:

- Secretary of DOTD or his designee
- Secretary of LED or his designee
- Director of GOHSEP or his designee
- Executive Director of OCD or his designee
- The Ports Association of Louisiana
- The Louisiana Motor Transport Association
- The Louisiana Railroad Association
- The Big River Coalition
- The American Waterways Operators
- The International Air Cargo Association
- The Committee of 100 for Economic Development
- The Louisiana Association of Business and Industry
- The Louisiana Chemical Association
- The U.S. Department of Transportation
- The U.S. Army Corps of Engineers
- The Economic Development Administration within the U.S. Department of Commerce
- The Louisiana Association of Planning and Development Districts
- The Board of Regents

SCR 99 directed that the SCTC shall be supported by the Department of Transportation and Development and assisted by the Department of Economic Development. Furthermore, SCR 99 stated the council should advise DOTD in the following four areas:

- 1) Provide advance geospatial planning an coordination to predict and avoid points of failure and to inform transportation providers in rea time of routes likely to remain open during and after a disaster;
- Recommend agreements between providers of different modes of transportation, companies shipping or receiving goods, and public agencies to provide for effective routing of transportation under disaster scenarios;
- 3) Support funding and resources to increase utilization of technology and new innovations in lessening the risk of closure, including innovations in water, rail, road, and air modes of transportation;
- 4) Increase effectiveness of relationships between local, state and federal transportation agencies, providers of transportation, shippers and receivers of goods, and their employees, to ensure constant communication and robust predisaster planning.

Finally, the resolution directed that the SCTC submit a written a report and recommendations, no later than February 1, 2018, to the president of the Senate, the Speaker of the House of Representatives, the house and senate committees on transportation, highways, and public works, and the Secretary of the Department of Transportation and Development. A full copy of SCR 99 is contained in Appendix D.

#### Senate Concurrent Resolution No. 9 of the 2018 Regular Session

SCR 9 recognizes the work accomplished of the SCTC during the 2017 calendar year including its formal organizations. It also extends the reporting deadline to March 1, 2019. A full copy of the SCR 9 can be found in Appendix D.

# **MODAL SUMMARY**

#### **Maritime**

Maritime transportation of freight is often overlooked in relation to other conveyance modes, but the movement of goods by water is the oldest method of transport in recorded history. It links the global economy, and can be realized over any distance, allowing goods to be shipped between states, countries, and continents. Virtually any material can be shipped by water, and it's cost effective nature continues to keep maritime shipping at the forefront of freight movement.

Louisiana plays an integral part in water-borne commerce, in terms of both inland and transoceanic market service. The state contains a navigable waterway network of over 2,800 miles, second only to Alaska, as well as the convergence of the Mississippi River system and the Gulf Intracoastal Waterway, the two largest waterway corridors in the United States. Louisiana is also home to 16 inland river ports, nine coastal energy ports, and six deep draft ports. There is also a port currently in development, the Louisiana International Deep Water Gulf Transfer Terminal (LIGTT), which is anticipated to be America's first deep water transfer terminal designed to accommodate ocean faring megaships.



Ports around the country such as the Port of Los Angeles, Port of New York/New Jersey, and Port of Houston might garner more attention, but Louisiana is not to be overlooked in the world of maritime trade. According to statistics compiled by the American Association of Port Authorities, Louisiana was home to five of the top 12 tonnage ports in the United States in 2016. The Port of South Louisiana, which extends 54 miles along the Mississippi River between Baton Rouge and New Orleans, earned the title of the largest tonnage port in the western hemisphere, with cargo totaling nearly 262 million tons. In a Maritime Workforce Study published by the Louisiana Association of Business and Industry, it is noted that Louisiana transfers 500 million tons of cargo every year, which accounts for 20% of the national total, and also ranks Louisiana number one in waterborne commerce.

Aside from bulk goods that move in and out of these ports, Louisiana also boasts several oil and gas transport facilities. Port Fourchon, Louisiana's southernmost port, is a seaport with significant petroleum industry traffic from offshore oil platforms. The port currently services over 90% of the deepwater oil production in the Gulf of Mexico, and is also a land base for the Louisiana Offshore Oil Platform (LOOP) pipeline. According to port officials, LOOP handles 10-15% of the nation's domestic oil, 10-15% of the nation's foreign oil, and is connected to 50% of US refining capacity. LOOP is the only U.S. deepwater port capable of offloading VLCCs (Very Large Crude Carriers) and ULCCs (Ultra Large Crude Carriers). Overall, Port Fourchon plays a strategic role in furnishing this country with about 18% of its entire oil supply.

Generally speaking, the ports in Louisiana are fairly resilient. The main hazard to ports, particularly those on the coast, is tropical storms and hurricanes coming onshore from the Gulf of Mexico. Even then, the facilities themselves have not historically sustained much physical damage. The biggest barricade to getting ports fully operational after a disaster lies in the workers' ability for re-entry, whether hindered by re-entry policy issues or by lack of access to the facility due to road closures. However, in terms of transportation of goods through the waterway network, the mouth of the Mississippi River is considered biggest single point of failure. If an incident, natural or otherwise were to occur at the mouth of the Mississippi River, goods moving up and down the river system would not have a chance to make it to ocean going vessels. Although some items could be offloaded onto smaller vessels/barges and brought up river, larger tankers would stay stationed at the mouth of the river until it was reopened.

#### **Roads**

Truck transport is extremely vital when looking at intermodal transportation of commodities. According to the preliminary 2018 Transportation Statistics Annual Report composed by the Bureau of Transportation Statistics, trucks carried the highest percentages of goods by weight and value of goods in the United States, accounting for 11.1 billion tons of the weight (62.7 percent) and \$11.2 trillion of the value (61.9 percent) in 2016. Trucks are important to the entire supply chain as they are often used to move goods between other transportation modes or from other transportation modes to retailers. Whether moving goods between other transportation modes, long-hauling commodities between distribution centers, or providing last mile delivery to end users, the road system is the backbone for freight movement within the United States.



Louisiana is home to over 61,000 miles of public roadways, including more than 930 miles of interstate highway and 2,600 miles of U.S. highway. Two major east-west trucking routes, Interstate 20 in the north and Interstate 10 in the south, both traverse the entire state and pass through large metropolitan areas. These two interstates are connected by Interstate 49, which currently runs from Lafayette to Shreveport and onward to Texarkana, Arkansas. Interstates 55 and 59 are also found in the state, and they provide access to major metropolitan areas in Mississippi, Alabama, Tennessee, Missouri, and Illinois.

As previously stated, the trucking industry is immensely important to the movement of freight throughout the country, and it is no different with Louisiana. According to the

DOTD 2015 State Transportation Plan, the trucking industry accounts for 58% of tonnage moved in Louisiana. I-10 alone carried 120 million tons of freight worth \$204 billion to, from, and through the state. On a more local level, approximately 78% of Louisiana communities depend exclusively on trucks to move goods. Because of this dependence on commodity movement via truck, it is imperative to recognize and assess roadways that are susceptible to disruptions due to natural disasters.

Recently, the floods of 2016 had tremendous impacts on commodity movement in/through Louisiana, and trucking was not immune to these impacts. Portions of I-10, I-12, I-20, and I-49 were closed during these events. There were also approximately 450 state and local roads closed, making the rerouting of trucks all the more difficult. During the flooding event in March 2016, a section of Interstate 20 east of Bossier City was closed, as well as a portion of Interstate 49 south of Shreveport. These closures essentially shut down freight movement via truck across the northern portion of the state. The impacts of the August 2016 flooding were equally devastating to freight movement. Approximately 78 miles of Interstate 10 were closed due to high water, and an additional 36 miles of Interstate 12 were deemed impassible.

Another important trucking route susceptible to flooding is LA Highway 1, which is the single trucking route for the movement of goods from Port Fourchon to Hwy 90 and points northward. Seven miles of LA-1, from Leesville to Port Fourchon, have been elevated recently to withstand flooding. The remaining eight miles, from Golden Meadow to Leeville, are level with Bayou Lafourche, making it vulnerable to frequent flooding events and subsequent road closures. According to Port Fourchon officials, up to 1,200 trucks per day travel in and out of Port Fourchon. With it being the only route of ingress and egress from the port, any closures of LA-1 between Port Fourchon and Golden Meadow can halt the transportation of goods via truck.

Aside from flooding, other natural hazards can have a negative impact on freight movement via truck in Louisiana. In January 2018, several stretches of Interstates 10, 12, 20, 49, and 55 were closed for multiple days due to ice and frozen precipitation. These closures included at least 4 of 10 bridges that cross the Mississippi River in Louisiana, temporarily halting freight transportation moving to, from, and through the state.

#### Rail

Louisiana railroads date back to 1830's and remain an important source of both originating and terminating traffic with the Port of New Orleans and the lucrative petrochemical industry both located there. Used to primarily haul bulk quantities of cargo over long distances and an estimated 121 million tons of freight handled annually, rail transport in Louisiana can be considered a gateway throughout the country to get commodities nationwide.



Today, Louisiana is still served by several Class 1 railroads (six of the seven) and several short lines allowing for an interesting mix of operations. Louisiana is mostly the domain of Class 1s CSX Transportation, Norfolk Southern Railway, Canadian National Railway (which reached the Pelican State when purchasing the Illinois Central), Kansas City Southern, BNSF Railway, and Union Pacific (only Canadian Pacific does not reach the state). Along with the six Class 1 Railroads, there are approximately 14 smaller local, switching, and terminating railroads throughout Louisiana.

Class	Definition
Class 1	Freight railroad with an operating revenue exceeding \$457.9 million
Class 2	Freight railroad with an operating revenue between \$36.6 million and \$457.9 million; regional railroads
Class 3	Operating revenues of \$36.6 million or less; defined as "short line"; Generally responsible for moving commodities from ports or manufacturing sites to interchange points with Class 1 rail operations

In the United States there are four major gateways where Class 1 lines meet; Chicago, St. Louis, Memphis, and New Orleans. With over 2,700 route miles of track in freight service in Louisiana, Union Pacific and KCS make up almost 73% of the routes throughout the state. By railcar volume, NOPB is the nation's 4<sup>th</sup> largest rail gateway.

Looking at how critical rail transportation is within the supply chain, it is no surprise that disruption to rail transport services will not only cripple Louisiana but will cripple the country. A hurricane or largescale flooding event that forces Class 1 lines to shut down or reroute will not only be difficult to the national class one lines and short line railroads, but will halt movement of commodities at ports, movement of commodities on roads, plant operation disruption, and also a potential problem to communities that rails run through if rerouting needs to take place.

Although it can be costly, many of the Class 1 railroads can reroute around areas impacted by a disaster. The bigger problem lies with getting the short line/"last mile" railroads operational. If their track is impacted by an event, they must resort to moving freight by truck, in many cases the short rails are so leveraged by loans they can't afford to take on any additional expenses. This can be particularly problematic for a rail line such as the New Orleans Public Belt, which services the Port of New Orleans and connects six Class 1 railroads that service New Orleans.

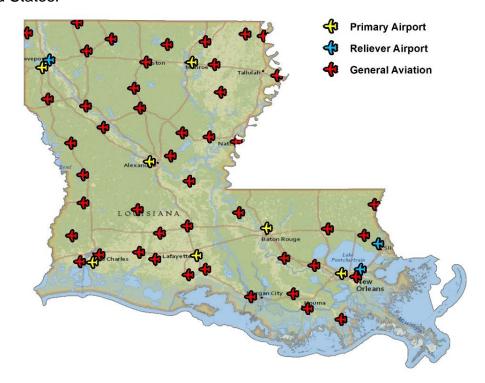
While such largescale impacts are rare, the spring floods of 2016 shutdown rail in all major cities in Louisiana, some for weeks and months. The disruption of services, economic loss and impact from the 2016 floods in North Louisiana and the Greater Baton Rouge area had not been seen in at least 37 years according to leading rail experts in Louisiana.

Raised rail is the most vulnerable segment of track in any part of Louisiana, with flooding being the biggest risk for the industry. The two Mississippi River Bridges, the Western Bridge over Sabine, power lines down on tracks, and any weather event south of I-10 are all major areas of concern when it comes to keeping rail running and fully operational.

In Louisiana, the rail industry is striving to improve pre-disaster planning and mitigation, along with communication efforts. Formalization of relationships within the Emergency Management community would greatly help improve communication between rail and other stakeholders. Increased collaboration with rail companies and emergency managers of what specific natural hazards are disruptive to rail transport and their interdependencies and how they are impacted will provide Louisiana with an opportunity to be a model for resiliency for natural hazard events of national significance.

#### Air

Of the four modes of transportation covered, freight transportation via air moves the least amount of cargo by tonnage. Louisiana's air cargo operations account for a negligible amount of the freight delivered from the state by weight – less than 1 percent of all cargo. However, air carriers almost exclusively move high-value, low-weight products. This includes items such as electronics, precision instruments, and pharmaceuticals. According to the Bureau of Statistics, this point is underscored by the relatively high value-to-weight ratio of air cargo, which is nearly \$100,000 per ton. In comparison, the overall value-to-weight ratio of cargo carried by all modes combined is approximately \$1,026 per ton. While it might not move quite the amount of goods moved by truck or by rail, air freight transportation certainly plays a role in the movement of goods to, from, and across the United States.



Currently, there are 56 public airports in Louisiana that are included in the National Plan of Integrated Airport Systems (NPIAS). These airports are divided into two categories based on function. Commercial service airports are facilities designed for scheduled passenger service aircraft with more than 2,500 boardings. There are seven commercial airports in the state: Alexandria International, Baton Rouge Metropolitan, Lafayette Regional, Lake Charles Regional, Monroe Regional, Louis Armstrong New Orleans International, and Shreveport Regional. The remaining 49 airports are classified as General Aviation airports, which accommodate all other civil aviation operations other than scheduled air services. However, three general aviation airports – Lakefront Airport in New Orleans, Shreveport Downtown Airport in Shreveport, and Slidell Airport in Slidell

– have been designated as Reliever airports, which are intended to relieve congestion at large commercial service airports. However, these reliever airports generally don't have the same structural capabilities as commercial airports.

The commercial airports are further divided based on their annual enplanements. Large hubs account of at least 1% of total U.S. passenger enplanements, medium hubs account for between 0.25% and 1% of total U.S. passenger enplanements, small hubs account for between 0.05% and 0.25% of total U.S. passenger enplanements, and non hubs account for less than 0.05% of total U.S. passenger enplanements, but more than 10,000 annual enplanements. Of the seven commercial airports in Louisiana, six of them are considered non hubs. However, Louis Armstrong New Orleans International Airport is considered a medium hub, and tallied over 6 million enplanements in 2017, ranking it as the 38th busiest airport in the United States.

Louisiana airports carry fewer inbound tons than other commodity transportation modes in the state. According to the LADOTD 2015 Transportation Plan, the vast majority of the cargo activity (99.8%) is handled at Louis Armstrong International Airport in New Orleans (98.3%) and Shreveport Regional Airport (1.5%) in Shreveport, handling 266,000 and 170,000 total tons, respectively between 2006-2010. General aviation airports don't play much of a role in cargo transportation to and from the state. This is mainly due to their structural limitations; they generally do not have runways of adequate length to land planes of appropriate size, nor do they have the necessary equipment to offload cargo from planes.

Generally speaking, in terms of disaster resiliency, airports often fare quite well compared to other transportation modes. During Hurricane Katrina in 2005, Louis Armstrong International Airport was forced to close temporarily, but that was primarily due to external circumstances rather than direct affects from the storm. While the airport sustained minimal damage compared to other structures, workers were unable to get to the airport due to inundation of roads in the area. In the event that air airport is shut down and is unable to receive cargo, it is relatively easy to reroute the plane to another airport in the region that is capable of accepting and offloading the cargo.

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## **FUNDING AND PROPOSALS**

## **Funded Proposals**

#### **Office of Community Development**

## **Purpose of Project:**

In line with SCTC's Mission Statement and eight focus areas, the group identified eight tasks aligned with the selected focus areas. This project aims at executing six of the initial eight tasks over a 36 month period. The six selected tasks and associated activities are as follows:

Task 1: Identify known single points of failure for all transportation nodes: Triggers, impacts, alternatives.

Through establishment of sub-committees and working groups, the four main transportation modes will be thoroughly reviewed for single points of failure that if disrupted, will interrupt and significantly impact the supply chain. This task is projected to span a 6 month – one year time period.

Task 2: Identify known single points of failures that have experienced repetitive flooding. Through direct engagements with infrastructure owners and research, this activity will determine transportation critical infrastructure sites that have experienced disruptions due to flooding caused by excessive rains, excess capacity in waterways, and storm surge caused by tropical cyclone activity. Critical infrastructure modes that have experienced repetitive flooding that has resulted in supply chain disruptions will be identified and mapped. Future mitigation measures will be recommended to prevent future disruptions. This task is projected to span a 4 month – one year time period.

Task 3: Identify single points of failure of interdependency infrastructure.

Identification of the cross critical infrastructure sectors that provide direct support to ensure that single points of failure are operational. Cross critical infrastructure sectors include but not limited to energy, communications, and information technology sectors. Outreach efforts will involve site visits for critical transportation modes that have experienced repetitive losses to identify other critical infrastructures that they are reliant on to ensure the uninterrupted flow of transportation. This task is projected to be executed in year two and will span a one month to one year time period.

Task 4: Identify governing authorities across the state impacting transportation. Identification of local, state and federal governing authorities through research and outreach efforts that have regulatory or statutory authority over critical infrastructure

transportation modes. Geographic files will be complied for all regulatory and statutory governing bodies that have direct authority over any of the four transportation modes. This task is projected to span a one month – six month time period.

Task 5: Consolidate all known transportation nodes mapping data.

Mapping requirements for each of the four transportation modes will be identified, along with an inventory of all existing GIS data. Mapping requirements and existing GIS data will be consolidated onto a custom web based mapping portal for viewing and consuming data. This task is projected to span a 6 month – one year time period.

Task 6: Identification of future disruptions to the transportation system caused by major flooding events caused by rainwater, excessive flooding of waterways and storm surge from tropical cyclones.

Through utilization of ADCIRC runs, integrated with transportation modes mapping data, the activity will determine critical infrastructure that is susceptible to storm surge. Additionally, a Precipitation and Riverine Estimation Product (PREP) flood model will be developed based on hydrological unit codes (HUC) to determine critical infrastructure modes that are vulnerable to flood waters from excessive rain and riverine flooding. This activity will also establish 500 year and 1,000 year baseline storms for each HUC to determine most likely and most dangerous disruptions to the supply chain for both the present and future. This task is expected to span the entire 36 months of the project.

**Partners Involved:** The Capital Region Planning Commission and the Stephenson Disaster Management Institute, LSU

**Status of Proposal:** This project was partially funded to complete tasks 1 and 2 by the Office of Community Development through a Federal grant from the Office of Housing Urban and Development. The project period began on October 1, 2018 and is funded for 18 months. Task 3 – 6 are still under review pending the publication of new grant guidance by HUD.

## **Venture Smarter Cities Competition**

#### **Purpose of Project:**

This project initiates a Regional Smart Transportation Network for the State of Louisiana across the strategic corridor from Interstate 10 south to the Louisiana Gulf Coast extending from the City of New Orleans on the eastern edge of the state to Lake Charles and the Calcasieu Ship Channel on the western border with Texas. The broad goal of this project is to develop a secure, resilient Smart Transportation Network encompassing the multi-modal transportation infrastructure of the Central Gulf Coast. In addition to a flourishing diversity of natural and cultural resources and coastal communities, this region

maintains, operates and protects a vast network of the nation's critical petroleum and energy infrastructure, as well as the strategic commercial waterway of the Mississippi River and Calcasieu Waterway central to the nation's economic and industrial vitality.

This proposal to the Regional Smart Infrastructure Challenge represents the initial research and development effort under the SCTC aimed at developing functional prototypes of Smart Transportation Systems for both citizen transportation in a municipality and surrounding region; and a cutting-edge, high speed "hyperloop" freight transport system to greatly improve disaster resilience and efficiency of freight transportation between critical nodes in the strategic manufacturing and petroleum centers of the state.

#### **Partners Involved:**

The principal collaborators on this proposal to develop the pilot effort represent the SCTC, as well as the City and Parish of Lafayette, two regional planning commissions (Acadiana and the Capital Region), the University of Louisiana at Lafayette, the analytic firm of REMI, Inc., and the New Orleans-based technology firm of Transonic Transportation, LLC. However, this team represents a much broader coalition of state, regional, community and private sector organizations that participate in the SCTC, and whose members were directly affected by the historic flooding of 2016. This broader Public Private Partnership is the coalition that is moving forward to improve the disaster resilience, efficiency, and cost-effectiveness of the Louisiana multi-modal transportation system.

**Status of Proposal:** Partially funded pending on availability of funds.

## **Submitted Proposals**

#### **U.S. Department of Transportation**

#### **Purpose of Project:**

This proposed project will continue and expand ongoing collaborative efforts to utilize the FHWA Vulnerability Assessment and Adaptation Framework to identify critical vulnerable nodes and assets in Louisiana's transportation infrastructure system that affect freight flows, examine the economic risk those vulnerable nodes represent, and make suggestions to improve the resiliency of those assets. MOVE 2042, the Capital Region/Baton Rouge Area MPO's update to the long-range metropolitan transportation plan (MTP), adopted in January 2018, establishes goals and objectives for improving regional freight flows. These include: (a) reducing congestion and delays; (b) improving safety and security and accommodating evacuation into and out of the area in disaster events; (c) maintaining the transportation system in a state of good repair; and (d) maintaining economic competitiveness by improving freight movement. These align with

federal transportation goals and performance measures, including supporting regional economic vitality; increasing transportation system safety and security; increasing accessibility and mobility for people and freight; enhancing integration and connectivity; promoting efficient system management and preservation; and, improving the resilience and reliability of the system.

The project is part of a comprehensive and federally-assisted response to real-world experience and events. In March and August of 2016, most of the State of Louisiana experienced 48-hour rainfall totals between the 1/10 and 1/50 annual exceedance probability (AEP) with as many as 7 smaller areas recording greater than 1/1000 (AEP)<sup>2</sup>. The subsequent flooding events led to federal disaster declarations covering 56 of Louisiana's 64 parishes. The floods also highlighted several critical points of failure that impacted commerce throughout the state, which will be highlighted regionally in the vulnerability and adaptation assessment.

The final assessment will consider future risks of failure across the Capital Region/Baton Rouge MPA transportation network and across multiple modes based on the increased level of risk due to climate-related weather events.

#### **Partners Involved:**

The Capital Region/Baton Rouge Area Metropolitan Planning Organization (CRPC-MPO) as lead agency and the Stephenson Disaster Management Institute as a supporting agency.

**Status of Proposal:** Project not selected for funding. However, technical assistance is being provided at no cost to the state.

<u>ftp://hdsc.nws.noaa.gov/pub/hdsc/data/aep/201603 MS River Valley/AEP LowerMississippiRiverValley March2 016.pdf.</u>

<sup>&</sup>lt;sup>2</sup>Hydrometeorological Design Studies Center, Office of Water Prediction, National Weather Service, National Oceanic and Atmospheric Administration. "Exceedance Probability Analysis for the Louisiana Rainfall Event, 11-13 August 2016." <a href="https://hdsc.nws.noaa.gov/pub/hdsc/data/aep/201608\_Louisiana/AEP\_Louisiana\_August2016.pdf">https://hdsc.nws.noaa.gov/pub/hdsc/data/aep/201608\_Louisiana/AEP\_Louisiana\_August2016.pdf</a>; Hydrometeorological Design Studies Center, National Weather Service, National Oceanic and Atmospheric Administration. "Lower Mississippi River Valley Area, 8-12 March 2016 Annual Exceedance Probabilities (AEP) for the Worst Case 48-Hour Rainfall." Refer to map on pg 4.

## **MOVING FORWARD**

In its first two years of organization, the SCTC has already made substantial progress in achieving the initial goals that it identified for itself as well as developing recommendations to improve transportation resiliency as directed by Senate Concurrent Resolutions 99 in the 2017 Regular Session and 9 in the 2018 Regular Sessions. This report represents the SCTC's initial efforts towards these goals. The SCTC has remained very active, meeting routinely in its first two years and working collaboratively to identify funding to allow it to achieve its objectives. The SCTC has brought together the public sector and academia to leverage its resources and begin the initial work of creating resiliency for the supply chain and transportation infrastructure for the State of Louisiana. With the Capital Regional Planning Commission serving as a de-facto sponsor of the SCTC, and its willingness to take a leadership role in securing funding to support research in achieving transportation resiliency, the SCTC is beginning to create capacity to successfully define and complete its eight critical tasks originally identified by the SCTC. In partnerships established by the Capital Regional Planning Commission with Louisiana State University and the University of Louisiana – Lafayette, the SCTC is well on its way to developing meaningful solutions and recommendation to improve the resiliency of the State's supply chain during and post-disasters.

While some successes have been achieved in the first two years, the primary goal of the SCTC is to receive continued authorization to pursue its goals and objectives. SCR 99 and 9 were instrumental in providing the SCTC with the necessary authorization to operate as a Council with a clearly defined mandate. However, the SCTC's authorization is expired with the submission of this initial report. In order to facilitate and allow the SCTC to continue functioning, it is necessary for an additional Concurrent Resolution to be passed by the Legislature during the 2019 Regular Sessions. The SCTC is seeking an additional two years to ensure it has the authorization and mandate to continue pursuing the goals and objectives of the council and to support the two funded research projects that have already been approved. This will also allow the SCTC to continue pursuing other sources for funding to help the State secure a more robust and resiliency transportation network.

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## **COUNCIL TASKS AND RECOMMENDATIONS**

## **Advanced Geospatial Planning**

#### Recommendation

Develop an advanced geospatial Multimodal Resource Mapping and Management Model for the State of Louisiana to assist policy makers, and emergency managers in improving situational awareness of critical infrastructure interdependencies, estimate risk of various points of failure and their consequences, and coordinate with various public and private sector stakeholders to improve community resilience to disasters.

## **Agreements between Providers of Different Modes of Transportation**

#### Issue

Resiliency in modal redundancy

#### Recommendation

Assist the private sector in identification of modal redundancies in the supply chains of critical industries and transportation of critical commodities. So that in the event of a disruption to one mode agreements are in place that allows for seamless transition to alternate modes of transportation. Encourage investments where necessary to create redundancy where none exists.

## Increase Utilization of Technology and New Innovations

#### Issue

Extended outages of land line and cell phone networks greatly hinders communications for freight carriers leading to delays and potential safety issues.

#### Recommendations

Examine bandwidth for long distance 2-way radio communications for certain freight carriers. (rail and maritime).

Approach the FCC about the possibility of using existing bandwidth or increasing bandwidth in the Louisiana Wireless Information Network so that operators of critical freight infrastructure could utilize during outages to normal communication channels.

Encourage study of satellite communication alternatives.

Encourage resilience in and redundancy in cell and landline telephone networks.

#### Issue

Vulnerability to supply chain and transportation infrastructure to cyber attack

#### Recommendations

Members of the Louisiana Cyber Security Commission and representatives on its various committees are also active participants in the SCTC. Encourage continued cooperation and communication between the two bodies.

#### Issue

Future increased volume of freight movement via autonomous and connected vehicles

#### Recommendations

Begin studying the impacts of the potential for increased movement of freight via autonomous and connected vehicles. Examine possible cost benefit for Louisiana to invest in infrastructure that supports autonomous and connected vehicles.

