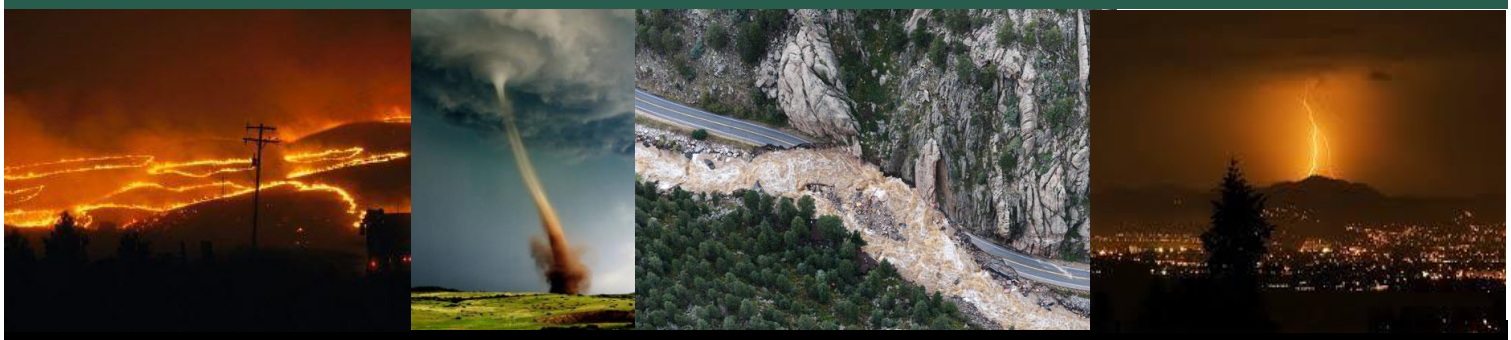
Hazard Mitigation Project Prioritization and Implementation Annex



LARIMER COUNTY

COMMITTED TO EXCELLENCE

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I. Overview

The Hazard Mitigation Project Prioritization and Implementation Annex (hereinafter referred to as the Implementation Annex) provides mitigation project feasibility, prioritization, and implementation guidance for the Larimer County Office of Emergency Management (OEM). The Implementation Annex accomplishes this by providing a Project Prioritization Matrix and a Mitigation Project Implementation Framework. In addition, the newest version of this matrix factors in equity to help align the project prioritization process with the Larimer County OEM motto, "Doing the most good for those that need it most." The Implementation Annex also contains the charter for the Larimer County Mitigation Committee, tasked with fostering hazard mitigation projects through collaboration and the identification of funding sources. These tools will be used to help guide mitigation activities and decisions within Larimer County.

II. Purpose and Scope

The value of mitigation has become increasingly clear over the last decade, and the amount of federal dollars allocated for mitigation projects continues to increase. In addition, throughout Larimer County, many possible mitigation projects have been identified through internal planning activities and external partners. This Annex is meant to complement existing work in Larimer County by providing guidance for mitigation project feasibility, prioritization, and implementation. In doing so, the Implementation Annex provides processes that will expand Larimer County's capacity to capture more mitigation funding by streamlining the project prioritization and implementation process, further building resiliency in Larimer County.

The Implementation Annex was developed by Larimer County OEM but may be used by other internal departments or external partners when determining project feasibility, prioritization, and/or implementation planning. This Annex is designed to facilitate Larimer County OEM's mission "to create sustainable communities and to protect life and property by empowering all who live, work, and visit the County to prevent, mitigate, prepare for, respond to, and recover from all types of emergencies and disasters" by using non-organization specific metrics. Instead of using prioritization metrics like, "Is this project within the Larimer County Hazard Mitigation Plan," the prioritization metrics take a triple-bottom-line approach, focusing on people, planet, and economic value. This ensures that the tools within this Annex provide value to all mitigation partners within Larimer County.

III. Larimer County Mitigation Committee

Mitigation projects are not the sole responsibility of the Larimer County Office of Emergency Management. Many other County departments and external partners work within mitigation, and mitigation projects often involve multiple stakeholders and the need for collaboration. Recognizing this, Larimer County OEM has created the Larimer County Mitigation Committee (LCMC). LCMC is comprised of county departments and external partners that meet regularly to discuss mitigation work within the county. The intent of the LCMC is to foster and encourage mitigation projects within Larimer County through collaboration and the identification of potential projects and potential funding sources.

The LCMC meetings will be held routinely to discuss,

- The status of ongoing mitigation projects
- Proposed or planned mitigation projects and project needs
- Mitigation barriers
- New potential mitigation funding sources
- Identifying new potential opportunities
- And next steps

The LCMC holds no formal power in prioritizing potential projects but may utilize the Implementation Annex to make informal recommendations and prioritizations.

IV. Project Benefits, Feasibility, and Prioritization

In a perfect world, mitigation projects would be prioritized based solely on the overall benefits of the mitigation treatment. However, the reality is that the difficulty of project implementation (or feasibility) is a barrier and should be considered when prioritizing mitigation projects. Because of this, we must evaluate both project benefits and the barriers in place that limit our capacity to do the projects when prioritizing. Therefore, the Larimer County Office of Emergency Management has created a Benefits and Feasibility Prioritization Matrix to account for the balance between project benefits and overall capacity to handle the project.

Determining mitigation project feasibility will identify project barriers, while prioritization will also quantify the overall project benefits (and non-benefits). In doing so, project barriers can be eliminated, and project weaknesses (the non-benefits) can be addressed before the project is implemented. Feasibility and prioritization should not

necessarily be used to ‘throw out' a proposed project but instead to evaluate it, improve its weaknesses, and remove barriers to improve the project when possible.

Benefits & Feasibility Prioritization Matrix

----- Mitigation Project Benefits (MPB) ----->							Prioritization Level
10	**0**	**10**	**20**	**30**	**40**	**50**	**Very High**
9	**0**	**9**	**18**	**27**	**36**	**45**	**41-50**
8	**0**	**8**	**16**	**24**	**32**	**40**	**High**
7	**0**	**7**	**14**	**21**	**28**	**35**	**31-40**
6	**0**	**6**	**12**	**18**	**24**	**30**	**Medium**
5	**0**	**5**	**10**	**15**	**20**	**25**	**21-30**
4	**0**	**4**	**8**	**12**	**16**	**20**	**Low**
3	**0**	**3**	**6**	**9**	**12**	**15**	**11-20**
2	**0**	**2**	**4**	**6**	**8**	**10**	**Very Low**
1	**0**	**1**	**2**	**3**	**4**	**5**	**1-10**
0	**0**	**0**	**0**	**0**	**0**	**0**	**Significant Barriers**
	0	***1***	***2***	***3***	***4***	***5***	

---------- Feasibility ---------->

1. Benefits and Feasibility Prioritization Matrix and Methodology

The Benefits and Feasibility Prioritization Matrix (BFPM) evaluates two factors when prioritizing projects. Feasibility, along the x-axis of the BFPM, essentially evaluates how easy the project will be to implement. Feasibility scores range from 0 to 5. Moving along the x-axis to the right, a project becomes easier to implement. Mitigation Project Benefits, along the y-axis, assesses the project

benefits, capturing the ideal prioritization if feasibility were a non-factor. Benefits scores range from 0 to 10. As you move up along the y-axis projects contain more mitigation benefits. Guidance on how to calculate feasibility and benefits scores are provided in the subsequent sections.

Feasibility and Mitigation Project Benefits scores are multiplied together to determine the overall PPM score, ranging from 0 to 50. Instead of addition, multiplication ensures that projects with no project benefits (a score of 0) or that lack feasibility (a score of 0) also receive a 0 in the BFPM score. BFPM scores provide a numerical prioritization of potential migration projects by balancing feasibility with overall benefits. The final project prioritization is ultimately up to the discretion of the group pursuing the project.

Projects that are both easy (have few barriers to implement) and effective (have large mitigation benefits) fall in the upper right-hand corner of the PPM. These projects generally have a PPM score above 41. These projects have a *Very High* priority. Projects that score between 31-40 are *High* priority. 21-30 are *Medium* priority. 11-20 are *Low* priority. And 1-10 is *Very Low* priority. Projects that score a 0 are either not cost-effective or have significant barriers to implementation.