## **Increase Effectiveness of Relationships**

#### Issue

After an ordered or mandatory evacuation railroad maintenance and repair personnel have experienced delays in being readmitted to Parishes and municipalities in order to conduct necessary repairs to damaged rail assets.

#### Recommendations

Add (Class 1) rail road repair and certain maritime crews to Tier 1 under state and parish reentry protocols.

Adopt recommendations of Crisis Event Response and Recovery Access (CERRA) Framework statewide.

Adopt re-entry protocols that cover multiple parishes to speed re-entry for personnel critical to restoring operations of critical transportation infrastructure..

Class 1 railroads operate a critical infrastructure and have demonstrated the ability to quickly repair their assets to resume operations. If highways and waterways are unusable for extended periods rail can provide the means to not only minimize economic damages due to disrupted supply chains but also move necessary life saving supplies.

The floods of 2016 demonstrated that extended disruptions to rail traffic in Louisiana can cause delays across the country. Repairing railways in Louisiana as quickly as possible strengthens the economic competitiveness and resilience of Louisiana and the country.

#### Issue

After an ordered or mandatory evacuation many large business owners and industries have experienced delays in being readmitted to Parishes and municipalities in order to

begin making the necessary repairs to businesses that can play an important role in distributing relief and recovery supplies.

#### Issue

Timing of flood gate closures. Rail operators lack situational awareness of the decision to close flood gates.

#### Recommendations

Providing rail operators with as much information as possible on the status of flood gate closures allows for them to make the necessary adjustments to their operations within time frames that limit losses to the railroads, trucking, marine carriers, and their customers. Allowing customers to plan for rail service disruptions minimizes their loss due to lost shipping efficiencies or even avoid facility shut downs.

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## **APPENDICES**

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# APPENDIX A: PROJECT UPDATE

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## **Office of Community Development**

The Capital Region Planning Commission and the Stephenson Disaster Management Institute, LSU partnered together to seek funding that would allow the SCTC to accomplish six of its critical tasks. Through a grant received from the Louisiana Office of Community Development, funding for the first two critical tasks was provided to CRPC and SDMI.

The two tasks that were funded include:

Task 1: Identify known single points of failure for all transportation nodes: Triggers, impacts, alternatives.

Through establishment of sub-committees and working groups, the four main transportation modes will be thoroughly reviewed for single points of failure that if disrupted, will interrupt and significantly impact the supply chain. This task is projected to span a 6 month – one year time period.

Task 2: Identify known single points of failures that have experienced repetitive flooding.

Through direct engagements with infrastructure owners and research, this activity will determine transportation critical infrastructure sites that have experienced disruptions due to flooding caused by excessive rains, excess capacity in waterways, and storm surge caused by tropical cyclone activity. Critical infrastructure modes that have experienced repetitive flooding that has resulted in supply chain disruptions will be identified and mapped. Future mitigation measures will be recommended to prevent future disruptions. This task is projected to span a 4 month – one year time period.

The following activities have been identified to complete tasks 1 and 2:

Activity 1a: Establishing subcommittee to assess known single points of failure for all transportation modes.

Activity 1b: Establish working group for each of the four transportation modes: air, road, maritime and rail modes.

Activity 1c: Identify critical components/infrastructure for each of the four transportation modes throughout the state by Metropolitan Planning Region (MPO) and GOHSEP Homeland Security Region (HLSR).

Activity 1d: Identify transportation modes/infrastructure single points of failure that if disrupted would interrupt the supply chain.

Activity 1e: Catalogue and map each of the four transportation modes with infrastructure single points of failure by MPO and HLS Region.

Activity 2a: Through direct engagements with infrastructure owners and research determine transportation critical infrastructure sites that have experienced disruptions due to flooding caused by excessive rains, excess capacity in waterways, and storm surge caused by tropical cyclone activity.

Activity 2b: Identify critical infrastructure modes that have experienced repetitive flooding that has resulted in the disruption of the supply chain.

Activity 2c: Identify mitigation measures that will prevent future disruptions of critical infrastructure and ensure the continuous flow of the supply chain on all four transportation modes

Project Deliverables include:

D1a: Rail Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active rail lines and associated infrastructure components that are necessary to ensure the sustainable flow of rail movements.

D1b: Air Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active commercial (primary and non-primary), cargo service, reliever, and general aviation airports and associated infrastructure components that are necessary to ensure the sustainable flow of air movements.

D1c: Surface Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active state and federal highways authorized for cargo transportation and associated infrastructure components that are necessary to ensure the sustainable flow of surface movements.

D1d: Maritime Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all inland waterways and associated infrastructure components that are necessary to ensure the sustainable flow of maritime movements.

D1e: Transportation Mode Report that catalogues all critical infrastructure sites, facilities and networks for each of the four transportation modes.

D2a: Rail Transportation Mode disrupted by Natural Hazards Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active rail lines that have experienced

disruptions due to naturally occurring disasters with emphasis on inland and storm surge flooding.

D2b: Air Transportation Mode disrupted by Natural Hazards Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active airports that have experienced disruptions due to naturally occurring disasters with emphasis on inland and storm surge flooding.

D2c: Surface Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active state and federal highways authorized for cargo transportation and associated infrastructure components that are necessary to ensure the sustainable flow of surface movements.

D2d: Maritime Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all inland waterways and associated infrastructure components that are necessary to ensure the sustainable flow of maritime movements.

D2e: Supply Chain Disruption Report that categorizes disruptions to the supply chain due to natural hazards and an initial identification of mitigation measures for the most critical sites that have experienced repetitive disruptions to reduce future disruptions to the state's transportation systems.

## Project Status for Task 1:

One of the first activities performed with the awarding of this grant including the formalization of the GIS Subcommittee membership. The Subcommittee was also broken down into four working groups to address each of the four transportation modes. Membership on the subcommittee includes:

#### Subcommittee Chair

- Brant Mitchell LSU-SDMI, Director Infrastructure Specialist:
  - Jeff McKee DHS, Protetective Security Advisor

#### Sea Ports / Waterways

- Mark Wright American Waterways
- Randall Withers DOTD, Ports Director
- Chris Collins DOTD, Waterways Program Manager

## Railway

- Carmack Blackmon Louisiana Railroads
- Mike Burrows DOTD, Assistant Director of Aviation

## Freight

Stephen Holliday – DOTD, Commercial Trucking

#### Subcommittee Support

- Lauren Stevens LSU-SDMI, Associate Director
- Chris Rippetoe LSU-SDMI, Project Manager

In addition to forming the subcommittee and working groups, substantial interviews have taken place with subject matter experts to understand the areas of concern for each of the transportation nodes. Schema for each of the geodatabases has been identified and data has been collected that will allow the Subcommittee to begin identify single points of failure and infrastructure that could disrupt the operations of each of the four modes. Next steps include continue interviews and information gathering on closures for all four nodes during previous disasters.

# **APPENDIX B: FUNDING AND PROPOSALS**

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## Proposal to Complete Initial Six Tasks Identified by the Supply Chain Transportation Council Executive Committee

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#### **SCTC Administration and Outreach**

#### Task 1: Identify known single points of failure for all transportation modes:

#### **Activities:**

Activity 1a: Establishing subcommittee to assess known single points of failure for all transportation modes.

Activity 1b: Establish working group for each of the four transportation modes: air, road, maritime and rail modes.

Activity 1c: Identify critical components/infrastructure for each of the four transportation modes throughout the state by Metropolitan Planning Region (MPO) and GOHSEP Homeland Security Region (HLSR).

Activity 1d: Identify transportation modes/infrastructure single points of failure that if disrupted would interrupt the supply chain.

Activity 1e: Catalogue and map each of the four transportation modes with infrastructure single points of failure by MPO and HLS Region.

#### **Deliverables:**

D1a: Rail Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active rail lines and associated infrastructure components that are necessary to ensure the sustainable flow of rail movements.

D1b: Air Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active commercial (primary and non-primary), cargo service, reliever, and general aviation airports and associated infrastructure components that are necessary to ensure the sustainable flow of air movements.

D1c: Surface Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active state and federal highways authorized for cargo transportation and associated infrastructure components that are necessary to ensure the sustainable flow of surface movements.

D1d: Maritime Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all inland waterways and associated infrastructure components that are necessary to ensure the sustainable flow of maritime movements.

D1e: Transportation Mode Report that catalogues all critical infrastructure sites, facilities and networks for each of the four transportation modes.

#### **Estimated Timeline:**

Y1 / Months 1 – 6

Cost:

\$82,003

#### Task 2: Identify known single points of failure that have experienced repetitive flooding.

#### **Activities:**

Activity 2a: Through direct engagements with infrastructure owners and research determine transportation critical infrastructure sites that have experienced disruptions due to flooding caused by excessive rains, excess capacity in waterways, and storm surge caused by tropical cyclone activity.

Activity 2b: Identify critical infrastructure modes that have experienced repetitive flooding that has resulted in the disruption of the supply chain.

Activity 2c: Identify mitigation measures that will prevent future disruptions of critical infrastructure and ensure the continuous flow of the supply chain on all four transportation modes

#### **Deliverables:**

D2a: Rail Transportation Mode disrupted by Natural Hazards Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active rail lines that have experienced disruptions due to naturally occurring disasters with emphasis on inland and storm surge flooding.

D2b: Air Transportation Mode disrupted by Natural Hazards Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active airports that have experienced disruptions due to naturally occurring disasters with emphasis on inland and storm surge flooding.

D2c: Surface Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active state and federal highways authorized for cargo transportation and associated infrastructure components that are necessary to ensure the sustainable flow of surface movements.

D2d: Maritime Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all inland waterways and associated infrastructure components that are necessary to ensure the sustainable flow of maritime movements.

D2e: Supply Chain Disruption Report that categorizes disruptions to the supply chain due to natural hazards and an initial identification of mitigation measures for the most critical sites that have experienced repetitive disruptions to reduce future disruptions to the state's transportation systems.

#### **Estimated Timeline:**

Y1 / Months 4 – 12

Y2 / Months 1 – 6

#### Cost:

\$205,423

#### Task 3: Identify single points of failure of interdependency infrastructure.

#### **Activities:**

Activity 3a: Identify the cross critical infrastructure sectors that provide direct support to ensure that single points of failure are operational. Cross critical infrastructure sectors include but not limited to energy, communications, and information technology sectors.

Activity 3b: Conduct site visit for critical transportation modes that have experienced repetitive losses to identify other critical infrastructures that they are reliant on to ensure the uninterrupted flow of transportation.

#### **Deliverables:**

D3a: Transportation Modal Infrastructure Interdependency by Mode Report detailing select sites and interdependency infrastructure sites that are critical to ensure the continued operation and flow of goods post disaster.

D3b: Interdependency Infrastructure by Transportation Mode Geospatial Database in Shapefile and geodatabase formats.

#### **Estimated Timeline:**

Y2 / Months 1 - 12

#### Cost:

\$84,909

#### Task 4: Identify governing authorities across the state impacting transportation.

#### **Activities:**

Activity 4a: Identify local, state and federal governing authorities that have regulatory or statutory authority over critical infrastructure transportation modes

Activity 4b: Compile geographic files for all regulatory and statutory governing bodies that have direct authority over any of the four transportation modes.

#### **Deliverables:**

D4a: Governance Report by Transportation Mode that catalogues federal, state and local geographic boundaries and statutory & regulatory responsibilities for each body.

D4b: Governance Boundary Geospatial Database in Shapefile and Geodatabase format.

#### Timeline:

Y1 / Months 1 – 6

Cost: \$48,209

#### Task 5: Consolidate all known transportation modes mapping data.

#### **Activities:**

Activity 5a: Identify all mapping requirements for each of the four transportation modes

Activity 5b: Inventory all existing GIS data and consolidate on to a web based mapping portal for viewing and consuming data.

Activity 5c: Create and develop any missing data layers. Upon completion add to web-based mapping portal.

#### **Deliverables:**

D5a: Web-based Viewer that depicts all relevant infrastructure sites and transportation networks by transportation mode.

D5b: Web-based Portal that catalogues and inventories all relevant transportation data by mode and makes data available for download and as a map service that allows direct consumption from the portal.

#### **Estimated Timeline:**

Y1 Months 6 - 12

#### Cost:

\$110,959

Task 6: Identification of future disruptions to the transportation system caused by major flooding events caused by rainwater, excessive flooding of waterways and storm surge from tropical cyclones.

#### **Activities:**

Activity 6a: Utilize ADCIRC runs integrated with transportation modes mapping data to determine critical infrastructure that is susceptible to storm surge.

Activity 6b: Develop the Precipitation and Riverine Estimation Product (PREP) flood model based on hydrological unit codes (HUC) to determine critical infrastructure modes that are vulnerable to flood waters from excessive rain and riverine flooding.

Activity 6c: Establish 500 year and 1,000 year baseline storms for each HUC to determine most likely and most dangerous disruptions to the supply chain.

Activity 6e: Conduct a future disruption analysis of each of the 32 HUCs for all relevant transportation nodes based on a 100 year, 500 year, and 1,000 year flood event.

#### **Deliverables:**

D6a: PREP flood model that provides predictive analysis of hydrological movement and flooding for each of the State's 32 HUCs

D6b: Statewide Potential Flooding Disruption Report by transportation mode consolidated for the State and segregated by Metropolitan Planning Region and HLS Region. Report will include analysis for Storm Surge using the ADCIRC + SWAN storm surge guidance systems and the PREP flooding model developed as Deliverable 6a. Most likely and most impacted analysis will be completed for each of the transportation modes based on a 100, 500, and 1,000 year rain event.

#### **Estimated Timeline:**

Y1 / Months 1 – 12 – HUC Designs and Model Development

Y2 / Months 1 – 12 – Model Testing and Validation

Y3 / Months 1 – 12 – Future Disruption Analysis

#### Costs:

\$1,531,279

#### Task 7: Coordination and Administration of the SCTC

#### **Activities**

Activity 7a: Planning, coordinating and executing regular meetings of the SCTC every-other-month. Develop programing for meetings to keep membership engaged and informed. Facilitate information sharing among members and process for members to provide feedback on SCTC projects.

Activity 7b: Grant and project management. Distribute funds to member entities for grant funded projects. Ensure projects adhere to timelines and manage reporting to grantors.

Activity 7c: Identify new public and private funding sources, inform membership of funding opportunities and synergies.

Activity 7d: SCTC identify resiliency goals for Louisiana and monitor progress.

#### **Deliverables:**

Deliverable 7a: Report(s) to legislature and Secretary of DOTD per SCR 9. Included in report a list of projects based upon cost/benefit analysis.

Deliverable 7b: Future resiliency reports to the legislature, the Governor and his Cabinet.

Deliverable 7c: Reports to grantors and regular reports on SCTC activity and resiliency goals.

Deliverable 7d: Regular SCTC meetings.

#### **Estimated Timeline:**

Ongoing

#### Costs:

See SCTC Coordination/Administration under *Total Costs* 

#### **Task 8: Implementation & Outreach**

#### **Activities:**

Activity 8a: Broaden reach of SCTC to include state MPOs.

Activity 8b: Conduct outreach to state, regional, and local officials and private sector stakeholders to make them aware of resiliency initiatives, findings and recommendations of the SCTC.

#### **Deliverables:**

Deliverable 8a: State MPOs incorporate resilience and findings of SCTC into long range transportation plans (updated every 5 years).

#### **Total Costs:**

Total:	\$2,343,965
Year 3: 70% FTE	\$104,998
Year 2: 70% FTE	\$103,004
Year 1: 50% FTE	\$73,180
CRPC/SCTC Coordination and Administration*	
Task 6: Future Disruptions	\$1,531,279
Task 5: Transportation Data Viewing and Consumption	\$110,959
Task 4: Transportation Governing Bodies	\$48,209
Task 3: CI Interdependency Identification	\$84,909
Task 2: Transportation CI Loss Identification	\$205,423
Task 1: Transportation CI Identification	\$82,003

## **Louisiana Supply Chain & Transportation Council (SCTC)**

# **Regional Smart Transportation Network**

# A Proposal to the Regional Smart Infrastructure Challenge

Smart Regions Conference Columbus, Ohio 25 October 2018



















## **Louisiana Regional Smart Transportation Network**

## **Executive Summary**

This project initiates a Regional Smart Transportation Network for the State of Louisiana across the strategic corridor from Interstate 10 south to the Louisiana Gulf Coast extending from the City of New Orleans on the eastern edge of the state to Lake Charles and the Calcasieu Ship Channel on the western border with Texas. The broad goal of this project is to develop a secure, resilient Smart Transportation Network encompassing the multi-modal transportation infrastructure of the Central Gulf Coast. In addition to a flourishing diversity of natural and cultural resources and coastal communities, this region maintains, operates and protects a vast network of the nation's critical petroleum and energy infrastructure, as well as the strategic commercial waterway of the Mississippi River and Calcasieu Waterway central to the nation's economic and industrial vitality.

In March 2018, following a series of state and regional initiatives to recover from historic flooding og 2016 and its economic impact, the Louisiana Legislature established the Supply Chain and Transportation Council (SCTC) to provide recommendations for improvements in commercial and workforce transportation to assist in making Louisiana's economy more resilient to disasters, to enhance resilience of the state's multi-modal transportation system, and ensure effective routing of transportation assets under disaster scenarios. The SCTC's charter includes research, development and adoption of new technologies and innovations to track, coordinate and assure transport and delivery of goods critical to the recovery of coastal communities, rural and agricultural regions, and urban centers impacted by the recurrent hurricanes, flooding and coastal erosion that affects Louisiana and much of the region. In addition, a critical mission for the state is to protect the industrial resources, businesses, and critical infrastructure systems that provide and distribute petroleum, natural gas and energy resources to the nation, to include sustaining the lives and livelihoods of the families and communities of the workforce that operates, maintains and protects these critical infrastructure systems.

In pursuit of this mission, the SCTC has been building a regional collaboration and broad Public Private Partnership to develop an integrated, systems-level approach to planning for disaster resilience with the goal of providing for the efficient recovery of Louisiana communities affected by disaster, while ensuring continuity of operations for the nation's strategic assets along the Louisiana Gulf Coast. This collaboration includes key businesses, industries and trade associations; regional economic development agencies, chambers of commerce and planning commissions; city and parish officials and community and business leaders; university research centers and technology firms; and key cities that are developing novel strategies for crossjurisdictional watershed management, flood mitigation and the resilience of community assets and populations.

This proposal to the Regional Smart Infrastructure Challenge represents the initial research and development effort under the SCTC aimed at developing functional prototypes of Smart Transportation Systems for both citizen transportation in a municipality and surrounding region; and a cutting-edge, high speed "hyperloop" freight transport system to greatly improve disaster resilience and efficiency of freight transportation between critical nodes in the strategic manufacturing and petroleum centers of the state. This proposal is comprised of three sections:

Charter and background of the Supply Chain and Transportation Council, its initiation of this
project submission to the Regional Smart Infrastructure Challenge, and a series of analyses
and research efforts to identify key technology and capability gaps in state inter-modal

transport;

- 2. A portfolio of projects within the City of Lafayette to establish a model Smart Transportation system as a regional model for ways to improve transportation efficiency, disaster resilience, and sustainability while establishing a baseline for community assessment of return on investment:
- 3. Development of a functional, full-scale prototype of a Hyperloop Freight Transport System between Lafayette and Lake Charles and the Calcasieu Waterway, a region which services and maintains critical national infrastructure for petroleum refinery and transport, and is currently undergoing a massive expansion of operations to support the global market in liquefied natural gas market.

Each of these projects represents a pilot or prototype effort under the SCTC, and will be the basis for an ongoing statewide effort to assess, design, and develop projects to enhance the structural and economic efficiency of the state's multi-modal transportation system.

#### A Statewide Public Private Partnership

The Louisiana Supply Chain and Transportation Council is a public private partnership with representation from state agencies, parish and municipal government, research universities and institutes, state transport carriers and associations, and private sector businesses, both large and small. The principal collaborators on this proposal to develop the pilot effort represent the SCTC, as well as the City and Parish of Lafayette, two regional planning commissions (Acadiana and the Capital Region), the University of Louisiana at Lafayette, the analytic firm of REMI, Inc., and the New Orleans-based technology firm of Transonic Transportation, LLC. However, this team represents a much broader coalition of state, regional, community and private sector organizations that participate in the SCTC, and whose members were directly affected by the historic flooding of 2016. This broader Public Private Partnership is the coalition that is moving forward to improve the disaster resilience, efficiency, and cost-effectiveness of the Louisiana multi-modal transportation system. Our partnership includes:

City-Parish of Lafayette	City of Baton Rouge
The Acadiana Planning Commission	The Capital Region Planning Commission
New Orleans Regional Planning Commission	Louisiana Committee of One Hundred
Imperial Calcasieu Regional Planning and Development Commission	One Acadiana
Louisiana Economic Development	State Office of Community Development
The Supply Chain and Transportation Council	Louisiana Motor Transport Association
Governor's Office of Homeland Security	Louisiana Business Emergency Operations Center
University of Louisiana at Lafayette	Louisiana State University

Louisiana Transportation Research Center

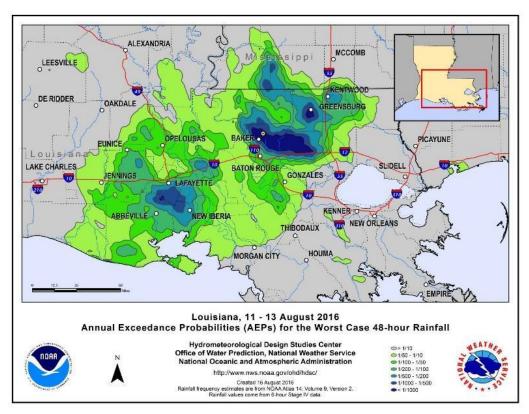
C.F. Fenstermaker & Associates, LLC

Capital Region Industry for Sustainable Infrastructure Solutions

**Part 1: Origins and Charter** 

## Louisiana Regional Smart Transportation Network Supply Chain and Transportation Council

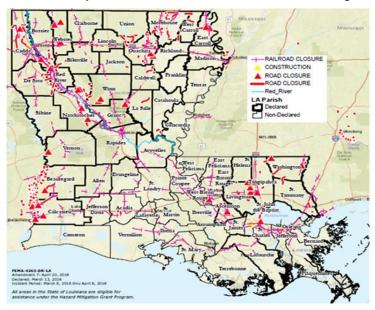
In March and August of 2016, most of the State of Louisiana experienced 48-hour rainfall totals between the 1/10 and 1/50 annual exceedance probability (AEP) with as many as 7 locations recording greater than 1/1000 (AEP). Thus, Louisiana experienced 2 "1,000 year" rain events in one year. The August storm dropped an estimated 7.1 trillion gallons of water, roughly enough to fill Lake Ponchartrain four times. The subsequent floods in March and August exceeded the flood of record in affected areas and led to federal disaster declarations covering 56 of Louisiana's 64 parishes.



The two catastrophic floods in one year highlighted several points of failure in Louisiana's transportation infrastructure that impacted freight flows and commerce throughout the state.

During the floods of 2016, all 6 interstate highways in Louisiana experienced extended closures in multiple places, as did hundreds of state secondary and local roads. Effects included:

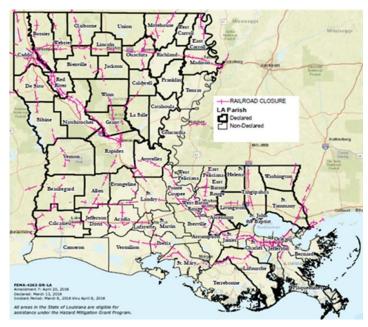
- I-10 at the Texas/Louisiana border closed for over 48 hours;
- 61,300 miles of public roads closed;
- During the August floods, motorists were stranded on portions of I-12 for over 48 hours.
- Rail traffic was essentially halted across Louisiana due to flooding



Flood-based road closures state-wide

#### Of particular note:

- Trucking accounts for 58% of tonnage moved in Louisiana;
- Class 1 railroad closures in Louisiana caused rail delays across the country;
- Kansas City Southern and Union Pacific closed for almost 1 month in March;
- KCS and UP account for 73% of 2,730 route miles in Louisiana;
- Railroads in Louisiana handle approximately 121 million tons of freight annually.



Flood-based rail closures statewide

Moreover, flood waters deposited substantial amounts of silt in key waterways, which resulted in the extended closure of the J. Bennett Johnston Red River Waterway System ("the Red River"). This also impacted the Ouachita River and three multimodal ports along the Red River, causing downstream impacts to commerce on the Atchafalaya and Mississippi rivers and the Gulf Intracoastal Waterway System. This was the first time that the Ouachita River failed to meet minimum standards for navigation. In addition, the Red River is the only waterway south of Cairo, IL with a 9- foot draft. (Standard commercial navigational draft is 12 feet).



Navigable waterways in Louisiana affected by 2016 Floods

In the wake of the 2016 floods, FEMA activated the National Disaster Recovery Framework (NDRF)—the first such statewide activation of the Framework as a disaster recovery strategy. The NDRF provides a strategy and process for federal agencies to coordinate and share information and resources in assisting state and local governments in long term disaster recovery. It splits primary recovery responsibilities into six Recovery Support Functions (RSFs):

- Community Planning and Capacity Building;
- Economic Recovery;
- Health and Social Services;
- Housing;
- Infrastructure Systems; and
- Natural and Cultural Resources.

The RSFs are represented by primary federal agencies and their work is coordinated locally by FEMA. A primary product of the NDRF and RSFs deployed to a disaster is the creation of a Recovery Support Strategy (RSS), intended to serve as a plan of action for local recovery efforts pursued as a partnership between federal, state and local authorities. The RSS for the March and August 2016 floods listed the following as primary focus for goals and objectives:

#### GOAL

To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events.

OBJECTIVE 1: Keep vital transportation networks operating or decrease downtime post disaster.

- Strategy 1: Invest in research to find alternatives to dredging and possibly subsidize financing for high-capacity shallow-draft boats and barges.
  - Action [Short Term]: Establish a supply chain network to engage businesses and agriculture interests in support of transportation resilience and enhanced transportation systems, in partnership with LADOTD.

#### Objective 1 of FEMA Recovery Support Strategy for Louisiana 2016 Flood Recovery

This goal, objective, strategy and action were the genesis of the Louisiana Supply Chain Transportation Council (SCTC). Consultants with the U.S. Chamber of Commerce and Economic Development Administration had begun having discussions with Louisiana Economic Development and the Louisiana Department of Transportation and Development in the spring and summer of 2016 regarding formation of a public-private partnership which would work toward the goal stated in the RSS, and the first meeting of the SCTC was held in early 2017.

In the early meetings the SCTC identified co-chairs for the Council, formed an Executive Committee, a GIS Committee, and Technology and Innovation Committee. The group then identified a series of critical tasks to undertake toward achieving the goal stated in the RSS:

- Identify known points of failure for all transportation nodes;
- Identify known single points of failure that have experienced repetitive flooding;
- Identify single points of failure of interdependency infrastructure;
- Identify governing authorities impacting transportation across the state;
- Consolidate all known transportation nodes mapping data:
- Identification of future disruptions to the transportation system;
- Establish a capability for on-the-fly routing during disasters;
- Support universities in the state in providing a list of priorities and conducting analyses to enhance resiliency across the transportation sector.

In May of 2017, the Louisiana Legislature passed *Senate Concurrent Resolution 99*, formally authorizing the creation of the SCTC and calling upon it to "study and make recommendations regarding increasing resilience in various modes of transportation through increased communication, collaboration, development of geographic information technologies, and new innovations in transportation." The council is comprised of stakeholders from state and federal government, Louisiana Universities and the private sector representing every mode of freight transportation within the state. The SCTC meets on monthly basis and has staff support from the Capital Region Planning Commission's Regional Economic Disaster Recovery Manager.

By September, the State of Louisiana had agreed to provide funding to the SCTC to cover administrative costs, which then began working on the identified critical tasks and to complete the report requested by the Legislature for delivery in the Spring of 2019.

The following entities are active members of the SCTC:

- Louisiana Department of Transportation and Development (DOTD)
- Department of Economic Development (LED)
- Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)
- Office of Community Development-Disaster Recovery Unit (OCD-DRU)
- Ports Association of Louisiana
- Louisiana Motor Transport Association
- Louisiana Railroads Association
- Big River Coalition
- American Waterways Operators
- International Air Cargo Association
- Committee of 100 for Economic Development
- Louisiana Association of Business and Industry
- Louisiana Chemical Association
- US Department of Transportation
- US Army Corps of Engineers
- US Economic Development Administration
- Louisiana Association of Planning and Development Districts
- Louisiana Board of Regents
- Louisiana State University Stevenson Disaster Management Institute (SDMI)
- University of Louisiana Lafayette (ULL) Informatics Research Institute
- National Incident Management Systems and Advanced Technologies Institute (ULL)
- University of New Orleans.

With this broad Public Private Partnership, Louisiana, with assistance from federal partners, has taken a strategic and proactive approach to recovery from the 2016 floods, recognizing that disasters, no matter how devastating, can also create opportunities for improvement. Very early in the process, Governor John Bel Edwards expressed the desire that, rather than a return to predisaster status quo, resiliency should be factored into all aspects of recovery. The Governor twice called statewide symposia of local and state government stakeholders to discuss resilient recovery. In May 2018, Governor Edwards signed an executive order creating the Council on Watershed Management Agencies, consisting of the heads of 5 state agencies and charged the council with shifting the state's approach to flood risk beyond jurisdictional boundaries toward a more regional watershed-based approach.

Achieving transportation resiliency and thereby creating economic resiliency and increasing economic competitiveness is at the heart of the SCTC's mission. The best way to build resiliency in a supply chain is through redundancy. Multi-modal optionality can avoid complete supply chain disruptions, where freight continues to flow but under sub-optimal conditions rather than experience a complete shutdown in service.

The proposed **Regional Smart Transportation Network** is the template for accomplishing redundancy in transportation systems across the state. In addition, accounting for cutting-edge transportation technology via a Hyperloop Freight Delivery System adds a completely new dimension to supply chain and transportation redundancy via an entirely new mode of transport.

**Additional Context and Justification** 

- 13.5% of bridges in Louisiana are structurally deficient, which means they have been rated as being in poor condition due to structural flaws that affect the load carrying capacities or the waterways that frequently overtop the bridges during floods.
- Louisiana ranks 2nd in the nation in number of structurally deficient bridges based on square footage of bridge deck.
- Transportation funding in Louisiana has been stagnant since the 1990s. With inflation and increased demand, Louisiana has been unable to maintain its 12,915 bridges properly over the last 30 years.
- Louisiana's failure to meet these current and future transportation needs contributes to a lack of economic regional and national competitiveness.
- The state gasoline tax is currently 20 cents/gallon (4 cents TIMED Program and 16 cents regular program. However, due to inflation, the 16 cents is worth approximately 7 cents in current dollars, a huge loss in buying power.
- With nearly a \$13B backlog (\$10.1B for roads), not only does capacity suffer, but preservation, operations, and safety are also jeopardized.
- According to the 2015 TTI Urban Mobility Scorecard, New Orleans is ranked 54th (39,159,000 hours of delay) and Baton Rouge is ranked 38th (23,163,000 hours of delay) in the nation for travel delays.
- As documented in the 2015 TTI Urban Mobility Scorecard, New Orleans was graded as the sixth worst urban area (medium average area for 33 areas) for travel time delay, and Baton Rouge was rated third worst (medium average area for 33 areas).
- According to Federal Highway Administration Statistics, vehicle miles traveled (VMT) in Louisiana increased from 45.4 billion VMT in 2010 to 47.9 billion VMT in 2014, a 5% increase.
- Driving on roads needing repair costs Louisiana drivers \$6.5 billion per year in additional vehicle repairs, travel delays, traffic crashes, and operating costs (\$1,894 - \$2,466 per motorist in major urban areas).
- The Louisiana Fatality Rate in 2014 (total of 712 fatalities) is 1.51/MVMT (Million Vehicle Miles Traveled). Meanwhile, the national average rate for fatalities in 2015 was 1.12/MVMT. This places Louisiana about 35% higher than the national average.
- Drivers in Lafayette experience 26 hours of delay per year, per automobile.

Appendix B March 2019

# SCTC Tasks and Cost Estimates

NOTE: Tasks 1 and 2 are currently funded via the Office of Community Development.

# Task 1: Identify known single points of failure for all transportation modes:

Activity 1a: Establishing subcommittee to assess known single points of failure for all transportation modes.

Activity 1b: Establish working group for each of the four transportation modes: air, road, maritime and rail modes.

Activity 1c: Identify critical components/infrastructure for each of the four transportation modes throughout the state by Metropolitan Planning Region (MPO) and GOHSEP Homeland Security Region (HLSR).

Activity 1d: Identify transportation modes/infrastructure single points of failure that if disrupted would interrupt the supply chain.

Activity 1e: Catalogue and map each of the four transportation modes with infrastructure single points of failure by MPO and HLS Region.

# **Deliverables:**

D1a: Rail Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active rail lines and associated infrastructure components that are necessary to ensure the sustainable flow of rail movements.

D1b: Air Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active commercial (primary and non-primary), cargo service, reliever, and general aviation airports and associated infrastructure components that are necessary to ensure the sustainable flow of air movements.

D1c: Surface Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active state and federal highways authorized for cargo transportation and associated infrastructure components that are necessary to ensure the sustainable flow of surface movements.

D1d: Maritime Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all inland waterways and associated infrastructure components that are necessary to ensure the sustainable flow of maritime movements.

D1e: Transportation Mode Report that catalogues all critical infrastructure sites, facilities and networks for each of the four transportation modes.

**Estimated Timeline:** Y1 / Months 1-6

Estimated Cost: \$82,003

# Task 2: Identify known single points of failure that have experienced repetitive flooding.

Activity 2a: Through direct engagements with infrastructure owners and research determine transportation critical infrastructure sites that have experienced disruptions due to flooding caused by excessive rains, excess capacity in waterways, and storm surge caused by tropical cyclone activity.

Activity 2b: Identify critical infrastructure modes that have experienced repetitive flooding that has resulted in the disruption of the supply chain.

Activity 2c: Identify mitigation measures that will prevent future disruptions of critical infrastructure and ensure the continuous flow of the supply chain on all four transportation modes

# **Deliverables:**

D2a: Rail Transportation Mode disrupted by Natural Hazards Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active rail lines that have experienced disruptions due to naturally occurring disasters with emphasis on inland and storm surge flooding.

D2b: Air Transportation Mode disrupted by Natural Hazards Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active airports that have experienced disruptions due to naturally occurring disasters with emphasis on inland and storm surge flooding.

D2c: Surface Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all active state and federal highways authorized for cargo transportation and associated infrastructure components that are necessary to ensure the sustainable flow of surface movements.

D2d: Maritime Transportation Mode Geospatial Data Layer in Shapefile and Geodatabase formats identifying all inland waterways and associated infrastructure components that are necessary to ensure the sustainable flow of maritime movements.

D2e: Supply Chain Disruption Report that categorizes disruptions to the supply chain due to natural hazards and an initial identification of mitigation measures for the most critical sites that have experienced repetitive disruptions to reduce future disruptions to the state's transportation systems.

**Estimated Timeline:** Y1 / Months 4 – 12 Y2 / Months 1 - 6

Estimated Cost: \$205,423

# Task 3: Identify single points of failure of interdependency infrastructure.

Activity 3a: Identify the cross critical infrastructure sectors that provide direct support to ensure that single points of failure are operational. Cross critical infrastructure sectors include but not limited to energy, communications, and information technology sectors.

Activity 3b: Conduct site visit for critical transportation modes that have experienced repetitive losses to identify other critical infrastructures that they are reliant on to ensure the uninterrupted flow of transportation.

# **Deliverables:**

D3a: Transportation Modal Infrastructure Interdependency by Mode Report detailing select sites and interdependency infrastructure sites that are critical to ensure the continued operation and flow of goods post disaster.

D3b: Interdependency Infrastructure by Transportation Mode Geospatial Database in Shapefile and geodatabase formats.

**Estimated Timeline** Y2 / Months 1 – 12

Estimated Cost: \$84,909

# Task 4: Identify governing authorities across the state impacting transportation.

Activity 4a: Identify local, state and federal governing authorities that have regulatory or statutory authority over critical infrastructure transportation modes

Activity 4b: Compile geographic files for all regulatory and statutory governing bodies that have direct authority over any of the four transportation modes.

# **Deliverables:**

D4a: Governance Report by Transportation Mode that catalogues federal, state and local geographic boundaries and statutory & regulatory responsibilities for each body.

D4b: Governance Boundary Geospatial Database in Shapefile and Geodatabase format.

**Estimated Timeline:** Y1 / Months 1 - 6

Estimated Cost: \$48,209

# Task 5: Consolidate all known transportation modes mapping data.

Activity 5a: Identify all mapping requirements for each of the four transportation modes

Activity 5b: Inventory all existing GIS data and consolidate on to a web based mapping portal for

viewing and consuming data.

Activity 5c: Create and develop any missing data layers. Upon completion add to web-based mapping portal.

### Deliverables:

D5a: Web-based Viewer that depicts all relevant infrastructure sites and transportation networks by transportation mode.

D5b: Web-based Portal that catalogues and inventories all relevant transportation data by mode and makes data available for download and as a map service that allows direct consumption from the portal.

**Estimated Timeline:** Y1 Months 6 – 12

Estimated Cost: \$110,959

# Task 6: Identification of future disruptions to the transportation system caused by major flooding events caused by rainwater, excessive flooding of waterways and storm surge from tropical cyclones.

Activity 6a: Utilize ADCIRC runs integrated with transportation modes mapping data to determine critical infrastructure that is susceptible to storm surge.

Activity 6b: Develop the Precipitation and Riverine Estimation Product (PREP) flood model based on hydrological unit codes (HUC) to determine critical infrastructure modes that are vulnerable to flood waters from excessive rain and riverine flooding.

Activity 6c: Establish 500 year and 1,000 year baseline storms for each HUC to determine most likely and most dangerous disruptions to the supply chain.

Activity 6e: Conduct a future disruption analysis of each of the 32 HUCs for all relevant transportation nodes based on a 100 year, 500 year, and 1,000 year flood event.

# **Deliverables:**

D6a: PREP flood model that provides predictive analysis of hydrological movement and flooding for each of the State's 32 HUCs.

D6b: Statewide Potential Flooding Disruption Report by transportation mode consolidated for the State and segregated by Metropolitan Planning Region and HLS Region. Report will include analysis for Storm Surge using the ADCIRC + SWAN storm surge guidance systems and the PREP flooding model developed as Deliverable 6a. Most likely and most impacted analysis will be completed for each of the transportation modes based on a 100, 500, and 1,000 year rain event.

**Estimated Timeline:** Y1 / Months 1 – 12 – HUC Designs and Modeling

Y2 / Months 1 – 12 – Model Testing and Validation Y3 / Months 1 – 12 – Future Disruption Analysis

Estimated Costs: \$1,531,279

# Task 7: Conduct Economic and Functional Risk Analyses of the Multi-Modal Transportation System

This task provides for planning, coordinating and conducting an economic impact analysis and functional risk analyses of the statewide multi-nodal transportation system to support planned enhancements envisioned in the SCTC Charter and tasks. Analyses will be undertaken by the University of Louisiana at Lafayette—specifically the National Incident Management Systems and Advanced Technology (NIMSAT) Institute and the Louisiana Transportation Research Center (LTRC)—supported by the Regional Economic Modeling Institute, Inc. (REMI), which has been previously engaged by the Louisiana Department of Transportation and Development (DOTD) for statewide analytic support. This aspect of the SCTC Regional Smart Transportation Network will establish a baseline and develop methodologies for completing several specific requirements established by the SCTC Charter:

- Identify single points of failure of interdependency infrastructure;
- Identify governing authorities impacting transportation across the state;
- Consolidate all known transportation nodes mapping data;
- Identification of future disruptions to the transportation system;
- Establish a capability for on-the-fly routing during disasters;

Activity 7a: Conduct analyses of the state multi-modal transportation system in order to enhance disaster resilience and identify system interdependencies and vulnerabilities

Activity 7b: Provide direct support to the SCTC in project management, cost-benefit analyses, risk assessment, and task prioritization, and ensuring that projects meet expected timelines and objectives.

Activity 7c: Conduct economic impact and benefit-cost analysis of proposed tasks and local / regional projects within the RSTN program (REMI)

Activity 7d: Identify long-term requirements to meet resiliency goals established by SCTC.

# **Deliverables:**

Deliverable 7a: Analyses of the multi-modal transportation system with focus on vulnerabilities and system interdependencies to enhance disaster resilience.

Deliverable 7b: Project management support to SCTC for the duration of the SCTC RSTN project development and implementation.

Deliverable 7c: Economic impact and benefit-cost analysis of proposed tasks and local / regional projects within the RSTN program, and a statewide dashboard for monitoring system interdependencies and outputs.

Deliverable 7d: Report of long-term requirements and shortfalls within SCTC planning and state multi-modal transportation system strategies for capacity enhancement.

Estimated Timeline: Y1 / Months 1-12 (REMI)

Y1-Y3 Months 1-36 (UL NIMSAT)

Y1-Y3 Months 1-36 (UL LTRC)

# **Estimated Costs:**

**REMI Economic Analysis and** 

Transportation Dashboard Year 1: \$272,000

NIMSAT Vulnerability/Risk Analysis Years 1-3 (\$159,670/yr) \$479,000\* LTRC Transportation System Analysis Years 1-3 (\$159,670/yr) \$479,000\* \*Includes 2.7 FTE Research Staff / 1 PhD student / 2 MS students + all F&A)

# Task 8: Coordination and Administration of the SCTC

Activity 8a: Planning, coordinating and executing regular meetings of the SCTC every-othermonth. Develop programing for meetings to keep membership engaged and informed. Facilitate information sharing among members and process for members to provide feedback on SCTC projects.

Activity 8b: Grant and project management. Distribute funds to member entities for grant funded projects. Ensure projects adhere to timelines and manage reporting to grantors.

Activity 8c: Identify new public and private funding sources, inform membership of funding opportunities and synergies.

Activity 8d: SCTC identify resiliency goals for Louisiana and monitor progress.

# **Deliverables:**

Deliverable 8a: Report(s) to legislature and Secretary of DOTD per SCR 9. Included in report a list of projects based upon cost/benefit analysis.

Deliverable 8b: Future resiliency reports to the legislature, the Governor and his Cabinet.

Deliverable 8c: Reports to grantors and regular reports on SCTC activity and resiliency goals.

Deliverable 8d: Regular SCTC meetings.

Estimated Timeline: Ongoing

# Costs: CRPC/SCTC Coordination and Administration

Year 1: 50% FTE \$73,180 Year 2: 70% FTE \$103,004 Year 3: 70% FTE \$104,998

# Task 9: Implementation & Outreach

Activity 9a: Broaden reach of SCTC to include state MPOs.

Activity 10b: Conduct outreach to state, regional, and local officials and private sector stakeholders to make them aware of resiliency initiatives, findings and recommendations of the SCTC.

# **Deliverables:**

Deliverable 9a: State MPOs incorporate resilience and findings of SCTC into long range transportation plans (updated every 5 years).

# Project/Task Costs:

<b>(1:</b>	Transportation CI Identification \$82,003 (funded by OCD)
<b>(2:</b>	Transportation CI Loss Identification \$205,423 (funded by OCD)
<b>c</b> 3:	CI Interdependency Identification \$84,909
<b>(4:</b>	Transportation Governing Bodies \$48,209
ς 5:	Transportation Data Viewing and Consumption \$110,959
<b>(6:</b>	Future Disruptions\$1,531,279
<b>(7</b> :	Economic and Functional Risk Analysis\$1,230,000
Task 8:	Coordination and Administration (SCTC) \$281,182

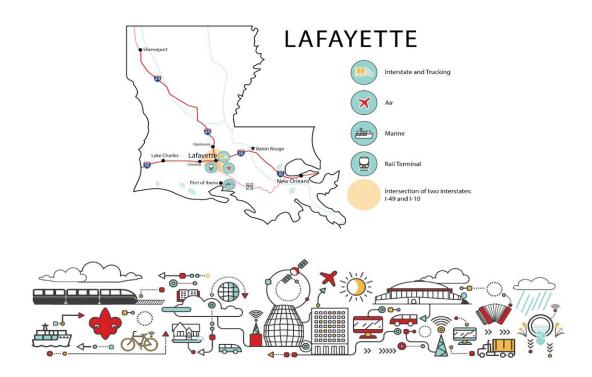
Total:

\$3,286,538

# Part 2: Development of a Community/Regional Transportation Network Pilot Site: Lafayette, Louisiana

This aspect of the Regional Smart Transportation Network will develop Smart Transportation strategies and technologies to enhance disaster resilience in a regionally significant pilot community as a testbed for technology research, test and evaluation for potential implementation across the state. This project has two key objectives:

- 1. Improve citizen access and Quality of Life while enhancing public safety
- 2. Address social disparity and build a more resilient, cohesive community

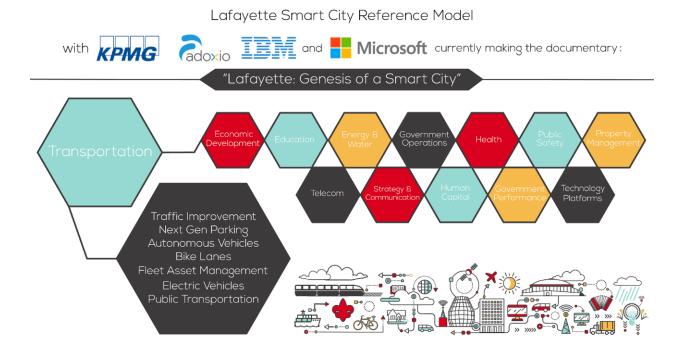


# **Lafayette Overview**

Lafayette, Louisiana is located in the center of a nine-parish region, known as Acadiana - named for a combination of Acadie and Louisiana. Acadie was home to our ancestors the Acadiens, who were exiled from Nova Scotia between 1755 to 1762. Since then, Lafayette has become the heart of the Acadiana region and has a long history of being innovative and creative earning its motto *Innovation with an Accent*. Lafayette earned its first distinction as an innovator when residents voted in 1836 to build one of the first road systems in the region making Lafayette the "Hub City" by cleverly building all roads leading to Lafayette to the nine parish area.

Then and more recently, Lafayette has a strong history of providing better access through innovation. In 1836 it was roads. In 1881, it was the railroad. And in 2007, it was becoming a USIgnite original Gig City when Lafayette launched LUS Fiber, a municipally-owned fiber network system offering 10 gig to the home now in 2018.

Lafayette is always looking to the latest technology to provide better access to jobs and commerce to improve quality of life for residents. In one of the latest efforts to build on this foundation of innovation, Lafayette is embarking on a project with Microsoft, IBM, Adoxio and KPMG, called the Smart City Roadmap that is currently being studied and filmed by Microsoft for a documentary titled, "Lafayette: Genesis of a Smart City".



# **Acadiana Planning Commission Overview**

Acadiana Planning Commission serves as Planning District IV for the State of Louisiana and consists of seven parishes commonly referred to as the heart of Cajun Country. Parishes include Acadia, Evangeline, Iberia, Lafayette, St. Landry, St. Martin, and Vermilion. Rich in culture and tradition the region is a tight knit group connected by villages, towns, and cities. While the culture is world-renowned for its uniqueness, there is common trait that is visible both in the culture and in the way local governments have worked together. Sine 2015, regionalism in Acadiana has evolved significantly through the creation of a new planning district and a new regional chamber. In 2017, the US Office of Economic Development Administration, designated the Acadiana Planning Commission as the official Economic District for the region. APC has strategically worked to build capacity within the region for stronger, smarter, and more effective planning and implementation. APC's mission is to serve the public sector in planning and implementation of

Economic, Community, and Transportation Development throughout the region known as Acadiana.

# **The Problem:**

Lafayette has yet to realize its full potential because of its great vulnerability to disasters. In 2016, a devastating flood caused thousands of residents to lose their homes, businesses and everything inside of them. As roads were already flooded and whole areas closed, the rain continued to fall while residents and the media watched water levels of the Vermilion River continue to rise. Roads were flooded and evacuating, accessing resources and supplies and emergency vehicle movement was difficult at best. Desperate drivers loaded up their families and their possessions anyway and ventured out causing secondary damage by the waves of their cars going over sandbags and into homes. Lafayette was shut down by rain. This was not the first time communities in our region have been affected by disaster. But this time it felt even more unexpected since it wasn't a hurricane or even a tropical storm. It was described simply as an "abnormal rain event". Residents and local government wondered, "how did a rainstorm do this?", "how could we have known and been more prepared?". We are seasoned enough to know how to prepare for a hurricane but this was something else entirely. This was predicted as a simple rain storm, until it was not just a simple rain storm. It kept raining and raining and didn't stop. This surprise devastation of so many residents and families has since launched a robust community dialogue with local government about what government should do to help our community be more resilient in the future.

The historic flooding of August 2016, challenged not only Lafayette, but parishes throughout Acadiana region and local officials to think differently about their approach to recovery and long-term resiliency. Silos defined by political jurisdictions became inconsequential in long-term resiliency planning and were replaced with unprecedented collaboration largely driven by the upstream and downstream impacts of drainage. Acadiana Planning Commission, a seven-member board of the highest elected parish official, became the platform by which the parishes would collaborate to improve regional watershed, drainage, and mitigate future flood-risks, the City of Lafayette played a lead role in the multi-jurisdictional collaborative effort.

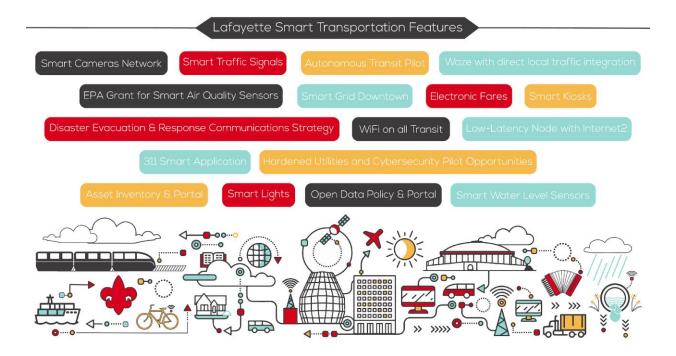
In August of 2017, the Louisiana Governor's Office announced \$25 million in mitigation funds for the 2016 disaster-declared parishes via the Acadiana Planning Commission (APC). Past announcements have traditionally been awarded to individual parishes for retrofitting water structures, home elevations, or small-scale parish projects, thereby marginally improving drainage capacity. The challenge for this allocation was to develop projects of significant upstream/downstream impact without a systemic Hydrologic and Hydraulic (H&H) model. In addition, public participation in flooding-related community events has increased significantly resulting in increased government scrutiny.

Despite public skepticism, parish officials pooled their resources to develop projects of regional significance. Community engineers and parish leaders proposed a total of 20 projects ranging from detention/retention ponds to bridge elevations. To ensure transparency and to bridge the gap between the government and the community, meetings were governed by Louisiana

Open Meetings law. Ultimately, the hope is to improve drainage and flood-risk for a significantly larger geographic area than in times past and to improve how Acadiana lives with water.

Lafayette is also on a willing journey to explore as a community how every decision either by individual, neighborhood or local government impacts our resiliency as a community. We are unified in one goal - how do we protect ourselves from this happening to us again when we know another storm is coming and then another, again and again. Now in 2018, it is a perfect time for innovation and reinvention as a community, sparked by our most recent devastating event and fueled by the fear that it may be even worse next time. Residents are engaged and expect more from each other and local government agencies to protect lives, property and quality of life.

Right now, the Lafayette community has a rare opportunity to connect: the Smart City Roadmap; community access needs; and a public and government willing to engage in a solution.



The Smart City Roadmap SWOT analysis work with the IBM team revealed that our greatest weakness and biggest opportunity is transportation. Our transportation weaknesses are not unlike many other places with a lack of connectivity, traffic congestion, aging infrastructure, limited resources and sprawl fueled by single-occupancy vehicle traffic. But Lafayette is also located in a disaster-prone climate at the intersection of I-10 and I-49, a critical point of evacuation during evacuations for all of Louisiana located south of Lafayette. Our opportunities are current transportation initiatives around our Smart City efforts and recent investment since the storm to improve community resilience and access to transportation during times of disaster an everyday.

# The Data:

Lafayette is already looking to smarter transportation solutions built on our municipally-owned utilities and fiber network to improve community resilience, disaster response, transportation efficiency, public safety, engagement and access. This pilot smart transportation program in Lafayette aims to not only improve community resilience and transportation efficiency during times of disaster, but also aims to improve daily transportation quality and access along with long-term resiliency by building a strategy that can be replicated in other types of disasters facing other geographies such as earthquakes and wildfires.

This pilot looks to build on current and underway infrastructure projects to build an efficient and responsive transportation system guided by key performance indicators and data. Through the experience of the 2016 flood, we learned that transportation efficiency plays a vital role in community resiliency and thus is a critical starting point for Lafayette to be more resilient and efficient while improving quality of life for residents.

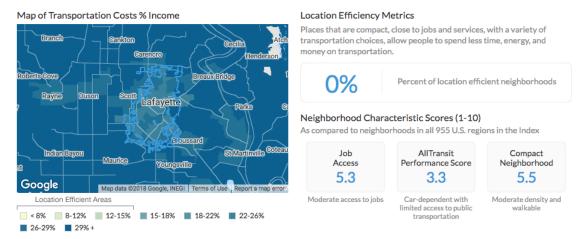




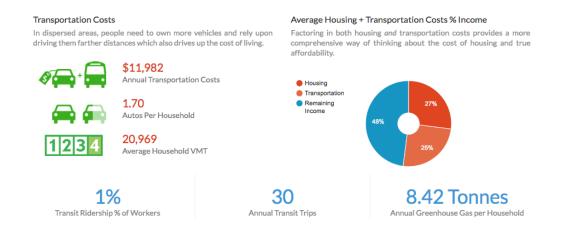
# Municipality: Lafayette, LA

Traditional measures of housing affordability ignore transportation costs. Typically a household's second-largest expenditure, transportation costs are largely a function of the characteristics of the neighborhood in which a household chooses to live. Location Matters. Compact and dynamic neighborhoods with walkable streets and high access to jobs, transit, and a wide variety of businesses are more efficient, affordable, and sustainable.

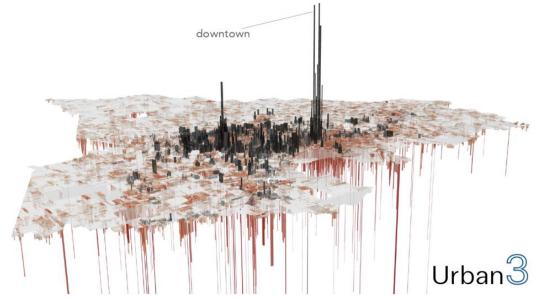
The statistics below are modeled for the Regional Typical Household. Income: \$47,449 Commuters: 1.17 Household Size: 2.64 (Lafayette, LA)



According to the Housing and Transportation Affordability Index by the Center for Neighborhood Technologies, Lafayette residents spend 27% of all household income on housing. But because of our current transportation level of service, Lafayette residents also spend 25% of all household income on transportation. This is one of the highest percentages in the nation.