2. Scoring for Feasibility

In the business realm, there are five types of Feasibility Studies. These are Scheduling Feasibility, Economic Feasibility, Legal Feasibility, Technical Feasibility, and Operational Feasibility. These five types of Feasibility Studies are used to inform our feasibility scoring process. Economic and Legal Feasibility have been renamed to become more government-centric, but generally, the intent of the five types of studies remains largely unchanged.

Each feasibility factor is worth 1 point, increasing a project's feasibility score. The points for each factor are awarded on an all-or-nothing basis independent of one another. The scores for each feasibility factor are added together. The max feasibility score for a project is 5 (easiest to implement). The group leading the project will determine the following scores for calculating project feasibility.

Feasibility = Financial + Jurisdictional + Operational + Scheduling + Technical

Financial (1 point): If a proposed project requires a reasonable amount of financial support, 1 point is awarded to the project's feasibility score. Several factors determine project financial needs. These include, but are not limited to

a. The availability of and ease of obtaining grant support for the project type.
b. The amount of local match required for the project and the availability and ease of obtaining match for other sources.
c. The amount of long-term financial support the project requires (i.e. maintenance costs).

Jurisdictional (1 point): If a proposed project is within jurisdictional means, 1 point is awarded to the project's feasibility score. Several factors determine project jurisdictional feasibility. These include, but are not limited to

a. The need for a policy or legal change (within our organization or another) to make the proposed project viable.
b. The need for public or political buy-in or approval.

Operational (1 point): If a proposed project is believed to be operationally successful upon implementation, then 1 point is awarded to the project's feasibility score. Several factors determine operational feasibility. These include, but are not limited to

a. The availability of research, data, or other information that shows that this proposed project will be successful.
b. The ability to successfully implement the proposed project, or the ability to get someone who can successfully implement the proposed project.
c. The amount of cross-agency coordination required to implement the project

Scheduling (1 point): If a proposed project requires a reasonable amount of time to implement, 1 point is awarded to the project's feasibility score. Several factors determine project time. These include, but are not limited to

a. Both the overall length of time of the project and the percentage of that time that will be dedicated to managing the project.
b. The amount of administrative work required to complete and financially manage the project.

Technical (1 point): If a proposed project is well within an organization's ability to complete the project, 1 point is awarded to the project's feasibility score. Several factors determine an organization's technical capacity. These include, but are not limited to

a. The level of existing knowledge or expertise about the project.
b. The ability of current staffing to adequately handle the project needs.
c. The ability for existing partnerships and/or organizational structure to effectively manage the project.

The project's Feasibility score has a high likelihood of changing from year to year as policy, grants, funding, expertise, public support, etc., continually evolve. It is recommended that feasibility for each project be revisited year after year.

3. Scoring for Mitigation Project Benefits

Determining project benefits is less straightforward. Mitigation projects can take on a multitude of forms and so scoring for project benefits needs to be broad enough to capture the true intent of every hazard mitigation project. At the core of every hazard mitigation project is the goal to increase the community's resiliency to a risk. So, therefore, we must score benefits based on risk and community resiliency. Risk is straightforward, but how do you quantify community resiliency? Here we do it by using the concept of sustainability and taking a triple bottom-line approach, social, environmental, and economic.

Benefits scoring is done by awarding project points independently for the four factors: risk, social, environmental, and economic. By scoring mitigation project benefits using the triple bottom line, projects that are the most sustainable and, therefore, most resilient will rise to the top, or those with the most substantial benefits for people, the planet, and that are fiscally responsible. The fourth factor is the overall hazard risk. Benefits scores range from 0 to 10. A benefits score of 10 indicates a project with the greatest benefits. Scores for risk, social, and environment are added together and then multiplied by economic (fiscally responsible). The multiplication with economic ensures that projects that aren't fiscally responsible score a 0 in the matrix.

$$Benefits = (Risk + Social + Environmental) \times Economic$$

Risk (0-4 points): The score for Risk is determined by evaluating the severity of the hazard and the location's level of exposure or likelihood of that hazard. A maximum of 2 points are available for hazard severity or impact, and a maximum of 2 points are available for hazard likelihood.