The high cost of transportation is not only draining needed resources out of our local economy, since transportation dollars rarely stay in the local economy, but they are also an unnecessarily high expense for families. With more reliable and accessible alternative transportation options, Lafayette residents can improve vicious cycles of poverty by providing better access to jobs and opportunities in their daily application and have better access to safety during a disaster.



Net cash flow model of Lafayette Parish (County), Louisiana black=municipal tax exceeds maintanence cost red=municipal taxes fall short of maintenance cost

In Fall 2015, as an effort to understand how to make more informed infrastructure investments, Lafayette was the first local government in the country to perform this self-assessment work to be more efficient and see more return on investment. This solution and ROI based approach led Lafayette to transportation as a means to be more resilient.

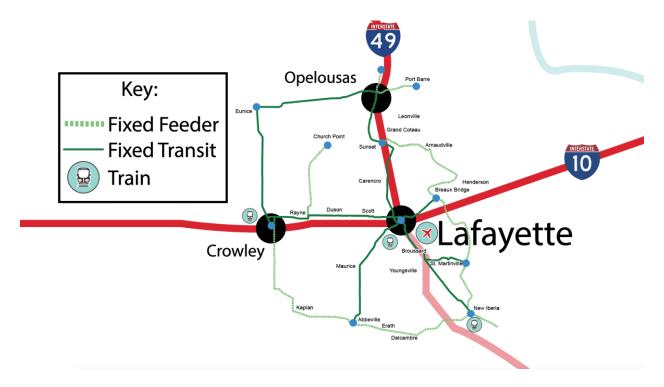
# **The Solutions:**

**Public Transportation** is a point of weakness in our transportation infrastructure. The perceived unreliable service, inconvenience and stigma of use contributes to low ridership. This translates to the majority of riders being residents that have little choice in how they get around because of the extremely high cost of transportation. Lack of investment in the public transportation system is also a result of key decision makers not using our public transportation system because they do have a choice in how they get around and most choose to drive. Because the majority of our population gets around by single-occupancy vehicles, traffic congestion is prevalent which leads to the misplaced efforts in trying to build our way out of congestion by more and bigger roads. This archaic line of thinking is draining resources and has not proved to solve our congestion issue. It's also led to more and more impervious surfaces such as concrete and asphalt that contributes to increased stormwater runoff and more sudden and severe rises in water levels, contributing to increased flooding and less natural absorption.



Modern traffic engineering research has shown that we will never be able to build our way out of congestion. In cases of mass evacuation or road closures due to disasters, a user-friendly and reliable public transportation system can be utilized to move many people faster, without increased congestion. Currently, LCG bus transit is already integrated into Google. The University of Louisiana at Lafayette, Lafayette Public School System and LCG are working together for the first time now to streamline transportation options between students and the greater community by combining efforts in the urban core that will include AV mass transit, buses, shuttles, ride hail, scooters and bikes. Currently, LCG has live bus tracking and is exploring electronic fares and sponsoring state legislation in the 2019 state session to be the first Autonomous Vehicle Transit Pilot Project in the state through funding made available by the LA DOTD Safety Grant Funds.

This effort not only has an immediate impact on traffic congestion relief but is investing in a culture shift driving by the next generation of mass transit users. In addition to Lafayette, Ride Acadiana established a regional transit pilot that is expanding in 2019.



But we know that if we want to improve transportation efficiency and thus community resiliency, we will need need a reliable, convenient and robust system of alternative transportation options. Multi-modal evacuation methods made available through pickup points, ride hail apps, or car share access and communication allow for safer and more efficient transportation in times of emergencies, while freeing up roadways for emergency vehicles and supply delivery. Also, with a more streamlined transit service, cities can minimize the demand for personally-owned vehicles and thus reducing costs of transportation by creating reliable and desirable transit options.

# Task 1: Improved access to transportation options for greater community resilience during disasters and daily life through improved user interface technology.

Activity 1a: Streamline existing modes of transportation to a single, adaptive system that improves awareness and reliability of alternative transportation through technology.

Activity 2b: Reduce congestion incrementally by tracking use patterns, user data and levels of service to improve daily traffic flow and efficiency.

Activity 3c: Develop a system that is agile to accept positive disruptions such as new transportation technology like AV mass transit; and other disruptors such as disasters and evacuations to utilize these alternative transportation efforts to get more people to safety more quickly.

# **Deliverables:**

D1a: Streamlined multi-modal transportation system for the Lafayette community that tracks traffic patterns and user data to adjust through automation to varying levels of service in daily use or during disasters and evacuations.

D1b: Public outreach and an app featuring this streamlined multi-modal system would help to familiarize residents to alternative transportation methods and establish reliability to reduce congestion pressure and the need to build more and larger roads. During a disaster the app could be used by residents to discover alternate means to evacuate themselves and family members while also allowing for residents to post rideshare offers and meet-up points for more timely and efficient evacuations.

D1c: Over time, with less single-occupancy vehicles, Lafayette will enjoy improved air quality and less concrete and asphalt with less car-centric development to improve the environmental health of the community while also allowing for more natural stormwater management to slow down flooding.

D1d: Transportation costs for families would decrease with improved access to reliable and convenient alternative transportation options. This can allow for more local dollars to be spent on improving quality of life for residents while keeping revenue in the local community.

**Estimated Timeline:** 

Y1 / Months 1 – 12 – Area and routing studies,

Validation,

Funding and First Pilot Implementations

Y2 / Months 1 – 12 – Future Disruption and Analysis

Y3 / Months 1 - 12 - Phase II and III

**Estimated Costs:** \$3,500,000.00



Task 2: Ride Lafayette could be a possible transportation and access breakthrough innovation with all alternative transportation options featured in a streamlined application that uses a consistent currency for all transportation options.

Activity 2a: The Ride Lafayette multi-modal transportation approach promotes multi-modal transportation and addresses last mile issues by consolidating transportation modes to a single app and currency. In the app, you can rent a bike or rideshare that gets you to the bus or gives riders the freedom to choose their method of transportation for your needs as they change using the same currency.

Activity 2b: In another innovation, the Ride Lafayette app returns points to riders for every ride taken using alternative transportation in the app. Through mapping software and on-board technologies, the app will generate points. These points can be immediately used for any alternative transportation costs such as bike share or city bus rides. Or points can be saved up for long-distance bus or train travel.

Activity 2c: Funding this points system can be done through public-private-partnerships of public investment with complimentary service providers such as credit card processors or cryptocurrency. Companies can ensure the financial sustainability of the system through mining of useable customer data, advertising and selling of data, recognizing that "data is the new oil".

Activity 2d: From a regional perspective, this pilot program in Lafayette could expand to the region to allow for the same app and currency to be used in New Orleans, Baton Rouge, Lake Charles and other cities, generating even more comprehensive regional data and information.

Activity 2e: During times of evacuations due to disasters, citizens will have more access to options to get out of harm's way without having to panic for a mode of transportation.

# **Deliverables:**

D2a: Development of the application and blockchain technology to host the currency and pointgenerating system.

D2b: Implementation with data tracking and social media will encourage agile route arrangements through automation for optimal transportation service and user experience while providing highly-marketable user data about how people move around cities.

D2c: The point-generating currency system will offer current transit riders without much choice in transportation the points they need to get around more easily and to greater distances while easing the burden of transportation costs.

D2d: Because Lafayette is a municipally-owned utilities and fiber community, these currency points may also be used for other LCG expenses such as utility bills or fiber internet access to help bridge the digital divide where it exists today. This will also ease the burden of transportation costs for families to have more income to use for quality of life investments.

**Estimated Timeline:** Y1 / Months 1 – 12 – App and Blockchain Currency

Development for first rollout of pilot area

Y2 / Months 1 – 12 – Future Disruption and Analysis

Y3 / Months 1 - 12 - Phase II and III

**Estimated Costs:** \$1,500,000.00

Task 3: Synchronizing Transportation Technology through an internet of things including cameras, lights and traffic signals to improve transportation efficiency and inform more educated transportation infrastructure decisions based on real-time data.

Activity 3a: Modern traffic flow modifications will utilize automated signals, digital signage and text/radio/emergency alerts to improve quality of transportation services everyday and in times of disasters.

Activity 3b: Smart corridor improvements would assist heavily-utilized evacuation routes and main arterial roads through monitoring of traffic movements along the corridor and providing real-time information to travelers.

Activity 3c: Improved communications with drivers and riders will enable them to maneuver swift and efficient evacuations along with provisions and maintenance of quality infrastructure and safety enhancement measures.

Activity 3d: Smart sensors, signals and cameras that can utilize live traffic engineer will adjust with unexpected events such as flooded roads or peak levels of service.

Activity 3e: Currently, LCG traffic cameras are tied into the 911 system, police, media outlets

and the Louisiana Transportation Operations Center in Baton Rouge who are monitoring and publishing this activity in real-time but not retaining it. Through advanced computer vision techniques, events like flooding or crashes can allow the cameras to learn these impacts on traffic flow and direct traffic elsewhere. This visual reporting combined with bluetooth congestion sensors provides a more dynamic snapshot of current traffic conditions that can be adaptive in real-time. Currently, LADOTD is in the same service area and Lafayette can leverage this spatial sharing to coordinate all government agency signals and automation for shared benefit.

Activity 3f: Currently, approximately 100 traffic signals are adaptive and are located on our main arterials. This foundation has the potential to create a significant system of signal automation by partnering with the APC through funding from the Federal Government to develop the system engineering required to take this to the next level.

Activity 3g: Special events, disasters and other unexpected occurrences prove a weakness in our transportation control infrastructure to be more responsive, when necessary to move people out of dangerous environments. In day to day use, the signals can prioritize transit, which contributes to its convenience and reliability; and in times of emergencies, the signals can prioritize emergency vehicles.

Activity 3h: Waze and Google integration is underway in Lafayette and we are currently sharing our road closure information in exchange for improved traffic data from Waze and Google. However, we feel that there is an opportunity to incorporate social media reports, cameras, bluetooth congestion sensors and water sensors to provide more informed transportation alerts to Google and Waze and thus, residents.

Activity 3i: In times of a flood, flooded roads become not only a transportation issue, but a threat to lives and property. After the 2016 flood, the APC was granted \$25 million dollars to make improvements to our watershed stormwater management. This will include 230 smart water gauges that report water levels and 30-40 stream gauges that report water movement. By pairing this technology with additional sensor types and elevations, we can more quickly identify points of failure and vulnerabilities in transportation infrastructure. In addition to this data, we can train computer vision cameras to identify standing water to cross reference with the water sensor data. By investing in a web user interface, such as Google or Waze, Lafayette can offer a value added by supplying data validated by other means than humans.

## **Deliverables:**

D3a: Placement of additional traffic cameras, sensors and internet of things in heavily congested areas will serve as a living lab. The layering of user-generated data from Social Media, Waze and Google will provide a more comprehensive assessment through computer trained hardware that can verify human information while reporting its own information through automation.

D3b: Additional stream sensors combined with computer-trained camera technology can identify

vulnerabilities of flooded streets and access points earlier and with more accuracy. This can make the difference for a resident either getting out or getting trapped due to a flash flood.

Estimated Timeline: Y1 / Months 1 - 12 - Area Study, Equipment

Inventory and

**Placement** 

Y2 / Months 1 – 12 – Future Disruption and Analysis

Y3 / Months 1 – 12 – Phase II and III to include more areas

**Estimated Costs:** \$3,000,000.00

Task 4: Effective Watershed Management is the key to our community resilience. Although innately resilient, our economy presents a continued vulnerability to natural disasters that are linked to our geography close ties to the oil and gas industry and its cycles of boom and bust.

Activity 4a: Regional priorities for resiliency are focused on greater economic diversity to withstand economic shocks and improve post-disaster responsiveness in order to decrease recovery time.

Activity 4b: A multi-jurisdictional approach for increasing the region's ability to better withstand natural disaster includes regional watershed planning and management.

Activity 4c: Acadiana Planning Commission proposes to design and deploy a regional gauge network for an eight-parish service-area is the primary focus of this effort and includes monitoring potential flooding and rainfall; and the development of a web-based public visualization interface for communicating near-time alerts that will ultimately inform a data-driven hydrological model.

Activity 4d: This network will be composed of streamflow, rain, and non-contact sensors and comprise a total of 230 gauges.

Activity 4e: This system would be incorporated into a pre-alert software platform for communication of real-time and/or near-time data and allow people to evacuate in the advance of a pending flood by providing information to parish emergency management officials and other agencies about precipitation, storm water runoff, and weather conditions.

Activity 4f: The City of Lafayette plays an integral role in the regional effort and has prioritized

watershed planning as evidenced by the local funding raised for drainage infrastructure by public vote that passed in 2017. But that wasn't enough for residents. They demanded a real-time public project management portal to follow progress of specific stormwater management projects. In 2018, Lafayette launched this portal with help of Socrata that now allows residents to see work being done, where it's done and see completion.

Activity 4g: In addition to work that LCG is doing itself, it's also working to educate residents about their role in community resiliency. To meet this goal, LCG also applied to the Bloomberg Mayor's Challenge and was awarded \$100,000 already and is currently one of 35 finalist Champion Cities out of over 300 applicants competing for \$5 million for implementation. The project aims to use smart water sensors, government data and an app to establish a point system with rewards for residents to see how their choices impact our local watershed, affecting our stormwater management and resiliency. Some of these solutions would include adding a rain garden, using permeable surfaces and using rain barrels.

# **Deliverables:**

D4a: Placement of additional sensors for the watershed system to monitor the comprehensive health and vitals of the watershed from a regional perspective.

D4b: Development of a pre-alert software platform for communication of real-time and/or near-time data and allow people to evacuate in the advance of a pending flood by providing information to parish emergency management officials and other agencies about precipitation, storm water runoff, and weather conditions.

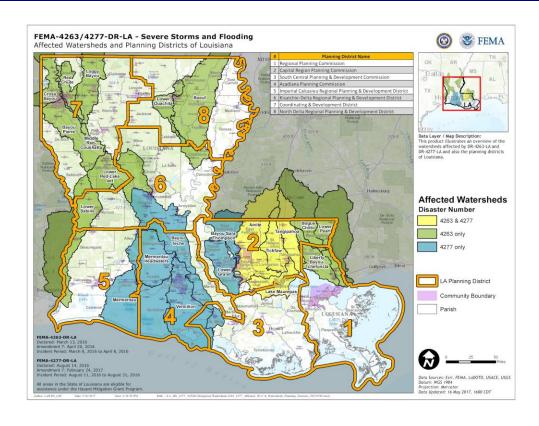
**Estimated Timeline:** Y1 / Months 1 - 12 - Area Study, Equipment Inventory and

**Placement** 

Y2 / Months 1 – 12 – Future Disruption and Analysis

Y3 / Months 1 – 12 – Phase II and III to include more areas

**Estimated Costs:** \$5,500,000.00



### LAFAYETTE, LA: 2018 CHAMPION CITY

# Citizen-Centered Disaster Preparedness in Lafayette





#### 127,626 Population

#### Joel Robideaux

Mayor

Mayor-President (consolidated government), directly elected

Type of Government

#### 4 years Length of Term

Climate Issue Area

# The Problem

A devastating 2016 flood left approximately one third of the parish's land mass under water. Local government is now addressing water management and drainage concerns head on, but government can't do it alone. Real preparedness and resiliency requires participation from the entire community.

## The Idea

The City of Lafayette will maximize citizen participation in the city's water management program, using incentives to generate individual ownership and accountability for watershed improvements.



Task 5: Communications are a vital part of community resilience and public safety. In most cities, the effectiveness of communication efforts are led by the public's willingness to be engaged. Because of the 2016 flood and the public's request to be more informed, Lafayette is uniquely situated to try a communications strategy that runs less of a risk of over-communication and thus disengagement.

Activity 5a: One way Lafayette is working on this is through the Smart City Roadmap work by launching a Digital 311 system. This is a multi-channel means of public information service. Through this two-way communication loop, residents can call in, text 911, email, chat or receive reverse 911 calls, texts, emails or web alerts.

Activity 5b: The data provided by residents to 311 everyday or in times of disaster through this digital format and backed by the IOT allows for more reliable information to residents, news media outlets, Google, Waze and open data portals and applications.

Activity 5c: By integrating digital signage, kiosks and smart lights to communicate emergencies or availability of services in times of need contributes to improved resilience and public safety. In times of disasters, communicating means of safety made available through pickup points,

ride hail apps, or car share access makes these modes of evacuation more viable in times of emergencies.

Activity 5d: A city-wide WiFi network would be helpful in bridging the digital divide everyday and through security measures to maintain service in times of power outages or other vulnerabilities would increase public response time and efficiency of obtaining vital services.

Activity 5e: A blockchain approach to inventories of sandbags, food, clothing, housing and other services could cut lag time and get resources to where they are needed faster. In everyday use, blockchain technology can benefit fleet asset management including maintenance, life cycles and tracking of service vehicles.

# **Deliverables:**

D5a: Implementation of the Digital 311 while incorporating the internet of things and other data will provide a more holistic and engaging approach to disseminating information to the public.

D5b: Closing the feedback loop between citizens and government is necessary in daily interaction in order to build trust in government during times of disaster. The development of the Digital 311 app and other means of communication will provide usable information that the public seeks while gathering information that the government needs to be more responsive. This will not only improve public safety daily and in times of disaster through improved access to information and resources, but it will also improve relationships between citizens and government.

D5c: WiFi throughout Lafayette that is secured in disasters will improve access to important public safety and evacuation information through phones and tablets. This will provide a modern means of communicating that adds an additional method of receiving information other than a battery-operated radio, which has been the primary source of information during a disaster for the last 100 years. With the additional benefit of two-way communication, government disaster responders can make more informed resource and communications decisions.

D5d: Development of blockchain supply information will provide vital supply location information to residents that will improve access and efficiency. Items such as sandbags, food, clothing, housing and other services could cut lag time and get resources to where they are needed faster. In everyday use, blockchain technology can benefit fleet asset management including maintenance, life cycles and tracking of service vehicles.

**Estimated Timeline:** and First Phase Roll-Out

Y1 / Months 1 – 12 – Study, Software Development

Y2 / Months 1 – 12 – Future Disruption and Analysis

Y3 / Months 1 – 12 – Phase II and III to include more features

**Estimated Costs:** \$2,225,000.00

# Part 3: Develop and prototype a high-speed Hyperloop Freight Transport System between Lafayette and Lake Charles

This aspect of the Regional Smart Transportation Network aims to develop a high-technology freight transportation system to improve throughput and reliability of the intermodal transportation system, while building resilience to disaster impact and ensuring the ability to deliver critical supplies and equipment for strategically important sectors of the national infrastructure base.

# The Problem

Throughout our history, the United States has flourished as a result of our ability to efficiently move goods. As a result of our nation's robust trade, the demand for a more reliable and cost-effective infrastructure has increased exponentially in recent years. With Transportation Infrastructure changing little since each iteration of advancement (ports, railroads, interstates, etc.) was first implemented in the last several hundred years, the needs of the 21st Century are simply not being met. While maintenance, repair, and expansion are certainly viable means to help meet demand, universal barriers to this approach include lack of available land, rising ROW costs, construction/energy costs, regulation, and work-zone accidents.

Without capacity to handle increased volumes, congestion will gridlock our nation's highways, limit productivity, and reduce quality of life for the average citizen. Of main concern is rising emissions and fatal accidents with Commercial Motor Vehicles (CMV).

## The Data

Key among these issues is the fact that no one pays the external costs of freight transport (an additional \$0.045/Ton-Mile) directly - neither freight haulers, shippers, nor consumers. (3) To make matters worse, the existing taxes only represent 20% of the infrastructure cost of truck transport. (3) By failing to invest in our vital transportation systems by 2020, businesses would pay an extra \$430 billion in transportation costs, household incomes would fall by \$7,000 and U.S. exports would fall by \$28 billion. (4) This is due to the fact that that all transportation infrastructure is at (or nearing) capacity in many parts of the country, and is anticipated to get worse. Americans wasted 42 hours sitting in congestion in 2014 and wasted 3.1 billion gallons of fuel – equal to one full work week and three weeks worth of gas for every traveler; this is up from 16 hours & 500 million gallons in 1982. (5) The total cost of congestion in 2014 was \$160 billion or \$960 in wasted time

and fuel for every traveler.<sub>(5)</sub> Traffic congestion will continue to worsen without more aggressive actions to combat it; by 2020, annual delay per commuter will grow from 42 hours in 2014 to 47 hours.<sub>(5)</sub> Most importantly, the amount of lives lost annually as a result of CMV collision robs the United States of its most important resource - its citizens. While it is impossible to put a number on this epidemic, the total cost of tangible losses from all motor vehicle crashes in 2010 (earliest year for which cost data is available) is estimated to be \$242B.<sub>(6)</sub> When taking into account intangible costs of quality-of-life that result from serious injury or death, the total value of societal harm is estimated to be \$836B.<sub>(6)</sub>

# **Transonic Freight Hyperloop - A Solution**

To meet the future challenges of moving freight, it is necessary to invest in multi-modal innovation. While it is impractical to believe that any one solution will solve all of Louisiana's (or the nation's) infrastructure problems, Transonic's proposed Hyperloop infrastructure will help to reduce the number of freight being transported on interstates, and as a result lower the volume of 'wear & tear' and accidents on the United States' highways. It will be the goal of Transonic to be included in LaSCTC's March 2019 Report to Gov. Edwards, and take part in the 'data-driven, stakeholder-informed process' of planning, design, construction, & implementation.





- Transonic's Freight Prototype
- Translates to 'Bearer of Good News'
- Named for the Longfellow poem, which was monumental in identifying Acadian identity in 19th & 20th Centuries.
- Designed to handle various cargo.
  - Produce
  - Haz-Mat
  - Disaster Relief Supplies
  - Electronics

# What is the Hyperloop?

Hyperloop is a practical, feasible version of a transportation concept envisioned by science-fiction writers, engineers, & inventors for over a century. By utilizing a controlled environment in a closed-loop system, travel times, energy consumption, & operation/maintenance expenses can be

significantly cut. It's also important to note that hyperloop isn't a specific type of infrastructure, as much as it is a type of environment that would allow transport units to move from one location to another without risk of outside interference. This includes infrastructure such as tunnels, pipelines, and elevated tubes. Requirements for all true hyperloop systems include an enclosed track, depressurized environment, means for propulsion, emphasis on energy efficiency, and virtually no inconvenience to the surrounding communities.

# **Benefits of the Technology**

- High Rate of Delivery
  - Max Cruising Speed of 600mph
  - 0.5min Departure Intervals for Freight
- Potential for Energy Independence
  - Solar Panels
  - Modular Nuclear Energy
- Enclosed track protects transport capsules from outside environment.
- Fast Construction Time
  - Tubes are pre-fabricated with all components, and delivered to site ready for installation.
  - Construction methods similar to Causeway Bridge connecting Northshore and South Shore of Lake Pontchartrain (Lego Blocks).
    - Accelerated Bridge Construction (ABC) Principles
- Above ground construction allows protection from floods.
- Valuable asset for Disaster Relief Operations
  - Possible to provide evacuation in emergency events.
    - Evacuee Liability Waiver
  - Additional transport tool to help counter damage from disaster events.
- By focusing solely on freight, possible to have operational in the near future.
- Once constructed, minimal impact to the environment.
- Adds capacity and redundancy to state/national infrastructure.
- Decreases Congestion & Accidents
- Fail-Safe & Economical Mag-Lev System
- Financially Profitable
- Noise Reduction
- Improved Air Quality
- Increased Productivity
- Efficient Delivery
- Lower Highway Maintenance/Repair Costs
- In event of national emergency or natural disaster, can ship personnel & supplies at a fraction of time and cost.
  - Natural Disasters
    - FEMA Personnel
    - Evacuees
    - Supplies

- Defense Operations
  - Weapons Transport
  - Military Personnel
  - Emergency Transport of Commander in Chief & Public Servants

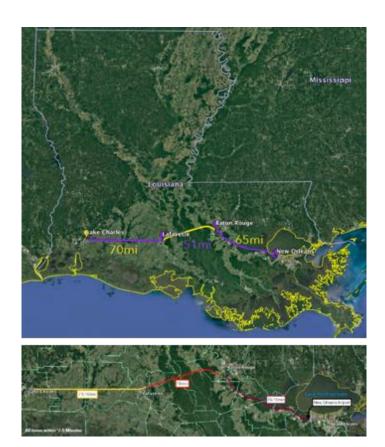
# **Pre-Implementation Considerations**

Before any route can be built, it is necessary to conduct various studies and R&D to ensure that Hyperloop infrastructure will operate as required with little or no impact to the surrounding communities, environment, and industry.

It will also be necessary to calibrate technology to address key hurdles, such as:

- Navigating Curves at High Speed
- Maintaining Speed
- Heat Dissipation
- Energy Consumption
- Tube Design
  - Rapid Depressurization
- Transport Unit Malfunction
- Operation in event of power loss.
- Capsule Deceleration in Response to System Malfunction

# The Project



As a prototype development effort for the Regional Smart Transportation Network, Transonic proposes to research, design, and develop a 70-mile stretch of Hyperloop system between the City of Lafayette and the region encompassing Lake Charles and the Calcasieu Waterway. This region is a strategically important corridor for servicing the critical infrastructure systems for petroleum and liquified natural gas (LNG) shipping, storage, and transport.

For the sake of rapid implementation, Transonic will **not** pursue passenger transport as part of its hyperloop technology development. Our sole focus will be the transport of freight. However, Transonic recognizes the societal importance of passenger transport, and believes its ramifications to be relevant for the purpose of this proposal.

# Terminal Optimization - Freight Handling & Dispatch

At the same time, Transonic is proposing to explore utilization of the existing F. Edward Hebert Defense Complex (NSA East-bank Facility) in the Bywater Neighborhood of New Orleans, LA for multimodal compatibility R&D and Optimization. After making the decision to close in 2006 due to BRAC (Base Realignment and Closure), the City of New Orleans competed for control of the facility with the intention of converting a portion of the property to a Resilience Center (i.e. a hub for disaster and emergency response activities). The property transfer process was completed in October of 2015. Since obtaining the property, the City has been in negotiations with a local developer to utilize the entire 1.5M+ square foot facility, including the set-aside space for a Resilience Center and other local government offices What is significant about this site, though, is its reputation of being nigh-indestructible in the face of natural disasters; in addition to surviving numerous disasters unscathed, it was one of the few properties that did not flood during Hurricane Katrina.

Of importance at this site will be the optimization of freight compatibility with multiple modes of transportation. Another unique property of the NSA East-bank Facility is its location relative to rail, highway, marine, and air transportation. If approved, Transonic will leverage the access of the surrounding infrastructure to develop the most effective means of compatibility. This will include:

- Backwards compatibility with rail, truck, air, barge, and marine transport.
- Automated Guided Vehicle (AGV) Freight Handling
- Blockchain Integration into Transonic's Hyperloop Supply Chain
- Loading/Unloading Procedure
- Multimodal Freight Transport Unit Design
  - Potential 8'x20' Shipping Container Compatibility
- Loading/Unloading Components & Equipment
- Last Mile Solutions
- Increased Efficiency
- Horizontal Connectivity
- Operation in the event of a Natural Disaster
  - Redundant Power Infrastructure
    - 0.30 MW Solar Array
  - Disaster Scenario Communications

- Satellite Internet Access
- Disaster Scenario Freight Tracking
  - Blockchain
- Evacuee Transport Natural Disaster
  - Passenger Transport Unit

Concerning the type of freight that will be studied, priority will be given to Disaster/Recovery Supplies, Computers & Parts, Motor Vehicles & Parts, Electrical Machinery, Hazardous Materials, & Produce.

# **Automated Guided Vehicle (AGV) Summary**

An Automatic Guided Vehicle (AGV) System consists of one or more computer-controlled, wheel-based load carriers (normally battery powered) that runs on the warehouse floor without the need for an onboard operator or driver. The units navigate by following markers/wires on the floor, or utilizing cameras/LiDAR. With this navigation, AGV's can transport pallets or trays between loading/unloading stations at a fraction of time and cost of more standard methods. The primary goal of these systems are to increase efficiency, decrease damage to goods, and reduce overhead by reducing time & eliminating human error.

Common components of AGV's include:

- Vehicle
- Host Software
- Wireless Communications
- User Interface
- Battery/Charger

A mathematical model for AGV operation inside a warehouse for the loading/unloading cycle is divided into four parts: Loading at Pickup Station, Travel Time to Drop-Off Station, Unloading at Drop-Off Station, & Empty Travel Time. The equations and variables are defined as follows:

$$T_e = T_1 + L_d/v + T_u + L_e/v$$
 Eq.1

T<sub>e</sub> = delivery cycle time (min/delivery)

 $T_1$  = time to load (min)

L<sub>d</sub> = distance load travels to unload station

v = carrier velocity

 $T_u$  = time to unloading station

L<sub>e</sub> = distance the AGV travels to next delivery station

To find the number to AGV's required in an environment:

n = WL/AT Eq.2

n = # of vehicles

WL = work load (min)

AT = available time (min)

# **Project Goals**

For the purposes of this project proposal, it will be important to assess the South Louisiana Freight Hyperloop through existing Mobility Plan outlines. (11)

# Safety

- Improve Multimodal Safety
- Reduce rates of truck-involved crashes, injuries, and fatalities on the Louisiana Highway Freight Network.
- Increase the resiliency and security of the state's freight transportation system in response to multi-hazard threats, including natural disasters and man-made threats.

# Economic Competitiveness

- Strengthen Louisiana's position as a global trade and logistics hub by improving and maintaining Louisiana's multimodal freight network infrastructure and connectivity.
- Leverage the increasing demand from rapidly growing industries such as energy, plastics, agriculture, and automotive production.
- Identify areas where hyperloop would be more economically competitive than freight infrastructure improvements in servicing future supply chains & logistics needs.

# Asset Preservation and Utilization

- Lowering the amount of 'wear & tear' on Louisiana roads from freight.
- Leveraging the Louisiana Multimodal Freight Network

# Mobility & Reliability

- Reduce congestion and improve system efficiency and performance.
- Improve travel time reliability on the Louisiana Freight Transportation Network.
- Integrate into currently-applied cost-effective methods to improve system capacity and reliability.
- Utilize hyperloop to improvement management and operations of the existing transportation system.

# Multimodal Connectivity

- Provide transportation choices and improve system connectivity for all freight modes.
- Increase Louisiana supply chain efficiencies by improving connectivity between modes.
- Improve first/last mile connectivity between freight modes and major freight generators and gateways.
- Improve connectivity between rural and urban freight centers.
- Improve ground access to commercial airports to enhance truck access and connectivity.

■ Leverage multi-state organizations to increase multimodal freight connectivity across state lines.

# Stewardship

- Manage environmental and LaDOTD resources responsibility and be accountable in decision-making.
- Reduce adverse environmental and community impacts of Hyperloop infrastructure.
- Lead efforts to foster greater coordination among the agencies responsible for freight network investment.
- Reduce delays in freight project planning, programming and implementation.
- Coordinate freight project planning and implementation with all planning partners and stakeholders.
- Social Responsibility

# Customer Service

- Understand and incorporate citizen feedback in decision-making processes, and be transparent in all communications.
- Develop and sustain partnerships with private sector industries, communities, agencies, MPO's, and other transportation stakeholders and partners.
- Increase hyperloop expertise in LaDOTD districts, across departments and among elected officials.
- Partner with public and private sector stakeholders to enhance workforce recruitment and retention in the transportation and logistics industry.
- Facilitate statewide dissemination of real-time freight movement information by integrating future traffic management centers. (Blockchain)

# Sustainable Funding

- Identify sustainable funding sources for Hyperloop.
- Identify and document the needed hyperloop investment costs to meet the state's future freight transportation needs.
- Educate the public and stakeholders on the costs of constructing and preserving the freight transportation system.
- Develop predictive capabilities for revenue forecasting and long-term needs assessments.

# **Existing Assets**

# F. Edward Hebert Defense Complex, New Orleans, LA

Currently owned by the City of New Orleans, and leased to NSAEB Partners, LLC (The Developer) the NSA (East-bank) Facility is an ideal site for multimodal, hyperloop-integrated operations. Each floor is roughly 80,000SqFt, with 3-4 Floors available for the Rear Building (Building 601). Concerning structural stability, the U.S. Navy once utilized the site to load tanks(!) onto naval carriers, making it one of the most structurally sound buildings in the Metro New

Orleans Area. This structural stability will easily allow the use of Automated Guided Vehicles (AGVs) for freight movement operations, as well as storage and freight transfer. Given the large roof area, there's potential for upwards of 0.30MW of Solar Power infrastructure to be leveraged in the event of a natural disaster. With that in mind, it's worth noting that the City of New Orleans is also planning to utilize the Rear Building for a 'hub for disaster and emergency response'. It's also worth noting the property is on a 99-year Flood Plain and did not flood or receive any significant damage due to Hurricane Katrina.



# Blockchain Infrastructure

Multiple organizations have developed blockchain infrastructure for uses outside of cryptocurrency, with one of the most important potential applications being that to the freight transport industry. Using Blockchain's nigh-incorruptible digital ledger, it is possible for any and all freight transport operations information to be simultaneously accessed by senders, receivers, shippers, and regulators. These records will also be able to detail a product's geographic flow, its sources, industry certifications, restricted/dangerous components, etc. And in the event of emergency situations (i.e. delays involving weather) blockchain can help identify incomplete or at-risk shipments, and can assist with making decisions on remediation action.

# **Risk Assessment**

# Introduction

The purpose of Risk Assessment is to provide a framework to ensure that levels of risk and uncertainty are properly identified for the project. As an ongoing process over the life of a project, this assessment will be regularly updated with each version being considered a 'snap shot' of relevant risks at the time of release. This is achieved by defining the following:

• Process that will be/has been adopted by the Project to identify, analyze, and evaluate risks during the course of the project;

- How risk mitigation strategies will be developed and deployed to reduce the likelihood and/or impact of risks;
- How often risks will be reviewed, the process for review and who will be involved;
- Roles and responsibilities for Risk Assessment & Management;
- How reporting on, and changes to, risk status will be carried out within the Project;
- A complete Risk Register containing all risks identified for the Project, their current gradings and the identified risk mitigation strategies to reduce the likelihood and seriousness of each risk.

# Analysis & Evaluation

Once risks have been identified they must be analyzed by determining how they might affect the success of the project. Generally, the impact of a risk will realize one or any combination of the following consequences:

- Project outcomes are delayed and/or benefits are reduced;
- Project output quality is reduced;
- Timeframes are extended;
- Costs are increased.

Once analyzed, risks should be evaluated to determine the **Likelihood** of a risk or threat being realized and the **Seriousness**, or impact, should the risk occur. These metrics are defined as such:

- **'Likelihood'** is a qualitative measure of probability to express the strength of our belief that the threat will emerge, and is generally ranked as:
  - Low (L) Below 15% Chance of Occurrence
  - Medium (M) Between 15% & 35% Chance of Occurrence
  - High (H) Above 35% Chance of Occurrence
- **'Seriousness'** is a qualitative measure of negative impact to convey the overall loss of value from a project if the threat emerges, based on the extent of the damage, and is generally ranked as:
- Low (L) Risk that has relatively little impact on cost, schedule, or performance.
- Medium (M) Potential risk to slightly impact project cost, schedule, or performance.
- High (H) Risk that has potential to greatly impact project cost, schedule, or performance.
- Extreme (X) Catastrophic Failure

Using these benchmarks, risks will be graded as A, B, C, or N according to the following matrix:

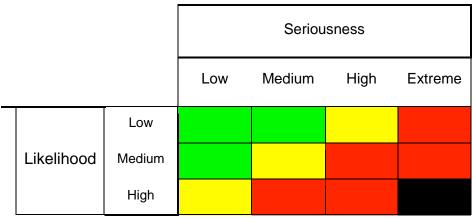


Figure 11 - Risk Matrix

# **Risk Mitigation**

Mitigation of risks involves the identification of actions to reduce the likelihood that a threat will occur (preventative action) and/or reduce the impact of a threat that does occur (contingency action). This strategy also involves identifying the stage of the project when the action should be undertaken, either prior to the start of or during the project.

The following table is useful to determine how risks will be treated in terms of preparation and/or deployment of mitigation strategies during the life of the Project. Mitigation strategies are usually only prepared and/or deployed for Grades A through to C, however where an existing risk graded at N appears likely to be upgraded, mitigation strategies should be prepared.

Grade	Action Taken
А	Mitigation actions, to reduce the likelihood and seriousness, to be identified and implemented as soon as the project commences as a priority.
В	Mitigation actions, to reduce the likelihood and seriousness, to be identified and appropriate actions implemented during project execution.
С	Mitigation actions, to reduce the likelihood and seriousness, to be identified and costed for possible action if funds permit.
N	To be noted; no action is needed unless grading increases over time.

Figure 12 - Risk mitigation table

Description of Risk	Grade	Impact on Project	Mitigation Actions	Individual/Group Responsible	Timeline for Action(s)	
Inability to Dissipate Heat	A	Because this is a closed-loop, depressurized environment, it will be difficult for heat to dissipate through conventional means. If built up without any viable heat sinks, this can cause catastrophic failure to the infrastructure, and cause delays upwards of several days.	Preventative - Ensure that cooling system and fail-safe systems are operational through regular inspection & monitoring.  Contingency: Replace and/or modify malfunctioning components to successfully dissipate heat.	Design Engineer, Project Manager, Maintenance Staff, Quality Control Manager	QC inspection before installation, monitoring conducted in real- time, and monthly Follow-Up QC Checks.	
Transport Unit Malfunction	В	Transport unit becomes stranded in tube environment, and no longer responds to attempts to accelerate. Without viable solution, will cause delays between half to a full day.	Preventative - Ensure that all components of the Linear Induction Motor are operating as designed.  Contingency - Use HOG (Hyperloop Obstruction Guide) to push malfunctioning unit to terminal; equivalent to PIG's used in the Oil & Gas Industry	Project Manager, Maintenance Staff, Quality Control Manager	Preventative: QC inspection before put into operation, monitoring conducted daily, and monthly Follow-Up QC Checks.  Contingency: Immediately after malfunction is detected	
Energy Consumption	В	Due to variable loading, some loads may draw more power than originally designed. If the power infrastructure is not able to keep up, will cause a shortage in units transported. Can cause hourly delays, backlog, and in the event of failure,	Preventative: Design power infrastructure to account for additional loading, in the event that demand exceeds actual supply. Take measures to tie into existing power grid in the event of emergencies.  Contingency: In the event of power shortage or power failure, take measures to tie into existing power grid.	Design Engineer, Project Manager, Maintenance Staff, Quality Control Manager; Electrical Engineering Staff	Preventative: QC inspection before put into operation, monitoring conducted daily, and monthly Follow-Up QC Checks.  Contingency: Immediately after shortage/failure occurs.	

		delays of several days.			
Magnet Failure	В	Through either 'wear & tear' or random occurrence, the mag-lev system may fail. This would potentially cause failure along the length of the track if the transport unit is 'dragged' while being forced to accelerate.	Preventative: Design transport units with redundant features that would allow transport units to coast without damaging track.  Contingency: Dispatch HOG to push malfunctioning unit to Terminal	Project Manager, Maintenance Staff, Quality Control Manager	Preventative: QC inspection before put into operation, monitoring conducted daily, and monthly Follow-Up QC Checks.  Contingency: Immediately after failure occurs.
Rapid Pressurization	Α	There is catastrophic failure in either the structural design of the tube, or safety procedure, and there is a catastrophic failure of the tube infrastructure, causing the system to be rapidly pressurized.	Preventative: Design tube structure with safety factors appropriate for high-speed freight transportation.  Contingency: Keep infrastructure components on hand in the event that repaid is needed; similar to GNOEC.	Project Manager, Maintenance Staff, Quality Control Manager; Safety Personnel	Preventative: QC inspection before put into operation, monitoring conducted daily, and monthly Follow-Up QC Checks. Safety protocol followed by all personnel.  Contingency: Immediately after failure occurs.

Inconsistent Speed	Z	Due to a number of variables, capsule speed is inconsistent from unit to unit. This can cause delays, traffic jams, and potential collisions.	Preventative: Design tube infrastructure with safety features to monitor and maintain minimum separation distance.  Contingency: Adjust LIM output as necessary at monitoring stations.	Project Manager, Maintenance Staff, Quality Control Manager; Operations Staff	Preventative: QC inspection before put into operation, monitoring conducted daily, and monthly Follow-Up QC Checks.  Contingency: If/when issue hinders operation.
"Trouble With The Curve"	Z	Transport units have difficulty navigating curves at higher speeds. This can cause delays & traffic jams.	Preventative: Design redundant features in infrastructure, so as to maintain central position within tube cross-section.  Contingency: Replace and/or modify components that will allow transport units to successfully navigate curves.	Project Manager, Maintenance Staff, Quality Control Manager	Preventative: QC inspection before put into operation, monitoring conducted daily, and monthly Follow-Up QC Checks.  Contingency: If/when issue hinders operation.
Capsule Deceleration	Α	Transport unit is unable to decelerate at key moments in the event of an emergency.	Preventative: Design redundant features which will act as an 'emergency brake' to bring high-velocity capsules to a dead stop.  Contingency: In the event that emergency braking system fails to automatically activate, manually engage.	Project Manager, Maintenance Staff, Quality Control Manager; Operations Staff	Preventative: QC inspection before put into operation, monitoring conducted daily, and monthly Follow-Up QC Checks.  Contingency: Immediate

Figure 13 - Transonic Hyperloop Risk Register

#### **Planning Framework Outline**

#### Research

Despite progress made by other private organizations, much work is yet to be done before Hyperloop infrastructure can be utilized for freight (or passenger) transport. Key among these concerns are the issues of navigating curves, dissipating heat, and removing potential obstructions. Transonic plans to move forward with R&D at the full-scale Desertron site in Texas, which will allow for development, testing, and optimization of all full-scale components. Furthermore, Transonic plans to convert a section of the SSC Infrastructure into a permanent R&D Facility to be operated by a consortium of universities, so that other public and private organizations will have the opportunity to test without having to first make large investments in civil infrastructure. In addition, Transonic is proposing to develop terminus optimization technology at the NSA Facility in Louisiana. Timeline for initial testing is anticipated to be completed within two years after commencement; secondary testing and optimization will be done in conjunction with regulatory agencies.

#### Plan

Currently, for the State of Louisiana Transonic recognizes that it is most efficient to develop a Pilot Route between Lafayette and Lake Charles. This process will be carried out in conjunction with public entities, and assistance from an EPC (Engineering Procurement Construction) Firm. Key points for the plan will be as follows:

- 1. Formal Agreements with Relevant Entities
- 2. Funding
- 3. Public Outreach
  - 1. Town Halls
  - 2. Public Info Sessions (Q&A)
  - 3. Advertisement
  - 4. Local Media Appearances
    - 1. Call-In Q&A
- 4. Right-of-Way Acquisition
- 5. Surveying
  - 1. Routing
  - 2. Final San Antonio Terminal Location
- 6. Engineering Design
  - 1. Final Approval
- 7. Procurement
  - 1. Bid Process
    - 1. Addenda Protocol
  - 2. Award
- 8. Construction
  - 1. Quality Control Inspections
- 9. Operation

#### **Funding**

Currently, the main source for Hyperloop R&D is private investments, with the idea of public grants beginning to develop momentum with government agencies. However, based on our communication with government officials, it should be possible for Hyperloop Infrastructure to leverage existing funding sources. Some potential means of R&D and Infrastructure funding include:

- U.S. Hyperloop Transportation Initiative (USHTI) Proposed by 9 (Nine) U.S. Representatives from 5 (Five) different States to the Trump Administration on January 18th of this year, the USHTI would provide \$20M for Hyperloop R&D.
- Transformative Projects Program (TPP) The TPP, proposed by the Trump Administration on February 12th of this year, would provide federal funding and technical assistance for, "bold, innovative, and transformative infrastructure projects that could dramatically improve infrastructure". Funding under this program would be awarded on a competitive basis to projects that are likely to be commercially viable, but that possess unique technical and risk characteristics that otherwise deter private sector investment. Proposed funding for the TPP is currently set at \$20B. This funding will used to support the project, and will be broken up into three tracks, as follows:
  - 30% of eligible costs under the Demonstration Track;
  - 50% of eligible costs under the Project Planning Track; and
  - 80% of eligible costs under the Capital Construction Track
- Railroad Rehabilitation and Improvement Financing (RRIF) Program The RRIF
  Program provides direct loans (and loan guarantees) to finance the development of rail
  infrastructure, with the FRA giving priority to projects that improve public safety, the
  environment, and economic development. Direct loans are eligible to cover up to 100% of
  the cost, with repayment periods up to 35 Years and interest rates equal to U.S. Treasury
  Rate for comparable-term securities. Total available amount to Non-Class I carriers is
  \$28B.
- U.S. National Science Foundation (NSF) Small Business Innovation Research (SBIR) Grants - NSF SBIR Grants grant awardees up to \$225K in seed capital to conduct product Research and Development (R&D) over 6-12 months. After completing the Phase I award, awardees can apply for a second-round investment of \$750K over 24 months. During the course of that award, awardees can apply for supplements that may add up to another \$500K.
- U.S. DOT SBIR Grants Possible to leverage certain topics that overlap with Hyperloop R&D, such as 'Multimodal Acoustic Tool for Inline Pipe Inspection' which was a topic for FY18 Phase 1 Recommendations.
- National Institute of Standards & Technology (NIST) Global City Teams Challenge (GCTC) - While the NIST and its partners do not provide direct funding, they act as a matchmaker and incubator —facilitating, advising, encouraging, nurturing, and publicizing the action clusters and their projects.
- Venture Smarter Challenge Funds In the event that funds were awarded by Venture Smarter as a result of the challenge, a portion of funds would also be used to develop a

hyperloop freight-transport prototype in conjunction with local universities and business entities.

#### **Deploy & Iterate**

Initial deployment in Louisiana will be a Pilot Route between the cities of Lafayette and Lake Charles. Secondary deployment will consist of the South Louisiana Hyperloop, with a line connecting to New Orleans through Baton Rouge, and eventually extending throughout the Southeastern United States. This is a region of the country that is unrivaled in its beauty, culture, cuisine, music, artistry, and (most importantly) potential - and is deserving of innovations and an economy to match.

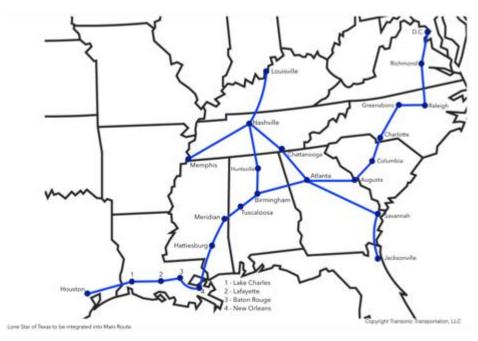


Figure 14

Proposed Main Route



FIGURE 6 - PILOT LOUISIANA FREIGHT ROUTE - LAKE CHARLES/LAFAYETTE

#### FINANCIAL PROJECTION - LAKE CHARLES/LAFAYETTE LOUISIANA PILOT ROUTE

		TYPE OF EVALUATION	1(3)	N	PRESENT VALUE
Cost <sub>(2)</sub>	\$1,306,314,979.20	~	~	~	\$1,306,314,979.20
Annual Maintenance Cost	\$6,531,574.90	P/A	0.02	100	\$281,500,111.63
REHABILITATION COST	\$326,578,744.80	P/F	0.02	50	\$121,333,109.40
				TOTAL VALUE	\$1,709,148,200.23

CALCULATED AT 80% FULL CAPACITY(1) - 30 SECOND DEPARTURE INTERVALS - 10 TONS/LOAD

MINIMUM TOLL RATE PER TON-MILE							
		TYPE OF EVALUATION	I <sub>(3)</sub> N <sub>(4)</sub>		DISCOUNT RATE		
TON-MILES/YEAR	1,177,344,000	P/A	P/A 0.02 35		25.00		
MIN RATE/TON-MILE	\$0.05807						
	ACTUAL RATE (46.03% MARKUP) <sub>(5)</sub>		\$0.0848				
	35-YR PROFIT	35-YR PROFIT		83,235.57			
	Avg. Profit/Yr - I	AVG. PROFIT/YR - INITIAL 35 YEARS		\$22,476,663.87			
	100-YEAR PROFIT		\$5,421,7	798,758.86			

<sup>(1) 320</sup> Days/Yr, 24 Hrs/Day

Figure 15 – Financial Projections

<sup>(2)</sup> Cost calculated at \$18,661,642.56/Mile. Price is approximate and does not include ROW Acquisition<sub>(6)</sub>, Tunneling, Terminals, or Transport Cars. Costs were calculated using RS Means with an additional 40% for Contingency and 30% for Engineering Fees.

<sup>(3)</sup> I-Value uses a PCE Inflation Rate of 2%, which is based on Economic Projections of U.S. Federal Reserve, released March 2017.

<sup>(4)</sup> Term of USDOT's RRIF Loan Program

<sup>(5)</sup> Averaged National Rate of Reefer & Van Transport, Week of 7/14/17, https://www.dat.com/resources/trendlines/van/national-rates

<sup>(6)</sup> Cost of ROW Acquisition can be offset by Transonic's Royalties Program & Tunneling.

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Capital Region Planning Commission - Baton Rouge, Louisiana, Letter of Interest for Proposed Pilot Project

## I. Description of the Proposed Effort

## 1. Purpose/goal of the project and a detailed description of the effort

The purpose of the proposed project is to continue and expand ongoing collaborative efforts and to utilize the FHWA Vulnerability Assessment and Adaptation Framework to identify critical vulnerable nodes and assets in Louisiana's transportation infrastructure system that affect freight flows, examine the economic risk those vulnerable nodes represent, and make suggestions to improve the resiliency of those assets. MOVE 2042, the Capital Region/Baton Rouge Area MPO's update to the long-range metropolitan transportation plan (MTP), adopted in January 2018, establishes goals and objectives for improving regional freight flows. These include: (a) reducing congestion and delays; (b) improving safety and security and accommodating evacuation into and out of the area in disaster events; (c) maintaining the transportation system in a state of good repair; and (d) maintaining economic competitiveness by improving freight movement. These align with federal transportation goals and performance measures, including supporting regional economic vitality; increasing transportation system safety and security; increasing accessibility and mobility for people and freight; enhancing integration and connectivity; promoting efficient system management and preservation; and, improving the resilience and reliability of the system.

This assessment will consider future risks of failure across the Capital Region/Baton Rouge MPA transportation network and across multiple modes based on the increased level of risk due to climate-related weather events. Physical assessment will link with assessment and analysis of the potential effects on the state's economy due to climate change driven by the increased frequency of extreme weather events.

#### Resiliency Impacts

The project is part of a comprehensive and federally-assisted response to real-world experience and events. In March and August of 2016, most of the State of Louisiana experienced 48-hour rainfall totals between the 1/10 and 1/50 annual exceedance probability (AEP) with as many as 7 smaller areas recording greater than 1/1000 (AEP)<sup>1</sup>. The subsequent flooding events led to federal disaster declarations covering 56 of Louisiana's 64 parishes. The floods also highlighted several critical points of failure that impacted commerce throughout the state, which will be

ftp://hdsc.nws.noaa.gov/pub/hdsc/data/aep/201603\_MS\_River\_Valley/AEP\_LowerMississippiRiverValley\_March2\_016.pdf.

<sup>&</sup>lt;sup>1</sup>Hydrometeorological Design Studies Center, Office of Water Prediction, National Weather Service, National Oceanic and Atmospheric Administration. "Exceedance Probability Analysis for the Louisiana Rainfall Event, 11-13 August 2016." <a href="ftp://hdsc.nws.noaa.gov/pub/hdsc/data/aep/201608">ftp://hdsc.nws.noaa.gov/pub/hdsc/data/aep/201608</a> Louisiana/AEP Louisiana August 2016.pdf.; Hydrometeorological Design Studies Center, National Weather Service, National Oceanic and Atmospheric Administration. "Lower Mississippi River Valley Area, 8-12 March 2016 Annual Exceedance Probabilities (AEP) for the Worst Case 48-Hour Rainfall." Refer to map on pg 4.

highlighted regionally in the vulnerability and adaptation assessment. In addition to causing the closure of portions of major interstates, flooding closed hundreds of state and local roads, and several major and short-line railroads. Flood waters deposited substantial amounts of silt in key waterways, which resulted in the extended closure of the J. Bennett Johnston Red River Waterway System ("the Red River"). This also impacted the Ouachita River and three multimodal ports along the Red River, causing downstream impacts to commerce on the Atchafalaya and Mississippi rivers and the Gulf Intracoastal Waterway System. This affected activity at the Port of Greater Baton Rouge, a major freight facility in the region.

## 2. Fit with Ongoing Efforts

Making systems more resilient will reduce potential for failure at critical locations in future extreme weather events. Collaboration allows for sharing of information and knowledge to develop better solutions. It also allows input from system users on what does and does not work.

In the wake of the 2016 floods, FEMA activated the National Disaster Recovery Framework (NDRF)<sup>2</sup>. One product of the NDRF process is a Recovery Support Strategy (RSS) to assist local governments and stakeholders. A key recommendation, under the Economic Recovery Support Function (ERSF), was that Louisiana "Establish a supply chain network to engage businesses and agriculture interests in support of transportation resilience and enhanced transportation systems, in partnership with LADOTD."<sup>3</sup> The U.S. Economic Development Administration, facilitated formation of the Louisiana Supply Chain and Transportation Council (SCTC) in early 2017. In May of 2017, the Louisiana Legislature passed Senate Concurrent Resolution 99,<sup>4</sup> formally authorizing the creation of the SCTC and calling upon it to "study and make recommendations regarding increasing resilience in various modes of transportation through increased communication, collaboration, development of geographic information technologies, and new innovations in transportation." The council is comprised of stakeholders from state and federal government, Louisiana Universities and the private sector representing every mode of freight transportation within the state.<sup>5</sup> The SCTC meets regularly and has staff support from the Capital Region Planning Commission's Regional Economic Disaster Recovery Manager.

Another goal of the SCTC is to build resiliency through familiarity so that when future extreme weather events occur, supply chain and transportation stakeholders have a wider network of alternate routes

<sup>&</sup>lt;sup>2</sup> Federal Emergency Management Agency. "National Disaster Recovery Support Framework." https://www.fema.gov/national-disaster-recovery-framework.