Hazard Impact/Severity (0-2 points)

a. If the project mitigates a medium-impact hazard, award 1 point
b. If the project mitigates a high-impact hazard, award 2 points

Hazard Likelihood/Frequency (0-2 points)

c. If the project mitigates a medium-frequency hazard, award 1 point
d. If the project mitigates a high-frequency hazard, award 2 points

Social (0-4 points): The score for Social is worth the same number of points as the score for Risk. However, the score for Social is weighted more than the scores for Environment and Economic. The Federal Emergency Management Agency (FEMA) defines the goal of Mitigation as to "reduce the loss of life and property by lessening the impact of future disaster." Therefore, by definition, the goal of Mitigation is people-centric, and this is the justification for weighting People more heavily than Environment and Economic. A score of 0, 1, 2, 3, or 4 points can be given for Social.

The following four criteria are used to determine the score for Social, each criteria is worth 1 point. The criteria were selected using the concepts of equity and whole community. Both these concepts have been shown to be fundamental in building more resilient communities, and by incorporating them into the scoring process, projects with the most positive social benefits will score higher.

Equity (0-2 points)

a. The proposed project is located within a Census Block with a Social Vulnerability Index* (SVI) $\geq$ 0.75 (High SVI), indirectly serves historically disadvantaged or underserved individuals or directly serves historically disadvantaged or underserved individuals
b. The proposed project directly serves historically disadvantaged or underserved individuals

**Another equity-based index can be used instead of SVI*

Whole Community (0-2 points)

c. The proposed project protects life, property, or infrastructure for a relatively large number of people either directly or indirectly or protects a valuable community asset
d. The proposed project has a relatively large amount of community support and/or participation

Environmental (0-2 points): The level of the proposed project's positive environmental impact. Each criteria is worth 1 point.

a. The proposed project provides a direct environmental benefit
b. The proposed project incorporates sustainable practices or technology and/or has an indirect environmental benefit

Economic (0-1 point): Whether the proposed project is fiscally responsible or not. This category is either a yes or no. A fiscally responsible project will be awarded 1 point and should demonstrate….

- A favorable cost-benefit ratio (or likely has a favorable cost-benefit ratio, if currently unknown) or
- A favorable social or environmental benefit that cannot be quantified (i.e. protecting a historic structure that means a great deal to the community or an advanced warning system meant to protect the community).

A score of 0 for this factor will result in a score of 0 in the Matrix. A proposed project must prove fiscal responsibility; otherwise, it is not a viable project. No further points are available for this category because typically, more cost-beneficial projects are within richer communities that have more assets. As such, awarding points for more economically beneficial projects creates further inequities.

V. Similarities to STAPLEE

STAPLEE is the FEMA recommended model for prioritizing hazard mitigation projects. It is important to note the similarities between STAPLEE and the Benefits and Feasibility Prioritization Matrix. STAPLEE stands for Social, Technical, Administrative, Political, Legal, Environmental, and Economic. The BFPM uses these same concepts when evaluating projects but divides STAPLEE up into benefits and barriers. Social, Environmental, and Economic are moved into Benefits. While Technical, Administrative, Political, and Legal fall under Feasibility. STAPLEE also has several other considerations that fall into the remaining BFPM categories like Risk and Financial.

VI. Using the Project Prioritization Matrix

The Project Prioritization Matrix is intended to be incorporated into the next Hazard Mitigation Plan update. Until this time, the BFPM will be utilized to evaluate projects on a case-by-case bases to help determine priorities for the Larimer County Office of Emergency Management.

Under the current HMP, projects are simply prioritized High, Medium, and Low using the STAPLEE guidelines. No unified scoring process is used in this prioritization process, and this results in a largely unsubstantiated prioritization process that provides little context. See Figure 1 on the following page as an example from the current HMP.

Utilizing the BFPM, the same page would change slightly. New columns for both Feasibility and Mitigation Benefits would give more context around why a project is prioritized the way it is. And the overall prioritization score would also give more information as to where that score fits within the category it falls in. (i.e. 32-High or 40-High). See Figure 2 on the previous page. Additionally, it is recommended that Feasibility scores be reevaluated each year, as barriers to projects often change over time. This in turn, would result in routine re-prioritization of projects and fits more realistically into how government operates and continually reprioritizes projects as the organization evolves.