<sup>&</sup>lt;sup>3</sup> Federal Emergency Management Agency. "Louisiana Floods Recovery Support Strategy: FEMA DR-4263-LA/DR-4277 LA." December 2016.

<sup>&</sup>lt;sup>4</sup> Senator Page Cortez and Representative Kenneth Havard, "Senate Concurrent Resolution No. 99." Louisiana State Legislature. http://www.legis.la.gov/legis/ViewDocument.aspx?d=1047740.

<sup>&</sup>lt;sup>5</sup> Members listed in SCR 99: LA Department of Transportation and Development, LA Department of Economic Development, Governor's Office of Homeland Security and Emergency Preparedness, Office of Community Development, Ports Association of Louisiana, Louisiana Motor Transport Association, Louisiana Railroads Association, Big River Coalition, American Waterways Operators, International Air Cargo Association, Committee of 100 for Economic Development, Louisiana Association of Business and Industry, Louisiana Chemical Association, U.S. DOT, U.S. Army Corps of Engineers, Economic Development Administration, LA Association of Planning and Development Districts, The Board of Regents.

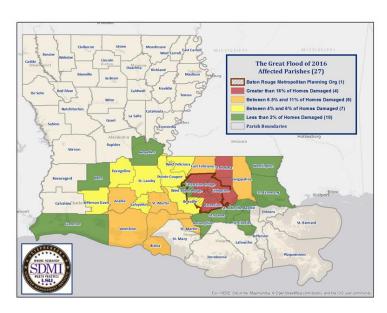
and options to more efficiently respond to disruptions. Providing a framework for the SCTC's ongoing work will advance its goals and mission and strengthen working relationships. Since CRPC staffs both the Capital Region/Baton Rouge Area Metropolitan Planning Organization and the SCTC, it is expected that this project will create opportunities to work collaboratively with both to assess the vulnerability of the transportation network relative to defined climate variables. Working in the state's capital city, which is also and a major center of freight commerce, CRPC is poised to develop a replicable model that can be expanded to the state-wide level or be used by other urbanized areas in Louisiana.

#### Resilient Recovery

Louisiana, with assistance from federal partners, has taken a strategic and proactive approach to recovery from the 2016 floods, recognizing that disaster, no matter how devastating, can also create opportunities for improvement. Very early in the process, Governor John Bel Edwards expressed the desire that, rather than a return to pre-disaster status quo, resiliency should be factored into all aspects of recovery. The Governor twice called statewide symposia of local and state government stakeholders to discuss resilient recovery. The last symposium, in the fall of 2017 was also the kick off a pilot program developed with support from FEMA, the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), and the Louisiana Office of Community Development-Disaster Recovery Unit (OCD-DRU). The pilot, called The Louisiana Resilient Recovery Program, it is described in more detail under the geographic scope discussion below.

## 3. Geographic Focus

The five-parish Baton Rouge Area/Capital Region MPO will be the primary focus of the vulnerability and adaptation assessment. The MPO boundaries include all of East Baton Rouge and Ascension Parishes (a.k.a. Counties), and portions of, Iberville, Livingston, and West Baton Rouge Parishes. Four of the five parishes (except for West Baton Rouge) lie within the Amite Watershed (U.S. Geological Survey's Hydraulic Unit Code 08070202)<sup>7</sup>. Some of the assessment work could therefore be conducted at the watershed level in



that area, which experienced extensive flooding in 2016. Growth projections developed for the long-range transportation plan

show that much regional growth anticipated over the next 25 years will occur in areas that flooded in 2016. On a positive note, the successive flooding events helped raise awareness

<sup>&</sup>lt;sup>6</sup>Capital Region Planning Commission. "CRPC Boundaries." <a href="http://crpcla.org/crpc-boundaries/">http://crpcla.org/crpc-boundaries/</a>.

<sup>&</sup>lt;sup>7</sup>Federal Emergency Management Agency, Mitigation Branch, Hazard Performance Analysis Group. "Louisiana Watershed Resiliency Study." Sections: 2.1.1 - 2.1.2.

https://data.femadata.com/Region6/mitigation/riskmap/lawrs/reports/LaWRS Main%20Report.pdf.

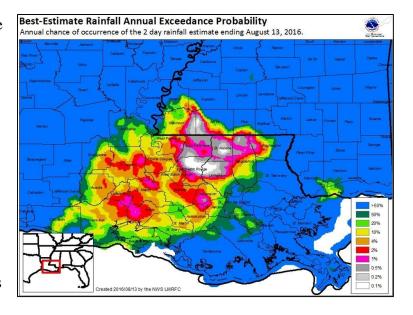
among public officials of the importance of planning to improve resilience to mitigate increased risk. At the state level, the OCD-DRU and GOHSEP are working in concert with CRPC as part of the Louisiana Resilient Recovery Program to conduct watershed level planning in the Amite basin. While this effort focuses primarily on water management issues, CRPC anticipates facilitating a dialog on vulnerable transportation assets in conjunction with the watershed planning efforts.

Since the MPO will be working with the support and assistance of the statewide SCTC it is anticipated that some of the pilot assessment work in the MPO study area could also pertain or be extrapolated to the state level. This would maximize efficient use of assets and resources.

#### 4. Types of Extreme Weather Events

The project will work with Louisiana State University's Stevens Disaster Management Institute (SDMI) and the Southern Regional Climate Center to define an array of climate variables. The statewide flooding of 2016, widely viewed as a climate-related extreme weather event, has caused a paradigm shift in the Baton Rouge region, where disasters were previously seen as only coastal events (i.e. hurricanes). Although the region is no stranger to major riverine flood events, the scale and scope of the 2016 events raised awareness among regional government officials that resilience is an issue for everyone. This is reinforced by new SLOSH Maximum of

Maximum (MOM) outputs published by the National Hurricane Center that indicate that the Capital Area/Baton Rouge region is now highly susceptible to storm surge from Hurricanes of Category 2 or stronger. This is even more amplified as the maps do not take into consideration the significant amount of subsidence occurring in the model areas. Winter storm events can also impact the MPO's transportation assets. In late 2017 and early 2018, ice caused closure of Interstate systems and other highways on two separate occasions including a three-day span during the winter storm of 2018.

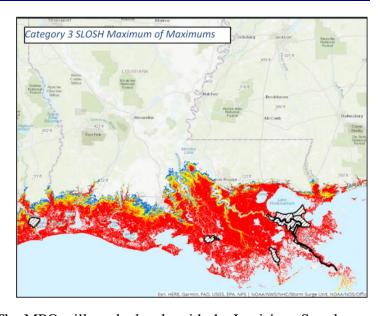


The primary focus of this assessment will be on the effects that climate change could have on the frequency of extreme rainfall events and overall precipitation totals and their effects on the riverine systems. However, other climate variables, as noted above, will also be considered. The MPO will facilitate a process to identify appropriate climate conditions to be addressed at the

regional level. This information will be incorporated into future probability analysis of potential flooding and other extreme weather events which will link to assessment of potential future impacts to vulnerable nodes and segments of the transportation network, across multiple modes. The Assessment will aim to identify mitigation measures to reduce vulnerability in the transportation network and increase system resilience.

#### 5. Agencies/Partners to be Involved

The Capital Region/Baton Rouge Area Metropolitan Planning Organization



(CRPC-MPO) will be the lead agency. The MPO will work closely with the Louisiana Supply Chain and Transportation Council (SCTC). The following entities are active members of the SCTC: LA Department of Transportation and Development (DOTD), LA Department of Economic Development (LED), Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), Office of Community Development-Disaster Recovery Unit (OCD-DRU), Ports Association of Louisiana, Louisiana Motor Transport Association, Louisiana Railroads Association, Big River Coalition, American Waterways Operators, International Air Cargo Association, Committee of 100 for Economic Development, Louisiana Association of Business and Industry, Louisiana Chemical Association, US Department of Transportation, US Army Corps of Engineers, US Economic Development Administration, Louisiana Association of Planning and Development Districts, Louisiana Board of Regents, Louisiana State University Stevenson Disaster Management Institute (SDMI), University of Louisiana Lafayette (ULL), ULL Informatics Research Institute, ULL National Incident Management Systems and Advanced Technologies Institute (NIMSAT), University of New Orleans.

These efforts dovetail with resources already being developed within the state. A Transportation Asset Management Plan (TMAP), being developed by LA DOTD under an FHWA grant, will provide information useful in the vulnerability assessment. SDMI has established a Geoportal for the SCTC which provides an aggregation of many of the data points necessary for conducting the vulnerability assessment. In addition, SDMI will provide technical assistance with a combination of a financial contract and in-kind match for staff time. CRPC will also contract with a graduate student to assist with data gathering, modeling and analysis. Louisiana Economic Development will assist with gathering economic data and will perform an economic impact analyses as part of the vulnerability assessment.

#### 6. Lead Agency

Capital Region Planning Commission (CRPC) is lead agency for the pilot program. CRPC qualifies as MPO for the Capital Region/Baton Rouge Area.

## II. Description of Dedicated Staffing/Resources

The Capital Region Planning Commission proposes to complete this work through a combination of leveraged resources of the Supply Chain Transportation Council, utilizing current MPO staff and contracting with Louisiana State University for both assignment of a graduate student and technical assistance from the Stephenson Disaster Management Institute. The proposed budget reflects an allocation of 1/3 of CPRC's Disaster Recovery Manager over the two-year period, with oversight by the Executive Director of CRPC. The Disaster Recovery Manager position was partially funded by the US Department of Commerce, Economic Development Administration (EDA) through a grant to CRPC to provide regional disaster recovery and resilience following the 2016 flooding disaster. This proposed pilot project aligns closely with the EDA project goals and furthers the progress CRPC has made in working with the SCTC in advancing the dialogue on transportation network resilience. Additional CRPC MPO staff will assist as part of the regular annual Unified Planning Work Program. This additional assistance will include data analysis, asset data collection and analysis, and GIS mapping. Those hours are not reflected in the proposed budget, as they will be funded out of federal transportation funds.

#### Local Match

The local match rate for this proposal reflects 35.2% of the total project cost. The match for this project is committed in the forms of: 1) \$43,473 of in kind salary match for the Director of the LSU-SDMI program; and, 2) \$36,922 of local non-federal dollars from the Capital Region Planning Commission. Both the in-kind and cash match are committed funds and are available if this project is awarded.

#### III. Draft Work Plan

#### Proposed Project Objectives and Outcomes

CRPCs primary objectives in working through the Vulnerability Assessment and Adaptation Framework will be to:

- 1. Define criticality and identify vulnerable transportation assets,
- 2. Agree on climate variables and level of risk for vulnerability assessment,
- 3. Assess the risk that the increased probability of extreme weather events poses to those assets
- 4. Assess the impact of disruption to transportation and supply chain systems in Louisiana and specifically in the CRPC MPO region due to closure or damage to those assets,
- 5. Identify a range of options (at system, policy and project level) to decrease vulnerability and improve resilience, conduct benefit- cost analysis of addressing the vulnerability versus taking no action,
- 6. Compile findings into a report to FHWA, local, regional and state policy makers.

The geographic focus of this assessment will be on assets that fall within the Capital Region/Baton Rouge MPA. These include: federal aid eligible roads, on and off-system bridges, Class I railroads, and segments of the Mississippi River. In examining how climate change could affect those assets, CRPC will look at the probability of increased extreme weather events (initially identified as precipitation, riverine hydrology, coastal hydrology and ice events). CRPC will then, consider and rank the vulnerability and benefits of improved resilience of priority infrastructure by mode. Through each step, CRPC will leverage the diversity of the SCTC for input on methodology and data, both qualitative and quantitative. The SCTC can also facilitate

access to a broad base of local knowledge. The SDMI will be a principle partner throughout the process, providing technical and data resources regarding climate conditions and increased risk. LA DOTD will assist in providing asset level data and LED will assist with economic evaluation and cost-benefit evaluation throughout the process. All these entities are represented on the SCTC, which has shown support through the attached letter.

#### **Key Outcomes**

- 1. While the CRPC MPO is working through this process at a regional level, a parallel discussion of asset vulnerability and climate change will occur at the Supply Chain Transportation Council.
- 2. The project will create a replicable process that can be used by other MPOs in the state. Available data sets on asset and climate conditions will be identified during the process.
- 3. The project will create a regional model for Critical Asset Vulnerability for use throughout Louisiana.
- 4. The MPO Policy Committee (TPC) will consider criticality and vulnerability as evaluation factors in policy development and project selection.
- 5. Resiliency will be evaluated as part of the FHWA planning process for the regional Metropolitan Transportation Plan (MTP) for the Baton Rouge MPA.

#### Work Plan

#### Task 1: Define Goals, Audience and Stakeholders

The Supply Chain Transportation Council (SCTC) has been meeting for over a year to collectively consider critical and vulnerable assets in Louisiana's freight transportation network. The proposed project will use the assessment tool provided by FHWA to provide a framework with tangible steps for achieving consensus on the level of analysis conducted, and types of data and variables to consider in regional implementation.

CRPC's first task will be bringing regional stakeholders to the table and engaging them and the SCTC in a guided conversation to agree upon what constitutes asset criticality. The conversation will consider variables such as: economic impacts (cost of system disruption), vulnerable populations (with limited transportation options), and natural disasters (evacuation and re-entry routes). Emphasis will be on defining a broad range of factors that constitute criticality. Following this process, the stakeholders and SCTC will identify key climate variables based on available data, historic trends and consider future climate-related risks. SDMI will be a key partner in gathering data to guide this discussion. CRPC will assist in facilitation.

**Time:** 3 months with Stakeholder engagement ongoing throughout project. **Work Products:** White paper defining regional criticality for transportation network. White paper establishing regional climate framework.

#### Task 2: Obtain Asset Data

The project will have access to a broad array of asset data. SDMI has a great deal of asset data already available in different formats, including GIS. SDMI produced updated hazard mitigation plans for all parishes in the state and will provide input based in that process. Working through GOHSEP, SDMI will also assist with processing "high water mark" data collected post-disaster. This data can be used to set a maximum benchmark from the two flood events of 2016. GOHSEP and LA DOTD will have historic information on the impacts of disruptions and closures on the transportation network by various incident types.

SCTC members will be able to assist in obtaining data, both public and private. CRPC will work with the LA DOTD to obtain relevant and available road and bridge data. LA DOTD can also provide rail data through the state rail plan. The American Waterways Operators, Big River Coalition and Louisiana Ports Association will assist with waterborne freight data. Many members of the SCTC have strong relationships with the U.S. Army Corps of Engineers to assist with data on Mississippi River conditions. Additionally, CRPC will work with FHWA's MARAD division to obtain Mississippi River transportation data. The Louisiana Association of Railroads can assist with rail data as well.

LSU and the Water Institute in Baton Rouge are additional sources of data on the river and regional hydrology. DOTD can also provide river hydrology and hydrography, and topographic data through a state GIS and LIDAR mapping study currently nearing completion. At the local level, the Amite River Basin Commission has historic highwater mark data and information on flood control in the basin.

As shown in the budget, CRPC staff, working with the LSU SDMI graduate student, will be the primary points of contact in the asset data collection phase. Both LSU and CRPC will work to map critical assets. CRPC will facilitate discussion of the level of criticality with the SCTC and other regional stakeholders.

**Time:** 9 months (Concurrent with Task 3)

Work Products: GIS Map of Critical Assets. Asset lifecycle screening/scorecard developed.

#### Task 3: Obtain Climate Data

SDMI will be the main partner in obtaining and processing climate data through their Climatology Department. In addition, CRPC will utilize available data from NOAA and the National Weather Service. Recent studies and models have demonstrated that climate change related sea level rise combined with coastal surge projections for Louisiana will put portions of the Baton Rouge MPA at increasing risk of storm surge. SDMI will evaluate the combined heavy rainfall and storm surge risk. As part of the budget, this project will fund a portion of time for the Director of the SDMI and a graduate student for the duration of the grant period, to complete the climate data analysis and risk assessment. CRPC will facilitate the regional conversation to help identify and refine the key climate variables that will be considered in this project.

**Time:** 9 months (Concurrent with Task 2)

**Work Products:** White paper regional agreement on climate model to use in test scenarios and framework.

#### Task 4: Assess Vulnerability

CRPC expects to take a combined stakeholder and indicator-based desk review approach to assessing the vulnerability of assets in the Baton Rouge MPA. What that vulnerability means to the transportation network in the MPO area will be determined through a series of stakeholder conversations and by working with the SCTC. Consideration will be given to sensitivity and adaptive capacity to climate change and how that translates to vulnerability in the regional transportation system. It is expected that engagement with the SCTC during this evaluation process will lead to similar, statewide, conversations on impacts on the supply chain across the state. We also expect that the ways in which we identify and measure vulnerability, asset and system sensitivity, and asset and system adaptive capacity will serve as a model for other such

studies in Louisiana. SDMI will be heavily utilized in developing and implementing a methodology to assess vulnerability. We will also look to past studies such as the U.S. DOT Gulf Coast study and the Vulnerability Assessment Scoring Tool (VAST) for best practices guidance.

**Time:** 6 months

Work Products: Ranking of vulnerable assets by mode

#### Task 5: Identify, analyze, and prioritize adaptation options

SDMI, and the SCTC (particularly the LA DOTD and LED) will be instrumental in assisting with identifying adaptation options. Outcomes from an economic analysis led by the Louisiana Economic Development will help in setting priorities for implementing various adaptation options. Consideration will be given to a range of natural, structural, and policy adaptation options. These could include modified system and operational freight planning and coordination, new assets and retrofit of existing assists, and incorporation of green infrastructure principals. Both direct and indirect costs and benefits will be considered. Guidelines and guidance identified in the framework such as USDOT's "Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis" and EPA's "Guidelines for Preparing Economic Analysis" will also inform the process. Data and scenarios will be presented to MPO Policy Committee (TPC) for feedback process and Prioritization ranking.

Time: 4 months

**Work Products:** Scenario/Asset prioritization matrix based upon MPO Transportation Policy Committee feedback.

## Task 6: Incorporate Assessment Results in decision making

In addition to a final report to be delivered to FHWA, CRPC will also report to the SCTC and the MPO Transportation Policy Committee. The results of this effort will be incorporated into plans generated by the MPO and CRPC, including long range transportation plans, yearly Unified Planning Work Programs, and EDA Regional Comprehensive Economic Development Strategy (CEDS). While the work under this grant is being completed at the regional scale, the CRPC will also work directly with, and support, the state-wide Supply Chain and Transportation Council. Through legislative mandate, the SCTC is required to make a report outlining critical transportation vulnerabilities by mid-2019. This will raise awareness of network vulnerabilities at the highest level of state government. Simultaneously, CRPC, working through the MPO, will be completing a detailed vulnerability assessment at the regional level which will serve as a replicable model that can be followed across the state and in other urbanized regions of Louisiana.

Time: 4 months

Work Products: Final report

#### **Task 7: Monitor and Revisit**

At the regional level, through the Metropolitan Transportation Planning process, CRPC will work to establish performance measures related to asset vulnerability and climate variables. This level of information will inform our planning process and be incorporated into asset management planning and project selection criteria. Climate data and information from vulnerability risk assessments will be shared with the MPO Policy board for their consideration in local land use decision-making.

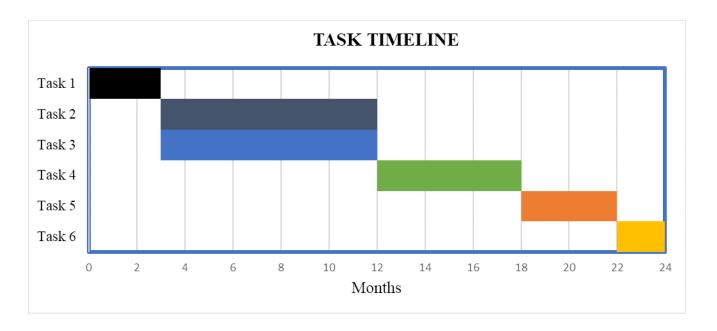
Additionally, this project will help advance part of the SCTC's long term mission, which includes monitoring the findings and recommendations from the assessment and adaptation process. Experience with this project will help to continue building the framework on which the SCTC will incorporate improved resiliency into Louisiana's supply chain and transportation infrastructure.

## FHWA Resiliency Grant - Two Year Budget Estimate

Resource	Hours	Total Budget** (\$)	Federal Funds Requested (\$)	Local Funds (\$)	% Local Share
Disaster Recovery Manager, CRPC	1,123	83,827	67,062	16,765	20.0%
Executive Director, CRPC	48	9,010	7,208	1,802	20.0%
Graduate Student Contract	-	48,300	38,640	9,660	20.0%
Stephenson Disaster Management Institute (SDMI) Contract*	-	86,946	34,778	52,168	60.0%
Total (\$)		228,083	147,688	80,395	35.2%

<sup>\*</sup> Total budget includes 50% in kind match from SDMI

<sup>\*\*</sup> Total budget includes overhead costs



# Q: How does the study relate to the March and August floods? What is the tie to the floods?

A: The study relates to the March and August 2016 floods through the Louisiana Floods Recovery Support Strategy (RSS) for FEMA DR-4263-LA/DR-4277-LA, and 2017 Regular Session Senate Concurrent Resolution (SCR) 99 and 2018 Regular Session Senate Concurrent Resolution 9.

The Economic Recovery Support Function portion of RSS for 4263/4277, which was a product of collaboration primarily between Louisiana Economic Development and the Economic Development Administration identified "disruptions in supply chains and commercial transportation" as a recovery issue. The ERSF established a goal "to increase the overall effectiveness of transportation and reduce the impacts on commercial and agricultural interests from future events", with an objective to "keep vital transportation networks operating or decrease downtime post disaster." One of the actions identified was to "Establish a supply chain network to engage business and agriculture interest in support of transportation resilience and enhanced transportation systems, in partnership with LA DOTD. This action from the RSS began implementation with the first organizational meeting of the Louisiana Supply Chain Transportation Council in February 2017.

SCR 99 of the 2017 Regular Session of the Louisiana Legislature states that "the flood events of 2016 highlighted critical points of failure in road, rail, and barge modes of transportation throughout the state..." and therefore authorized the creation of the "Louisiana Supply Chain Transportation Council (SCTC) to meet, undertake projects, and make recommendations to the legislature relative to improvements in commercial and workforce transportation, and to assist in making the Louisiana economy more resilient to disaster." SCR 99 lists several areas in transportation and supply chain for the SCTC to examine including "increase[d] effectiveness of relationships between local, state, and federal transportation agencies, providers of transportation, shippers and receivers of goods, and their employees, to ensure constant communication and robust pre-disaster recovery planning.

Further, SCR 9 defines the SCTC as a "public-private partnership including local, state, and federal agencies, private transport and business associations, and quasi-governmental entities such as regional planning districts." It calls for membership of the SCTC to include:

- Secretary of DOTD or his designee
- Secretary of LED or his designee
- Director of GOHSEP or his designee
- Executive Director of OCD or his designee
- The Ports Association of Louisiana
- The Louisiana Motor Transport Association
- The Louisiana Railroad Association

- The Big River Coalition
- The American Waterways Operators
- The International Air Cargo Association
- The Committee of 100 for Economic Development
- The Louisiana Association of Business and Industry
- The Louisiana Chemical Association
- The U.S. Department of Transportation
- The U.S. Army Corps of Engineers
- The Economic Development Administration within the U.S. Department of Commerce
- The Louisiana Association of Planning and Development Districts
- The Board of Regents

The SCTC also enjoys participation and support from the Governor's Office, LSU, ULL, UNO, the Federal Highway Administration, the Department of Homeland Security, and FEMA.

SCR 99 calls for the SCTC to submit a written report on its recommendations and findings to the president of the Senate, Speaker of the House of Representatives, the house and senate committees on transportation, highways, and public works, and the Secretary of the Department of Transportation and Development no later than February 1, 2018. The SCTC was unable to meet that deadline, so the legislature granted the SCTC an extension to submit the report through Regular Session 2018 SCR 9. The new deadline is March 1, 2019.

Due to time constraints the March 2019 report to the legislature will be a preliminary version of the final study that the SCTC will produce if funding is received for the complete study as proposed and outlined in the document "Proposal to Complete Initial Six Tasks Identified by the SCTC Executive Council." (Note a 7<sup>th</sup> task was added to this document to include administration of the SCTC and CRPC providing assistance to other MPOs across the state with incorporating the findings and recommendations of the SCTC.

## Q: What affects did the floods have on commercial transportation?

To provide context on the affects of the disaster here are some facts about freight in Louisiana.

## Transportation and logistics industry in declared parishes:

- 2,600 establishments
- 35,000 jobs
- \$1.87 billion Annual Payroll
- Rail freight users 189,650 direct jobs
  - Inclusive of multiplier impacts 494,500 jobs
- 20% of Louisiana jobs are supported by in-state ports
- 78.2% of Louisiana communities depend exclusively on trucks to move goods.

- Trucks transport 28% of total manufactured tonnage in Louisiana
- Of course, ALL businesses in the state rely on transportation and are affected when it fails
  - According to analysis in 4277 action plan and LED Lost Labor Productivity and lost Value-Added to the economy for the 3 weeks after the flood to be approximately \$1.1B
- Early estimates of damage projected \$115 million owed by the State in matching PA funds.

## Impacts to transportation

- March Floods
  - Waterways Barge is very efficient, equal to as many as 15 jumbo hopper railcars or 58 large semis.
    - 1st ever closure of J Bennet Johnson Waterway (Red River) due to silt.
      - JBJW shipped approximately 8.6 million tons of goods in 2015
      - There are 3 multimodal ports on Red River and it allows access to Atchafalaya River, Mississippi River, and Intercoastal Waterway System
    - Ouachita River failed to meet minimum standards of navigation for first time ever. The Ouachita transports between 501K and 5 million tons annually
    - Future disruptions could weaken vulnerable local economies along the Red River that rely upon it.
    - 55 levees damaged.
    - Estimated need for \$55 million for dredging projects
  - Rail impacts Rail is essential in linking Louisiana businesses with the rest of the country and world. Shipping via rail can be much less expensive per ton and much more efficient. For example, one tank car can hold 4 times more liquid than a tank truck. Put another way, every 1 tank car on the rail can replace the need for 4 trips of a semi hauling a tank trailer.
    - KCS service shut down on two main lines between April 9 April 12
    - UP closed for 9 days
      - Represents 73% of 2,730 route miles in Louisiana
    - These closures essentially shut down all rail traffic in Louisiana. (It
      was like a ripple effect, closure of one part of the rail system
      caused other parts of the rail system to close. Smaller switching
      and short line railroads closed as well.)
    - UP issued a bulletin to all customers notifying them to expect at least 48 hour delay on all shipments.
  - Road impacts
    - 3 of 6 interstate highways experience closures in several spots. I-10, I-20, I-49

- Approximately 450 state and local roads closed.
- August Floods
  - Waterways
    - No known impacts to commerce on navigable waterways
  - o Rail
    - Several closures of Class I railroads, including UP, CN and KCS.
  - o Roads
    - 2 of 6 interstates experienced several closures. I-10 and I-12 experienced lengthy closures. They are the most heavily travelled interstates.
    - Many major state highways experienced closures including U.S. Hwy. 61 in Baton Rouge and Ascension Parish and U.S. 190 in East Baton Rouge and Livingston Parish.
    - DOTD Sec. Wilson made the decision to open interstates to truck traffic on roads with 8 inches of waters on them after they were closed for 4 days. He stated that "they had to get commerce moving again."
    - Motorists were stranded on sections of I-12 in Livingston Parish for over 48 hours.
  - Unfortunately, our data for the affects of the August floods on transportation is not as robust as our data on the March floods. There are many reasons for that.
    - The August event was so close to the March event that ERSF was already in process of implementing recovery efforts for flood related supply chain disruptions.
    - The magnitude of the August event was apparent to all involved to the extent that it was clear that the affects to transportation would be similar if not worse than those in March. Because of this numerical data was never requested so it was never gathered.
    - SCTC members individually have data on the affects of the August floods to transportation and supply chain, it has just not been gathered and aggregated.
    - Interviews with stakeholders indicated that supply chain affects were significant and felt in all economic sectors.

## Q: How will this study/plan address those affects?

A: For reference the topics of our study and how it will be accomplished are covered in the document titled: "Proposal to Complete Initial Six Tasks Identified by the SCTC Executive Council."

How our study will address the affects of the flood is hard to exactly predict, because much of that will depend upon our findings. However, this is what we foresee:

We will have a much more accurate account of the affects of the floods, which will allow for better predictions of future disruptions.

Our study and recommendations will be shared with DOTD, the legislature, all of our members (public and private) and all MPOs in Louisiana. CRPC will aid MPOs in including the recommendations and findings of our study in their long-range plans which they must update every 5 years. These entities can and will use our study in their planning efforts and infrastructure projects. They will also use our findings in response to future disruptions, as our study will look at modal shift options to mitigate the affects of supply chain disruptions. It will also be possible for entities across the state to incorporate our findings into repairs to infrastructure that might still be necessary due to the affects of the flood. For instance, if we identify that silt has built up in sections of the Ouachita River due to the March flood and that it might cause disruptions to ship, we will examine and present options for addressing that issue. Another example might be a bridge over a state highway that is in need of repair due to repetitive highwater events, we will be able to present cost/benefit analysis on options for repairing, replacing, or doing nothing to the bridge.

## **APPENDIX C: 2017 AND 2018 ACTIVITIES**

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# LOUISIANA SUPPLY CHAIN TRANSPORTATION COUNCIL 2017 ACTIVITIES & 2018 OBJECTIVES

In 2016, Louisiana endured two 1,000-year rain events that flooded 80% of the parishes in the state. A team of economic recovery experts under contract to the Economic Development Agency (Economic Recovery Support Function/ERSF) working with FEMA under the National Disaster Recovery Framework, gathered information about impacts from the March 2016 floods to Louisiana's supply chain and transportation infrastructure. They learned of issues caused by the closures of Interstate 10 at the Louisiana-Texas border, portions of Interstate 20 and Interstate 49. Additionally, over 400 U.S. and state highways, and parish and local roadways closed – some for extended periods of time. ERSF also learned of an almost month-long closure of two Class I railroads, Kansas City Southern and Union Pacific. Due to these railroads being out of service, numerous other short-line and connecting railroads were also impacted. Louisiana's navigable waterways were not immune from the flood. The J. Bennett Johnston Red River Waterway and the Ouachita River Waterway were closed for extended periods due to silting, impacting both commercial and agricultural interests. In summary, flooding in March 2016 resulted in significant disruption to commerce in Louisiana.

One of the recovery strategies put forth by ERSF was to "form a supply chain network to engage businesses and agriculture interests in support of transportation resilience and enhanced transportation systems, in partnership with the Louisiana Department of Transportation and Development (DOTD)" and Louisiana Economic Development (LED)<sup>1</sup>. In mid-August 2016 an initial meeting took place with DOTD, LED, the Infrastructure Recovery Support Function of NDRF, and the U.S. Department of Transportation to discuss implementation of the initiative. At that meeting the initiative was named the Louisiana Supply Chain Transportation Council (SCTC). While this meeting was taking place the unprecedented rain that would cause the August floods was falling on Louisiana.

The August floods halted progress on the SCTC until November of 2016, when ERSF with the assistance of DOTD and The Committee of 100 for Economic Development began recruiting key transportation and business stakeholders to participate. The Council then began to take shape acquiring eager participants representing all modes of transportation from Louisiana's Universities, state and federal government, and the private sector. During this time Dr. Stanley Napper, at the time Vice President at Louisiana

<sup>&</sup>lt;sup>1</sup> Action step identified by Economic Recovery Support Function in the Recovery Support Strategy for DR-LA-4263 (March 2016 storms and floods)

Tech University agreed to Chair the council with Garry Lagrange of the Louisiana Ports Association acting as Co-Chair.

The SCTC held its first organizational meeting on February 21, 2017 where the council agreed upon the following Mission Statement "To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events." Additionally, 8 Focus areas were identified by the members: Intrastate transportation, Interstate & International transportation, Public/Private Carriers, Shippers - Producers/Distributors, Interdependence/Cyber, Technology and Innovation Human Resources & Logistics, Communication/Collaboration. The Director of the Stevenson Disaster Management Institute at LSU expanded upon this list in early March and emailed the Council identifying 8 critical tasks for the SCTC.

- 1. Identify known single points of failure for all transportation nodes: Triggers, impacts, alternatives.
- 2. Identify known single points of failures that have experienced repetitive flooding.
- 3. Identify single points of failure of interdependency infrastructure.
- 4. Identify governing authorities across the state impacting transportation.
- 5. Consolidate all known transportation nodes mapping data.
- 6. Identification of future disruptions.
- 7. Establish on the fly routing during disasters.
- 8. Support all the universities in the state by providing a list of research priorities to enhance resiliency for the transportation sector.

This list of tasks was adopted by the Council on a March 9<sup>th</sup> conference call. Also, during this call, the Council set up a Dropbox account in order to better collaborate and share files.

The next meeting of the Council was held on March 30<sup>th</sup>. At that meeting the Executive Committee was formed consisting of the following individuals.

- Cathy Gautreaux, Louisiana Motor Transport Association Co Chair
- Gary Lagrange, Ports Association of Louisiana Co Chair
- Chris Collins, Louisiana DOTD
- Sherri McConnell, Louisiana Economic Development
- Brant Mitchell, Stephenson Disaster Management Institute (LSU)
- Michael Olivier, Louisiana Committee of 100 for Economic Development

The Executive Committee then met on April 28<sup>th</sup> where Dr. Stanley Napper announced his resignation as Chair. Dr. Napier accepted a position out of state. Garry LaGrange agreed to become Chair and Cathy Gautreaux was named Co-Chair. At this meeting the executive committee established two more committees, Geographical Information and

Analysis Committee, chaired by Brant Mitchell and Technology Innovation + Cyber Interdependence committee, Chaired by Dr. Ramesh Kolluru. Dr. Kolluru subsequently joined the Executive Committee. The Executive Committee split the responsibility for the identified 8 critical tasks between the three committees.

- Executive Committee
  - o Identify governing authorities across the state impacting transportation
- GIS Committee
  - o Identify known single points of failure for all transportation nodes
  - Identify known single points of failure that have experienced flooding
  - Identify single points of failure of interdependent infrastructure
  - Consolidate all known transportation nodes mapping data
  - Identification of future disruptions
- Technology and Innovation + Cyber Interdependence
  - Establish on the fly routing during disasters
  - Support all the universities of the state by providing a list of research priorities to enhance resiliency for the transportation sector

On May 19<sup>th</sup>, 2017 the Louisiana Legislature passed Senate Concurrent Resolution 99, which formally authorized the creation of the Supply Chain and Transportation Council. SCR 99 enumerated what Federal, State, University, and private sector entities should participate in the Council and charged the Council with submitting a report of its findings and recommendations to the Legislature and Secretary of DOTD by February 1, 2018.<sup>2</sup>

The Supply Chain Transportation Council met 4 more times in 2017, in June, August, November, and December. During that period much work was done toward completing the tasks that the Council set for itself. All Council members have committed to working in a committee. The GIS Committee has a webpage with the basic framework of maps created that will be needed to identify the points of failure and interdependency as laid out in the critical tasks<sup>3</sup>. The committee continues to work with Council members to gather the necessary data to identify points of failure, consolidate other existing maps, and identify future disruptions. The Technology Committee is building upon and advancing work done by the University of Louisiana Lafayette Informatics Research Institute on

Appendix C March 2019

<sup>&</sup>lt;sup>2</sup> Members listed in SCR 99: LA Department of Transportation and Development, LA Department of Economic Development, Governor's Office of Homeland Security and Emergency Preparedness, Office of Community Development, Ports Association of Louisiana, Louisiana Motor Transport Association, Louisiana Railroads Association, Big River Coalition, American Waterways Operators, International Air Cargo Association, Committee of 100 for Economic Development, Louisiana Association of Business and Industry, Louisiana Chemical Association, U.S. DOT, U.S. Army Corps of Engineers, Economic Development Administration, LA Association of Planning and Development Districts, The Board of Regents.

<sup>&</sup>lt;sup>3</sup> https://arcg.is/19yL1i

evacuation fuel demand modeling to establish on the fly routing for freight carriers during disasters. The Technology Committee is also planning to explore issues related to cybersecurity of transportation and logistical infrastructures, owned and operated by public and private sectors that contribute to regional supply chain resiliency.

The Council has enjoyed participation and attendance from representatives of 11 of the 17 entities that were identified by SCR 99. Moreover, the council continues to identify new transportation, infrastructure, economic development and resiliency stakeholders to contribute to its mission. The Council has been joined and briefed by representatives from Senator Bill Cassidy's office, the Cyber Innovation Center, DOTD's Intermodal Commissioner, the Department of Homeland Security, and the Governor's Office.

However, the Council's progress toward creating a report has been slowed by a few circumstances outside of its control. The recovery experts of ERSF that provided the original guidance and administration for the Council were assigned to other missions sooner than had been anticipated due to Hurricanes Harvey, Irma and Maria. The 2017 hurricane season further demonstrated the vulnerable position Louisiana is in and illuminated another aspect of that vulnerability, expertise in recovery is a finite resource. The Council also lost Co-Chair Cathy Gautreaux in November. She accepted a position in Washington D.C. with the Federal Motor Carrier Safety Administration. Jamie Setze the Executive Director of the Capital Region Planning Commission and President of the Louisiana Association of Planning and Development Districts was named Co-Chair to fill the spot left vacant by Ms. Gautreaux. Then in December, Chair Gary LaGrange took health related time off.

As the council progressed in its mission in 2017 it began to realize that the scope of its mission and the type of report needed to fulfill the requirements of SCR 99 would require more resources in the form of funding and man hours. It was decided to seek an extension on the deadline put forth by SCR99 and seek outside funding to generate a useful report. We have identified a couple of promising sources from the private sector and federal government. Including the National Center for Disaster Philanthropy and a grant from the Federal Highways Administration Resilience and Durability to Extreme Weather Pilot Program. Part of that grant program includes a vulnerability assessment tool that the Council may utilize as a vetted framework to assist in writing our report and to secure more funding.

In November, ERSF contacted Drew Ratcliff, who is working in an EDA and Office of Community Development – Disaster Recovery Unit funded position as the Regional Disaster Recovery Manager at the Capital Region Planning Commission - about assuming their role as administrators for the Council. Mr. Ratcliff worked alongside ERSF

in FEMA's Recovery Support Function on the March and August Floods. Prior to that he worked for Genesis Energy, L.P. in Baton Rouge shipping hazardous bulk liquids by truck, rail, and ship, and as a Senior Public and Government Affairs Representative. Mr. Ratcliff has been allowed to devote a large part of his time to the council. His position provides needed stability and continuity for the SCTC and is tremendous utilization of already available federal resources along with the resources of the Capital Region Planning Commission. In addition, as of mid-January 2018 the U.S. Senate is to consider the Disaster Recovery and Reform Act (DRRA), which was passed by the House in December 2017. That DRRA indicates that the Federal government will be placing even greater emphasis on resiliency and represents the possibility of several billions of dollars being invested into resilient infrastructure projects.

The Council enters 2018 in a strong position to accomplish its goals and objectives of identifying vulnerabilities in Louisiana's supply chain and transportation infrastructure and identifying innovative ways to address those vulnerabilities. With an unprecedented range of transportation stakeholders meeting on a regular basis the Louisiana Supply Chain Transportation Council and may be the only one of its kind in practice in the U.S. As such it is unique position to leverage public and private resources and provide recommendations to the Legislature on creating a more resilient Louisiana economy.

## **2017 Supply Chain Council Summary**

7 Official Meetings, more subsequent committee conference calls

**Utilizing file sharing platforms** 

Regular participation from 11 of 17 stakeholder entities identified in SCR 99

Continuously identifying & adding stakeholders

**Committees formed with delegated responsibilities** 

Identified a regular administrator

**Identified sources of funding** 

Meeting on regular basis

#### 2018 Objectives

Secure report deadline extension and recognition of council by legislature for 2018

**Complete 8 Critical Tasks** 

Secure funding and continue to identify more resources

Have working draft of report for Legislature to be submitted in 2019

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## **APPENDIX D: RESOLUTIONS**

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2017 Regular Session

**ENROLLED** 

SENATE CONCURRENT RESOLUTION NO. 99

BY SENATOR CORTEZ AND REPRESENTATIVE HAVARD

## A CONCURRENT RESOLUTION

To authorize creation of the Louisiana Supply Chain and Transportation Council to study and make recommendations regarding increasing resilience in various modes of transportation through increased communication, collaboration, development of geographic information technologies, and new innovations in transportation resilience.

WHEREAS, Louisiana experienced two unprecedented flood events in 2016, which resulted in two federal disaster declarations that together included fifty-nine of Louisiana's sixty-four parishes; and

WHEREAS, the flood events of 2016 highlighted critical points of failure in road, rail, and barge modes of transportation throughout the state; and

WHEREAS, geographic information technologies in transportation, pre-disaster planning involving partnerships between public and private sectors in different modes of transportation, and innovations such as shallow-draft barges and composite roadways may improve the ability of commerce to continue during and after disruptive incidents; and

WHEREAS, the creation of plans and methods that will allow workers to return to their jobs aids both workers and companies in recovering from incidents more quickly; and

WHEREAS, the discipline of supply chain resilience has resulted in new approaches that ensure reliable flows of materials and products to continue in times of disaster.

THEREFORE, BE IT RESOLVED that the Legislature of Louisiana does hereby authorize creation of the Louisiana Supply Chain and Transportation Council (Council) to meet, undertake projects, and make recommendations to the legislature relative to improvements in commercial and workforce transportation to assist in making the Louisiana economy more resilient to disaster.

BE IT FURTHER RESOLVED that the Council shall be supported by the Department of Transportation and Development, assisted by the Department of Economic Development, and shall be a public-private partnership including local, state, and federal agencies, private transport and business associations, and quasi-governmental entities such as regional planning districts. The Council shall advise the Department of Transportation and Development on actions necessary to accomplish the following, including any additional recommendations the Council may find beneficial:

- (1) Provide advanced geospatial planning and coordination to predict and avoid points of failure and to inform transportation providers in real time of routes likely to remain open during and after a disaster.
- (2) Recommend agreements between providers of different modes of transportation, companies shipping or receiving goods, and public agencies to provide for effective routing of transportation under disaster scenarios.
- (3) Support funding and resources to increase utilization of technology and new innovations in lessening the risk of closure, including innovations in water, rail, road, and air modes of transportation.
- (4) Increase effectiveness of relationships between local, state, and federal transportation agencies, providers of transportation, shippers and receivers of goods, and their employees, to ensure constant communication and robust pre-disaster recovery planning.

BE IT FURTHER RESOLVED that the Council shall comprise the following members:

- (1) One member shall be the secretary of the Department of Transportation and Development, or his designee.
- (2) One member shall be the secretaryof the Department of Economic Development, or his designee.
- (3) One member shall be the director of the Governor's Office of Homeland Security and Emergency Preparedness, or his designee.
- (4) One member shall be designated by the executive director of the office of community development within the division of administration to represent its disaster

recovery unit.

- (5) Additional members of the Council shall include one representative designated by each of the following:
  - (a) The Ports Association of Louisiana.
  - (b) The Louisiana Motor Transport Association, Incorporated.
  - (c) The Louisiana Railroads Association.
  - (d) The Big River Coalition.
  - (e) The American Waterways Operators, Inc.
  - (f) The International Air Cargo Association.
  - (g) The Committee of 100 for Economic Development, Incorporated.
  - (h) The Louisiana Association of Business and Industry.
  - (i) The Louisiana Chemical Association.
  - (j) The United States Department of Transportation.
  - (k) The United States Army Corps of Engineers.
- (1) The Economic Development Administration within the United States Department of Commerce.
  - (m) The Louisiana Association of Planning and Development Districts.
  - (n) The Board of Regents.

BE IT FURTHER RESOLVED that members of the Council shall serve without compensation, except per diem or expense reimbursement to which any member may be individually entitled as a member of their respective organization.

BE IT FURTHER RESOLVED that the Department of Transportation and Development shall provide meeting space for all Council meetings.

BE IT FURTHER RESOLVED that the Council shall submit a written report and recommendations, no later than February 1, 2018, to the president of the Senate, the speaker of the House of Representatives, the house and senate committees on transportation, highways, and public works, and the secretary of the Department of Transportation and Development.

BE IT FURTHER RESOLVED that a copy of this Resolution be transmitted to the secretary of the Department of Transportation and Development, the secretary of the

Department of Economic Development, the executive director of the office of community development within the division of administration, and the director of the Governor's Office of Homeland Security and Emergency Preparedness.

PRESIDENT OF THE SENATE

SPEAKER OF THE HOUSE OF REPRESENTATIVES

2018 Regular Session

**ENROLLED** 

SENATE CONCURRENT RESOLUTION NO. 9

BY SENATOR CORTEZ

### A CONCURRENT RESOLUTION

To extend the creation, members, and charge of the Louisiana Supply Chain and Transportation Council as provided in Senate Concurrent Resolution No. 99 of the 2017 Regular Session of the Legislature to study and make recommendations regarding increasing resilience in various modes of transportation through increased communication, collaboration, development of geographic information technologies, and new innovations in transportation resilience.

WHEREAS, Senate Concurrent Resolution No. 99 of the 2017 Regular Session of the Legislature created the Louisiana Supply Chain and Transportation Council to make recommendations to the legislature relative to improvements in commercial and workforce transportation to assist in making the Louisiana economy more resilient to disaster, and to advise the Department of Transportation and Development on actions necessary to accomplish the following, including any additional recommendations the council may find beneficial:

- (1) Provide advanced geospatial planning and coordination to predict and avoid points of failure and to inform transportation provided in real time of routes likely to remain open during and after a disaster;
- (2) Recommend agreements between providers of different modes of transportation, companies shipping or receiving goods, and public agencies to provide for effective routing of transportation under scenarios;
- (3) Support funding and resources to increase utilization of technology and new innovations in lessening the risk of closure, including innovation in water, road, and air modes of transportation;
- (4) Increase effectiveness of relationships among local, state, and federal transportation agencies, providers of transportation, shippers and receivers of goods, and

their employees, to ensure constant communication and robust predisaster recovery planning; and

WHEREAS, Senate Concurrent Resolution No. 99 of the 2017 Regular Session of the Legislature further mandated submission of a written report and recommendations, no later than February 1, 2018; and

WHEREAS, individual members of the council were appointed, an organizational meeting was held where co-chairpersons were elected, and an executive committee was appointed; and

WHEREAS, the council met numerous occasions seeking to identify all potential entities available to assist in the gathering of essential data and other resources necessary for preparation of a written report on or before February 1, 2018; and

WHEREAS, the magnitude of the mandate charged to the council has become a project of such proportion not envisioned by Senate Concurrent Resolution No. 99 of the 2017 Regular Session of the Legislature; and

WHEREAS, as of its December 11, 2017, meeting, all of the necessary resource entities have been identified and are ready to commence the necessary studies to formulate a written report; and

WHEREAS, the council submitted a preliminary report on January 31, 2018, indicating that a final detailed written report cannot be finalized and submitted by February 1, 2018; and

WHEREAS, the co-chairmen of the council request extension of the creation, members, and charge to the council, all as provided in Senate Concurrent Resolution No. 99 of the 2017 Regular Session of the Legislature, and that the council submit a final written report on or before March 1, 2019, to the president of the Senate, the speaker of the House of Representatives, the chairmen of the house and senate committees on transportation, highways, and public works, and the secretary of the Department of Transportation and Development.

THEREFORE, BE IT RESOLVED that the Legislature of Louisiana does hereby accept the preliminary report of the council submitted on January 1, 2018.

BE IT FURTHER RESOLVED that the Legislature of Louisiana does hereby extend

the creation, members, and charge of the Louisiana Supply Chain and Transportation Council to meet, undertake projects, and make recommendations to the legislature relative to improvements in commercial and workforce transportation to assist in making the Louisiana economy more resilient to disaster, all as provided in Senate Concurrent Resolution No. 99 of the 2017 Regular Session of the Legislature.

BE IT FURTHER RESOLVED that the council shall continue to be supported by the Department of Transportation and Development, assisted by the Department of Economic Development, and shall be a public-private partnership including local, state, and federal agencies, private transport and business associations, and quasi-governmental entities such as regional planning districts.

BE IT FURTHER RESOLVED that members of the council shall continue to serve without compensation, except per diem or expense reimbursement to which any member may be individually entitled as a member of their respective organization.

BE IT FURTHER RESOLVED that the Department of Transportation and Development shall continue to provide meeting space for all council meetings.

BE IT FURTHER RESOLVED that the council shall submit a final written report and recommendations, no later than March 1, 2019, to the president of the Senate, the speaker of the House of Representatives, the house and senate committees on transportation, highways, and public works, and the secretary of the Department of Transportation and Development.

BE IT FURTHER RESOLVED that a copy of this Resolution be transmitted to the secretary of the Department of Transportation and Development, the secretary of the Department of Economic Development, the executive director of the office of community development within the division of administration, and the director of the Governor's Office of Homeland Security and Emergency Preparedness.

PRESIDENT OF THE SENATE

SPEAKER OF THE HOUSE OF REPRESENTATIVES

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# APPENDIX E: SCTC MEETING AGENDAS AND MINUTES

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"To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events"

Tuesday, January 30, 2017

9:30 - 11:30

Louisiana Emerging Technology Center LSU, 340 E. Parker St., Baton Rouge, LA 70803 Conference Line: (571) 317-3112 Access Code: 788-817-517

- 9:30 Co-Chair Jamie Setze, Capital Region Planning Commission
  - Welcome and attendee self-introduction
  - Approval of minutes
- 9:40 Jamie Setze, Initiation of Committee Reports
  - Executive Committee, Michael Olivier
    - o Name change discussion
    - o SCTC 2017 Report
    - Extension request letter to legislature and report on 2017 activity
  - Geographical Information and Analysis Committee, Brant Mitchell (Chair)
  - Technology and Innovation, Dr. Ramesh Kolluru (Chair)
- 10:30 Jamie Setze
  - Presentations

Drew Ratcliff, Capital Region Planning Commission

- FHWA Resilience and Durability to Extreme Weather Pilot Program & Vulnerability Assessment and Adaptation Framework
- 11:00 Group Discussion: Funding opportunities.
  - Other issues, Concerns or Opportunities
- 11:30 Adjourn

No minutes were supplied for this meeting.

10:00

11:30

Adjourn

## LOUISIANA SUPPLY CHAIN TRANSPORTATION COUNCIL

"To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events"

Tuesday, March 20, 2018

10:00 - 11:30

Louisiana Emerging Technology Center LSU, 340 E. Parker St., Baton Rouge, LA 70803 Conference Line: (224) 501-3412 Access Code: 172-183-909

	<ul> <li>Welcome and attendee self-introduction</li> </ul>
10:10	Jamie Setze, Initiation of Committee Reports  - Executive Committee, Michael Olivier  o Funding opportunities/Restore Louisiana o SCR 9  Committee to create budget and scope work for report  Geographical Information and Analysis Committee, Brant Mitchell (Chair)  Technology and Innovation, Dr. Ramesh Kolluru (Chair)
10:45	Other Business
	Drew Ratcliff, Capital Region Planning Commission - SCTC Structure, meetings, communications - Louisiana Resilient Recovery Program – Amite Watershed
11:00	Group Discussion

- Current events, projects, initiatives, concerns, etc.

Co-Chair Jamie Setze, Capital Region Planning Commission

**Meeting Minutes** 

March 20, 2018

Present: Chris Collins, Michael Dunaway, Brant Mitchell, Sheri McConnell, Carlos McCloud,

Mike Olivier, Drew Ratcliff, Jamie Setze, Chris Rippetoe

Via Phone: John Dragseth, Sean Duffy, Vicki Hendershot, Jeff McKee, Ramesh

Kolluru

Next IF NEEDED: April 24<sup>a</sup>. Emerging Tech Center on LSU's Campus. 3<sup>a</sup> Floor

meeting: Boardroom. 10:00 am

### Welcome and attendee introductions

Co-Chair Jamie Setze called for committee reports

## II. Committee Reports

a. Executive Committee - Michael Olivier

Discussion about funding opportunities. CRPC was not selected for funding by FHWA. Agreed upon need to begin scope of work for our report and creation of potential budget. Budget to assist with making ask for funds.

Senate Concurrent Resolution 9 by Sen. Cortez were distributed. SCR 9 reauthorizes the SCTC for another year and extends the deadline for our report to <u>March 1, 2019</u>.

#### **Action Items**

- Arrange call with SCTC Exec Committee Members and Cathy Gautreaux to discuss potential assistance from FMCSA
  - Drew Ratcliff
- Convene an ad hoc committee to begin scope of work and budget, last week of March or 1st week of April
  - Drew Ratcliff, Brant Mitchell, Ramesh Kolluru, Michael Dunaway
- Send letter to Pat Forbes requesting Restore Louisiana funds be directed to support SCTC creating report for the legislature. Call members of the Restore Louisiana Task Force economic sub-committee.
  - Drew Ratcliff, Jamie Setze.
- **b.** GIS Committee Chris Rippetoe for Brant Mitchell

Nothing new to report.

- C. Technology and Innovation Committee Ramesh Kolluru
- Dr. Kolluru expanded upon the 3 objectives/critical tasks that the SCTC adopted and the committee that he chairs had taken on.
- 1.) Extend the Fuel Demand Model for evacuation to a Multi-Modal Resource Mapping and Management Model for disaster management as well as blue-sky operations.

- 2.) Develop a Framework for Louisiana's Supply Chains and Logistics Networks, with a focus on enhancing resilience of the overall System. This framework will be based on qualitative research (interviews) of industry members on and beyond the Council and those involved with the LABEOC.
- Assessment and Mitigation of Cybersecurity risks to critical public and private sector supply chains and logistical/transportation networks.
   Michael Dunaway reported out on the NIST Global Cities Challenge Conference that he attended.

### **Action Items**

- Approach contacts at DHS about possible funding based upon security aspects of SCTC work
  - Michael Dunaway

## III. Presentations and other business

**a.** SCTC structure, future meetings and communications. Louisiana Resilient Recovery Program: Phase III Amite Watershed – Drew Ratcliff

Drew Ratcliff asked for feedback on future meeting times and communication preferences. It was decided to set future meeting dates to the <u>last Tuesday of every month at 10 am</u>. Drew will send out a recurring calendar item for the meeting. If a meeting is not necessary, Drew will cancel the invite for that month.