ID	Related Goal(s)	Hazard(s) Mitigated	Description	Lead Agency and Partners	Cost Estimate	Potential Funding	Priority	Timeline	Status and Implementation Notes
LC-12*	Goals 1,2 Objectives 3,5	Flooding and drainage	**Larimer County Stormwater Design Standards Update.** The County's stormwater design standards last revised in 2006 will be updated to meet current standards per the Mile High Flood District's Urban Storm Drainage Criteria Manual.	**Engineering Department,** Community Development	$85,000	General fund	Medium	Dec. 2021	New in 2021.
LC-13	Goals 1,2 Objectives 5	Flooding	**Larimer County Strategic Plan Improvements.** A selected plan of floodplain and drainage projects will be identified to improve adverse flooding & drainage impacts. These projects may include projects such as upsizing culverts or other crossings, floodplain stabilization, construction of overflow paths, and others.	**Engineering Department,** County Fire Departments, OEM	TBD, project specific	FEMA HMP Grants	Medium	Dec. 2020	New in 2021.
LC-14	Goals 1,2 Objectives 5	Wildfire	**Wildfire Initial Attack module that is All Hazards capable.** Hire six full time wildland firefighters (2 squad Bosses and 4 firefighters) at the Larimer County Sheriff's Office. Supplemented with an additional 4 seasonal firefighters in the summer months funded by grant monies if available. Currently the Initial Attack (IA) Module is solely grant funded and supplemented with on-call firefighters. The IA module has a turnover about every two years as people gain experience and then move to jobs in fire that are not as tenuous, creating a gap in skills and knowledge in the fire program. The on-call firefighter program fluctuates with availability, especially for initial attack. The IA Module's primary work is with County Parks and some Watershed coalitions working on hazardous wildfire fuels reduction and forest health projects. If there is no grant funding available, the IA module would be dissolved and needed mitigation work would not get done. Grant monies are getting harder to obtain. Vision would be to expand to 10 during the summer months funded with grants, allowing for 7-day coverage. Hazardous wildfire fuels reduced to sustain forest health, neighborhoods assessed for	**Larimer County Sheriff's Office,** Emergency Services County Fire Departments, OEM	$275,000	General fund, supplemented by grants if available	High	2021 initiate, ongoing into the future	New in 2021.

Figure 1: A page from the current Larimer County Hazard Mitigation Plan

ID	Related Goal(s)	Hazard(s) Mitigated	Description	Lead Agency and Partners	Cost Estimate	Potential Funding	Feasibility (Max Score 5)	Mitigation Benefits (Max Score 10)	Priority (Max Score 50)	Timeline	Status and Implementation Notes
LC-12*	Goals 1,2 Objectives 3,5	Flooding and drainage	**Larimer County Stormwater Design Standards Update.** The County's stormwater design standards last revised in 2006 will be updated to meet current standards per the Mile High Flood District's Urban Storm Drainage Criteria Manual.	**Engineering Department,** Community Development	$85,000	General fund	5	7	35 - High	Dec. 2021	New in 2021.
LC-13	Goals 1,2 Objectives 5	Flooding	**Larimer County Strategic Plan Improvements.** A selected plan of floodplain and drainage projects will be identified to improve adverse flooding & drainage impacts. These projects may include projects such as upsizing culverts or other crossings, floodplain stabilization, construction of overflow paths, and others.	**Engineering Department,** County Fire Departments, OEM	TBD, project specific	FEMA HMP Grants	5	8	40 - High	Dec. 2020	New in 2021.
LC-14	Goals 1,2 Objectives 5	Wildfire	**Wildfire Initial Attack module that is All Hazards capable.** Hire six full time wildland firefighters (2 squad Bosses and 4 firefighters) at the Larimer County Sheriff's Office. Supplemented with an additional 4 seasonal firefighters in the summer months funded by grant monies if available. Currently the Initial Attack (IA) Module is solely grant funded and supplemented with on-call firefighters. The IA module has a turnover about every two years as people gain experience and then move to jobs in fire that are not as tenuous, creating a gap in skills and knowledge in the fire program. The on-call firefighter program fluctuates with availability, especially for initial attack. The IA Module's primary work is with County Parks and some Watershed coalitions working on hazardous wildfire fuels	**Larimer County Sheriff's Office,** Emergency Services County Fire Departments, OEM	$275,000	General fund, supplemented by grants if available	4	8	32 - High	2021 initiate, ongoing into the future	New in 2021.