Drew Ratcliff briefed the SCTC on the work of the Louisiana Resilient Recovery (LARR) Program in the Amite Watershed. LARR is a partnership between GOHSEP, FEMA and the Office of Community Development – Disaster Recovery Unit. They have been conducting outreach activities in the Amite Watershed (E. Feliciana, St. Helena, E. Baton Rouge, Livingston, Ascension, Iberville) to identify common watershed related priorities and concerns. They will be hosting an Amite Watershed Symposium for local government officials on April 4<sup>th</sup> in Baton Rouge to discuss their common issues and priorities. One of the goals is to bring the Parishes together under a Watershed Organization. The Watershed Organization will then be able to evaluate and decide on watershed projects. The hope is to fund watershed based projects (<u>if</u> funding goes through) via an additional HUD allocation of money to OCD.

Carlos McCloud a Transportation Planner with FHWA – Louisiana Division. Spoke to the group about FHWA and his work in Louisiana. He and CRPC had a debrief with FHWA personnel from D.C. on CRPC's letter of interest for funding under the resiliency pilot program. FHWA went over a few items of concern: it appeared that too much work would be put on a grad student, soft match \$, and how we would obtain freight data. Other than that FHWA was very impressed with the proposal and said it would have been funded if they had not had a record number of applicants and pre-determined that they would fund certain numbers of certain kinds of projects. FHWA was very interested in the freight component of our LOI. CRPC will continue to work with Carlos and other FHWA officials on possible future funding opportunities and technical assistance on the Vulnerability and Adaptation Framework. There are other FHWA tools (VAST & INVEST) that that can assist the SCTC in creating a report that Carlos can assist the SCTC with. Carlos also mentioned other possible sources of federal funding for the SCTC: EPA for air quality issues and USDA.

#### **Action Items**

- Send recurring calendar item for meeting on last Tuesday of every month
  - Drew Ratcliff
- Set up peer to peer exchange with Mobile MPO for ideas on Vulnerability Assessment and Adaptation Framework
  - Drew Ratcliff and Carlos McCloud
- Contact Bruce Lambert about freight data
  - TRD
- Contact DOTD and Louisiana Transportation Research Center to better understand soft match criteria/guidelines
  - Jamie Setze

## IV. Other Business and Adjournment

Chris Collins informed the group that the Institute for Trade and Transportation Studies (ITTS) would like someone from the SCTC to present at their Southeast Conference in May during FreightWeek STL. Many other states are interested in starting their own SCTC. It was agreed that Drew Ratcliff would attend the conference to present if asked.

#### **Action Items**

Chris Collins to connect Drew Ratcliff with Bruce Lambert about presenting at the ITTS conference.

"To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events"

Tuesday, May 29, 2018

10:00 - 11:30

Louisiana Emerging Technology Center LSU, 340 E. Parker St., Baton Rouge, LA 70803 Conference Line: (224) 501-3412 Access Code: 172-183-909

10:00	Co-Chair Jamie Setze, Capital Region Planning Commission - Welcome and attendee self-introduction
10:05	Jamie Setze, Initiation of Committee Reports  - Executive Committee  - Update on funding possibilities, request for assistance and engaging stakeholders  - SCR 9  - Geographical Information and Analysis Committee, Brant Mitchell (Chair)  - Technology and Innovation, Dr. Ramesh Kolluru (Chair)  - Cybersecurity Council
10:25	Other Business and Presentations
	Possible speaker on pipeline security and how it relates to cyber security
10:45	Michael Dunaway, update on Regional Smart Infrastructure Challenge
10:55	Drew Ratcliff, Capital Region Planning Commission - Report on FreightweekSTL (Chris Collins, DOTD) - Homeland Security Information Network
11:05	Group Discussion - Current events, projects, initiatives, concerns, etc.
11:30	Adjourn

**Meeting Minutes** 

May 29, 2018

Present: Carmack Blackmon, David Dodd, Sean Duffy, Michael Dunaway, Vicki Hendershot,

Sheri McConnell, Kelli Polk, Lindsey Quick, Drew Ratcliff, Jamie Setze, Chris

Rippetoe, Guang Tian

Via Phone: LaSonta Davenport, Ramesh Kolluru

Next IF NEEDED: Tuesday June 26th. Emerging Tech Center on LSU's Campus. 3d Floor

meeting: Boardroom. 10:00 am

### Welcome and attendee introductions

Co-Chair Jamie Setze called for committee reports

## II. Committee Reports

**b.** Executive Committee – Carmack Blackmon

Reported that SCR 9 passed the legislature, extending the deadline for the SCTC's report to March 1, 2019. Sen. Cortez is interested in the report to inform new legislation and regulations.

Drew Ratcliff reported that he met with OCD regarding potential funding for the SCTC through the \$1.2B HUD has allocated to Louisiana for resiliency projects. 3 projects were presented to OCD: 1) Funding for continuation of the council, a report to the Legislature/completion of the 6 Critical Tasks identified by the SCTC. 2) Funding support to develop a State Strategy and Proposal for a "Regional Smart Transportation Network". 3) Multimodal Resource Mapping and Management Model for the State. OCD is waiting for HUD to publish guidelines on what OCD will be able to fund through the allocation. Once that happens OCD will submit an Action Plan to HUD, which HUD must approve. It is unknown when HUD will publish its guidelines.

### **Action Items**

- Follow up conversations with OCD as necessary.
  - Drew Ratcliff
- Invite Sen. Cortez, Sen. Landry and Rep. Havard to next SCTC meeting
  - Drew Ratcliff
- **C.** GIS Committee Chris Rippetoe for Brant Mitchell

Nothing new to report.

- **d.** Technology and Innovation Committee Ramesh Kolluru
- Dr. Kolluru briefed the Council on the activities of the Louisiana Cybersecurity Commission. Michael Dunaway and Dr. Kolluru briefed the Commission on the SCTC at the Commission's last meeting. The majority of the Commission was supportive of identifying opportunities for collaboration between the SCTC and Commission.

#### **Action Items**

- Secure invitation for SCTC member to attend next meeting of Louisiana Cyber Security Commission
  - Michael Dunaway or Ramesh Kolluru
- Ramesh to assist Sean Duffy with economic data for the Mississippi River
  - Ramesh Kolluru and Sean Duffy

## III. Presentations and other business

**b.** Kelli Polk – Investigative Specialist Critical Infrastructure with Louisiana State Police – Louisiana State Analytical and Fusion Exchange (LA-SAFE) spoke with the group about LA-SAFE and some current cyber and pipeline threats that law enforcement agencies are monitoring in Louisiana. The information shared with the group is sensitive but not classified and not for sharing beyond the meeting.

LA-SAFE has an app (See Something Send Something) and website (<a href="https://dpsweb.dps.louisiana.gov/suspicious.nsf/WebForm?OpenForm">https://dpsweb.dps.louisiana.gov/suspicious.nsf/WebForm?OpenForm</a>) for sharing suspicious activity. These are to be used in **NON-EMGERGENCY SITUATIONS** 

**c.** Drew Ratcliff – Briefed the group on the ITTS Conference/Freight Week STL where he presented on the work of the SCTC. Several ITTS members approached the ITTS Executive Director about a webinar where Drew would give his presentation again. Drew will also be writing an article on the SCTC for the Waterways Council Inc.'s Summer Newsletter. At the conference Drew was asked if the SCTC had a website, and he was asked for a logo for SCTC to go in the article.

#### **Action Items**

- Look into creating a logo and website for the SCTC
  - Drew Ratcliff

## IV. Other Business and Adjournment

The group discussed the current form of the state budget and how DOTD will not have extra funds for projects next fiscal year. Alternate sources of funding will be needed.

"To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events"

Tuesday, July 31, 2018

10:00 - 11:30

Louisiana Emerging Technology Center LSU, 340 E. Parker St., Baton Rouge, LA 70803 Conference Line: (786) 535-3211 Access Code: 263-580-013

10:00	Welcome and attendee self-introduction: Jamie Setze, Co-Chair
10:05	Initiation of Committee Reports: Jamie Setze  - Executive Committee  o Funding update o Plan for report without funding o Mid-year objectives  - Geographical Information and Analysis Committee: Brant Mitchell (Committee Chair)  - Technology and Innovation: Dr. Ramesh Kolluru (Committee Chair)
10:25	Other Business and Presentations
	Truck Travel Time Study: Ravi Ponnapureddy, Capital Region Planning Commission
10:45	Thriving Communities Grants: Guang Tian, UNO
11:55	Goals and Objectives of SCTC for 2018 and 2019: Drew Ratcliff, Capital Region Planning Commission  - Long term goals and plans identified in first meeting  - Report for Legislature – Information and assistance needed from SCTC members
11:20	Group Discussion - Current events, projects, initiatives, concerns, etc.
11:30	Adjourn

**Meeting Minutes** 

July 30, 2018

Present: Carmack Blackmon, Chris Collins, Michael Dunaway, Sheri McConnell, Drew

Ratcliff, Chris Rippetoe, Guang Tian

Via Phone: Sean Duffy, Raju Gottumukkala, Steven Holliday, Robert Schromm

Next Tuesday August 28, 2018. Emerging Tech Center on LSU's Campus. 3rd Floor

meeting: Boardroom. 10:00 am

### Welcome and attendee introductions

Co-Chairs Jamie Setze and Carmack Blackmon asked Drew Ratcliff to run through the agenda. Drew Ratcliff asked for self-introductions and called for the committee report

## II. Committee Reports

C. Executive Committee - Drew Ratcliff

OCD is still waiting for HUD to publish guidelines on what OCD will be able to fund through the \$1.2 billion resiliency allocation. Once that happens OCD will submit an Action Plan to HUD, which HUD must approve. It is unknown when HUD will publish its guidelines. HUD has stated that they will issue guidelines on separate resiliency allocations for Texas, Florida and Puerto Rico before they release guidelines for Louisiana.

Given the unknown timetable, the executive committee and CRPC have decided to move forward with a plan to begin work on a report for the legislature.

#### **Action Items**

- Follow up conversations with OCD as necessary.
- CRPC to present on truck travel times and performance metrics at next meeting
  - Drew Ratcliff
- **d.** GIS Committee Chris Rippetoe for Brant Mitchell

Nothing new to report.

**e.** Technology and Innovation Committee – Michael Dunaway (for Ramesh Kolluru) Michael provided an update on the Smart Cities Challenge.

## III. Presentations and other business

d. Drew Ratcliff - CRPC Regional Disaster Recovery Manager Drew

In order to provide background on the presented plan and objectives, Drew went through the mission statement, areas of focus, and critical activities identified and adopted by the SCTC when it formed. Then the 4 actions identified by SCR 9 and 99 were discussed. Drew presented objectives for 2018-2019, and work plan until 2019, and possible goals past 2019.

Part of the work plan will include stakeholder interviews to learn what the group would like the SCTC to do in the future, identify more stakeholder with data and information on trouble spots in transportation and infrastructure. The group went over stakeholders to contact.

Through discussion and by giving examples of what kinds of information would be gathered in stakeholder interviews. It was agreed that one of the identified issues in the SCTC report will be re-entrance of railroad maintenance crews after incidents. Sheri McConnell brought up the role of transporting electronic goods in Louisiana's economy and the group agreed that cyber infrastructure provider should be invited to SCTC meetings. The group also agreed that a possible recommendation to the legislature could involve role of private sector freight concerns in the EOC and BEOC or examining data sharing during incidents between responders and freight transporters.

### Refer to slides and list of stakeholders

**e.** Guang Tian, UNO - Briefed the group on the National Academies of Science, Engineering and Medicine's Thriving Communities Grant. UNO is attempting to put together a team to apply. Interested parties should contact Guang. Information on the grant can be found here. <a href="http://www.nationalacademies.org/gulf/grants/tc-5/index.htm">http://www.nationalacademies.org/gulf/grants/tc-5/index.htm</a>

#### **Action Items**

- Post slides and list of stakeholders in Dropbox
- Identify Cyber Service provider to attend meetings
  - Drew Ratcliff

## IV. Other Business and Adjournment

Michael Dunaway as Co-Chair of the Public Sector & Economic Development (PSED) Committee of the Governor's Cybersecurity Commission requested SCTC representation on the PSED Committee. Sheri McConnell and Michael Dunaway nominated Drew Ratcliff. Drew Ratcliff accepted and will join the PSED Committee.

The article that Drew Ratcliff wrote on the SCTC for the Waterways Council, Inc's newsletter was published and can be found in the SCTC Dropbox in the news folder.

"To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events"

Wednesday, September 26, 2018

10:00 - 11:30

Louisiana Emerging Technology Center LSU, 340 E. Parker St., Baton Rouge, LA 70803 Conference Line: (872) 240-3212 Access Code: 379-852-013

10:00	Welcome and attendee self-introduction: Jamie Setze, Co-Chair
10:05	Initiation of Committee Reports: Jamie Setze  - Executive Committee  O Funding update  - Geographical Information and Analysis Committee: Brant Mitchell (Committee Chair)  O Completing 2 of the critical tasks and the March report for the Legislature.  - Technology and Innovation: Dr. Ramesh Kolluru (Committee Chair)
10:35	Other Business and Presentations - Mississippi River Ship Channel Deepening Project: Sean Duffy, Big River Coalition
10:55	<ul> <li>Truck Travel Time Study &amp; FHWA Performance Metrics: Ravi Ponnapureddy, Capital Region Planning Commission</li> </ul>
11:15	Group Discussion - Current events, projects, initiatives, concerns, etc.
11:30	Adjourn

**Meeting Minutes** 

September 26, 2018

Present: Tommy Clark, Sean Duffy, Brad Lambert, Brant Mitchell, Mike Olivier, Ravi

Ponnapureddy, Drew Ratcliff, Chris Rippetoe, Jamie Setze, Randal Withers *Via Phone:* LaSonta Davenport, Michael Dunaway, Rachel Godeaux, Steven

Holliday, Pat Witty

Next meeting:

TBD October. Doodle Poll will be sent

## Welcome and attendee introductions

Co-Chair Jamie Setze initiated the meeting with self-introductions

## II. Committee Reports

#### **d.** Executive Committee – Drew Ratcliff

OCD has verbally awarded the SCTC (through CRPC and LSU SDMI) approximately \$360K to create a report for the legislature by March 1 2019 and to complete the first 2 critical tasks identified in the proposal submitted to OCD in May. OCD also stated that they would like to award funding for the remainder of the funding that was requested in the proposal, however that is contingent upon the publication of HUD's regulations on how the anticipated resiliency allocation can be utilized. Timeframe for the publication of the regulations is anticipated to be late 2018, with distribution of funding occurring early 2019 (best case scenario).

Michael Olivier stated that members needed to continue to seek out additional funding to ensure the long-term stability and success of the SCTC. He suggested a form letter that SCTC members could use to educate on the SCTC and solicit funds. The group unanimously agreed.

#### **Action Item**

• Draft form letter for SCTC support – Drew Ratcliff

#### **e.** GIS Committee – Brant Mitchell

Brant gave an overview of the 2 critical tasks that will be completed for the report and the work that LSU SDMI and CRPC will be doing to complete the tasks and create a report for the legislature. The 2 tasks are

- 1. Identify single points of failure for all transportation modes
- 2. Identify single points of failure that have experience repetitive flooding Deliverables with this project will include a GIS database and shape files, in addition to the report to the legislature and outreach to MPOs in Louisiana
- **f.** Technology and Innovation Committee Michael Dunaway (for Ramesh Kolluru)

Michael provided an update on the Smart Cities Challenge and the proposal that will go before Venture Smarter at a conference/regional smart growth competition in Columbus Ohio in late October. With SCTC support Michael is working with Trans Sonic (a group working on hyperloop technology) and CRPC on a proposal for a regional smart freight transportation network between Lake Charles and Lafayette.

### **Action Item**

 Michael to send Drew abstract of project and materials on the proposal to post in SCTC Dropbox

## III. Presentations and other business

**f.** Sean Duffy – Executive Director, Big River Coalition

Sean provided an overview of the past, present and future channel depth and depth maintenance on the Mississippi River, and the currently proposed Mississippi River Ship Channel Deepening Project. The proposal seeks to deepen the channel from Head of Passes to Baton Rouge to a depth of 50 feet to accommodate deeper draft neopanamax vessels. Sean presented a letter of support for the project that he will be submitting to the Assistant Secretary of the Army for Civil Works and requested that the SCTC sign on to the letter. A motion to lend SCTC support and sign he letter was brought by Mike Olivier, seconded by Jamie Setze, and passed with unanimous support from the SCTC. See the Dropbox for a copy of the letter. During the presentation Tommy Clark noted that his office is working with USACE on identifying funding for the project. His office is also working with all 5 ports on the Mississippi River between Baton Rouge and Head of Passes to work together on marketing the lower Mississippi River.

g. Ravi Ponnapureddy – Director of Transportation, Capital Region Planning Commission

Ravi gave a presentation on travel time reliability in the Capital Region, and the metrics and tools that CRPC and FHWA are using to study travel time reliability. He went through data illustrating that traffic incidents are the biggest factor causing travel times to be unreliable and causing congestion and delays. He went through data gathered by several incidents in the capital area. The group discussed ways to assist in reducing problems caused by incidents.

#### **Action Items**

Upload Big River Coalition letter to Dropbox

## IV. Other Business and Adjournment

CRPC has received an AmeriCorps VISTA for Community & Economic Development and is in the process of accepting applications. The VISTA will assist with outreach for the SCTC and facilitation of the development of the Comprehensive Economic Development Strategy (CEDS). Target start date is Nov. 5 for a 1 year appointment. The position comes with a monthly living stipend, rent subsidy, health benefits, and education stipend upon completion program. After completion the VISTA also receives one year of non-competitive eligibility (NCE) status for employment with the federal government. Flyer is on drobox.

"To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events"

Wednesday, November 13, 2018

10:00 - 11:30

Louisiana Emerging Technology Center LSU, 340 E. Parker St., Baton Rouge, LA 70803 Conference Line: (786) 535-3211 Access Code: 495-837-325

10:00	Welcome and attendee self-introduction: Jamie Setze, Co-Chair
10:05	Initiation of Committee Reports: Jamie Setze  - Executive Committee  - Funding update  - Legislation recommendations from the Council  - Geographical Information and Analysis Committee: Brant Mitchell (Committee Chair)  - Committee meetings, data gathering and developing metrics  - Technology and Innovation: Dr. Ramesh Kolluru (Committee Chair)
10:35	Smart Cities Challenge presentation and update on the Public Sector & Economic Development Committee of the Cyber Security Commission: Michael Dunaway, Louisiana Business Emergency Operations Center, Executive Director.
10:50	Group Discussion - Current events, projects, initiatives, concerns, etc.
11:30	Adjourn

**Meeting Minutes** 

November 13, 2018

Present: Carmack Blackmon, Tommy Clark, Chris DeGuelle, Sean Duffy, Michael Dunaway,

Brad Lambert, Brant Mitchell, Barret Nugent, Mike Olivier, Drew Ratcliff, Chris

Rippetoe, Jamie Setze, Guang Tian

Next

Thursday, January 10, 2019

meeting:

### Welcome and attendee introductions

Co-Chair Jamie Setze initiated the meeting with self-introductions

## II. Committee Reports

#### e. Executive Committee - Drew Ratcliff

CRPC has received the required paperwork to enter into a cooperative endeavor agreement with OCD and begin receiving funding to complete the 1<sup>st</sup> 2 critical tasks for the report to the legislature. OCD again stated that they would like to award funding for the remainder of the funding that was requested in the proposal, however that is contingent upon the publication of HUD's regulations on how the anticipated resiliency allocation can be utilized. Timeframe for the publication of the regulations is anticipated to be late 2018, with distribution of funding occurring early 2019 (best case scenario).

The council discussed legislation and policy recommendations to be included in the report to the legislature. Carmack Blackmon identified 3 issues that the railroads face during and after disruptions that can be fixed via legislation: 1) Credentialing railroad workers so they can gain re-entry into Parishes affected by an event. 2) Communications alternatives to landline and cellular phones. 3) Coordination of operation on certain flood gates. Another issue identified was larger companies and "big box stores" having trouble getting their recovery teams into the state or parishes.

The council voted with no dissention to include the 3 recommendations presented by Mr. Blackmon in the report to the Legislature.

<u>Action Item:</u> Drew and SDMI team to work with Mr. Blackmon on specific language for recommendations in the report.

### f. GIS Committee - Brant Mitchell

Mr. Mitchell provided an update on the work of the GIS committee to date. See "November 2018 Meeting" folder on Dropbox for presentation slides.

A few questions about the aviation side of the data gathering and study were brought up. Mike Olivier pointed out that Stennis in Mississippi could be taken into our consideration and that there is only one runway in Louisiana with over 10,000 linear feet. Mr. Blackmon

recommended including helicopter aviation infrastructure due to it's importance to the oil and gas industry.

Additional data sources were discussed (such as the state rail plan and transportation plan).

#### **Action Item**

- Drew to work with Brant on signing Cooperative Endeavour Agreement between LSU and CRPC.
- **g.** Technology and Innovation Committee No report

## III. Presentations and other business

**h.** Michael Dunaway – Director, NIMSAT, Informatics Research Institute, ULL.

Mr. Dunaway (on behalf of the SCTC) along with a team from Trans Sonic, the City of Lafayette, and the Acadiana Planning Commission, presented a proposal for a regional smart transportation network plan between Lafayette and Lake Charles at the Venture Smarter Smart Cities Conference and Competition in late October. Mr. Dunaway's team's proposal finished 1<sup>st</sup> runner up. He was notified that his team and the SCTC is in line to receive funding from attendees of the Smart Cities conference.

Mr. Dunaway also briefed the council on the work of the Governor's Cybersecurity Commission and the Public Sector and Economic Development committee of the Commission.

A copy of the proposal and report to the governor from the Cyber Security Commission will be shared after it is finalized and sent to Governor Edwards.

## IV. Other Business and Adjournment

The Council decided that it would like to invite a representative from Trans Sonic to the next meeting to brief the group on hyperloop technology and the company's work in Louisiana.

Brant Mitchell pointed out that advantage that working with a public private partnership like the SCTC brings to universities when they are seeking funding.

There was more discussion on alternative to cell phones for communication after an event.

"To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events"

Thursday, January 10, 2019

10:00 - 11:30

Louisiana Emerging Technology Center LSU, 340 E. Parker St., Baton Rouge, LA 70803 Conference Line: 1 (872) 240-3212 Access Code: 994-398-837

10:00	Welcome and attendee self-introduction: Jamie Setze, Co-Chair
10:05	Initiation of Committee Reports: Jamie Setze  - Executive Committee  - Funding update  - Legislation recommendations from the Council  - Geographical Information and Analysis Committee: Brant Mitchell (Committee Chair)  - Update on the report to the Legislature  - Technology and Innovation: Dr. Ramesh Kolluru (Committee Chair)
10:35	Other Business and Presentations - Transonic and South Louisiana Freight Hyperloop: Josh Manriquez, Transonic Transportation
10:50	Group Discussion - Current events, projects, initiatives, concerns, etc.
11:30	Adjourn

**Meeting Minutes** 

January 10, 2019

Present: Carmack Blackmon, Chris Collins, Chris DeGuelle, Michael Dunaway, Brad Lambert,

Josh Mariquez, Brant Mitchell, Drew Ratcliff, Chris Rippetoe, Via teleconference:

Tommy Clark, Sean Duffy, Carrie Robison

Next meeting:

Wednesday, February 13, 2019

## Welcome and attendee introductions

Co-Chair Carmack Blackmon delegated Drew Ratcliff to initiate the meeting with self-introductions

## II. Committee Reports

**f.** Executive Committee – Drew Ratcliff

CRPC and OCD is still waiting on the HUD regulations regarding the \$1.2 billion resilience grant for Louisiana.

#### **Action Item:**

- g. GIS Committee Brant Mitchell
- Mr. Mitchell provided an update on the work of the GIS committee to date. See DropBox "January 2019 Meeting" folder for an outline of the report.
- **h.** Technology and Innovation Committee No report

## III. Presentations and other business

Josh Manriquez - Trans Sonic

Presented on Trans Sonic's work to build a freight hyper loop. See DropBox "January 2019 Meeting" folder for presentation. Trans Sonic is seeking government funding for proof of concept and to test a protype. Josh requested that the SCTC provide a letter of support for their work which would aid in Trans Sonic's fund-raising efforts. He will submit a request and the council will vote at the next meeting.

## IV. Other Business and Adjournment

"To increase the overall effectiveness of transportation and reduce impacts on commercial and agricultural interests from future events"

Wednesday, February 13, 2019

10:00 - 11:30

Louisiana Emerging Technology Center LSU, 340 E. Parker St., Baton Rouge, LA 70803 Conference Line: 1 (646) 749-3312 Access Code: 924-342-397

10:00	Welcome and attendee self-introduction: Jamie Setze, Co-Chair
10:05	Initiation of Committee Reports: Jamie Setze  - Executive Committee  - Geographical Information and Analysis Committee: Brant Mitchell (Committee Chair)  - Update on the report to the Legislature  - Discussion of recommendations and timeline for submitting comments  - Technology and Innovation: Dr. Ramesh Kolluru (Committee Chair)
11:00	Other Business and Presentations
11:15	Group Discussion - Current events, projects, initiatives, concerns, etc.
11:30	Adjourn

**Meeting Minutes** 

February 13, 2019

Present: Carmack Blackmon, Chris Collins, Sean Duffy, Brad Lambert, Jeff McKee, Lauren

Morgan, Brant Mitchell, Tonia Pence, Drew Ratcliff, Chris Rippetoe, Jamie Setze,

Guang Tian Via teleconference: LaSonta Davenport, Ann Guissinger

Next

To be announced after the legislature receives the report

meeting:

## Welcome and attendee introductions

Co-Chair Jamie Setze began with self-introductions

## II. Committee Reports

#### g. Executive Committee - Drew Ratcliff

Carmack Blackmon informed the council that as a legislative task force it did not have the authority to provide a letter of endorsement to Trans Sonic. The executive committee discussed the mater prior to the meeting and agreed that it did not want to discourage innovation so CRPC would try to connect Trans Sonic with TRAN-SET for potential resources and funding. Officially the matter is tabled until further notice.

#### Action Item:

Contact Josh Manriquez - Drew Ratcliff

#### h. GIS Committee – Brant Mitchell

Mr. Mitchell presented a draft of the report to the Legislature and led discussion on areas in which council members input is need.

## "Moving Forward:"

Carmack Blackmon recommended requesting a continuing resolution for the Supply Chain Transportation Council to continue its work as a task force and advisory group for a minimum of 2 years. This will ensure continuity for new legislators and committee chairmen and allow them a better opportunity to engage with resiliency issues. It prevents the issue of transportation resiliency from being overlooked. In addition, the SCTC's work is funded through March 2020. Jeff McKee with DHS supported the idea of a resolution for 2 more years. He stated that there are federal programs and funding centered around resiliency that will become available in the next couple of years. Having the SCTC already working together with identified projects puts Louisiana in a good position to take advantage of the programs and funding that will come. He also recognized the importance of the SCTC consistently having the right people together to discuss the issues. Tonia Pence agreed.

## "Council Tasks and Recommendations:"

Sean Duffy brought up frequent draft restrictions as a resiliency issue. The council agreed.

Communication issues in the maritime industry during emergencies was discussed The possibility of the FCC allowing private critical infrastructure operators use emergency bands (like LWIN) was discussed.

As a possible solution to reentry issues Jeff McKee mentioned the CERRA (Crisis Event Response and Recovery Access) framework.

### **Action Items:**

Council members submit feedback on the report to Drew Ratcliff by <u>Friday</u>, <u>February 22<sup>nd</sup></u>. LSU needs shape files/map data for rail and maritime – Chris Collins

- i. Technology and Innovation Committee No report
- III. Presentations and other business
- IV. Other Business and Adjournment