Figure 2: What the same page would look like incorporating the PPM scores

VII. Mitigation Project Implementation Framework

Mitigation project implementation differs from your typical project implementation in that the funding sources for such projects are not always initially known and are primarily supplied by external sources/grants and come with additional conditions or requirements. This results in the need to incorporate the fund source considerations into project implementation planning. The Mitigation Project Implementation Framework was developed to account for this key difference.

This framework divides project implementation activities into two main roles, the Project Coordinator and the Content Expert. The Project Coordinator is responsible for funding source identification, application, and coordination. The Content Expert is the lead for Project Design and Implementation Planning and Post-Award Implementation, as they are the expert for the mitigation treatment. Larimer County OEM typically takes ownership of the Project Coordinator role, while a county department, contractor, or external partner typically owns the Content Expert Role. It is important to identify the Project Coordinator and Content Expert early on in the project implementation process.

Major Project Responsibilities

	Funding Identification	**Project Design & Implementation Planning**	**Grant Application**	**Post-Award Coordination**	**Post-Award Implementation**
Project Coordinator (OEM)	Lead	Secondary	Lead	Lead	Secondary
Content Expert	Secondary	Lead	Secondary	Secondary	Lead

1. Funding Identification

   Some mitigation projects will have a clear funding source; however, a mitigation project may sometimes be identified but lack a funding source. In this case, the Project Coordinator should identify possible sources of funding and present these options to the Content Expert. The source of the match (typically 25%), funding source time constraints, and any additional funding source requirements should be identified, and all project partners should be a part of this discussion.

2. Project Design & Implementation Planning

   Once a mitigation project has an identified funding source, information collected during the PFP scoring process should be utilized to build out the Project Design and an Implementation Plan. The Content Expert will lead this endeavor, while the Project Coordinator will assist as needed. The Content Expert should ensure that all necessary stakeholders are involved in the project design process. The Project Coordinator should ensure that the sponsor/funding source is included in the design process as required. The following should be formalized during this process, though it may not be detailed until the funding source is secured.

   a. Identifying and removing or mitigating obstacles identified in the PFP process.
      - The Project Coordinator and Content Expert should work together with project partners to ensure obstacles identified in the PFP process are acknowledged and mitigate or remove these obstacles when possible.

   b. Project scope
      - The Content Expert should lead the project scoping process; identifying the overall goals and extent of the project. This includes identifying possible partners and including them in the project scoping conversations. The Project Coordinator will assist as needed.

   c. Project objective
      - The Content Expert will take the lead in setting project objectives. Project partners should be included when setting these objectives. The Project Coordinator will assist as needed.

   d. Project timeline and deliverables
      - The Content Expert will take the lead in setting the project timeline. Including the identification of deliverables. Project partners and the funding source should be included in this process. The Project Coordinator will assist as needed.

e. Roles and responsibilities of all involved
    - The Content Expert should delegate roles and responsibilities for the project with project partners as needed. This includes identifying if a contractor is needed and writing the RFP to obtain the contractor.

f. Project Budget
    - The Content Expert will take the lead on developing a project budget. The Project Coordinator will assist as needed. The project partners and funding source should be included as needed.

3. Funding Application

   The Project Coordinator should submit the funding application with assistance from the Content Expert. The Project Coordinator is responsible for ensuring all application requirements are met and coordinating between the Content Expert and the funding source as needed during the application process.

4. Post-Award Coordination

   After the funding source is awarded, the Project Coordinator is the lead for the continual coordination between the funding source and the Content Expert. This includes the coordination of any documentation as the project is implemented and ensuring that the funding source requirements and deliverables are met, in addition to identifying allowable and non-allowable costs.

5. Post-Award Implementation

   The Content Expert is the lead for the implementation of the project. The Project Design and Implementation Planning from Step 2 should be revisited and fully built out once funding is secured. In addition to revisiting items a. through f. from Step 2, two additional planning items should be addressed to ensure successful project implementation.

   a. Project and funding source requirements and deliverables
       - The Project Coordinator will work with the Content Expert to ensure that project continues to meet funding source requirements and that funding source deliverables are met.

b. Project communications plan
    - The Project Coordinator and Content Expert should work together to develop a clear communication plan between all partners and the funding source to ensure that information is shared in a timely and consistent manner once the project is underway.

VII. Annex Maintenance

It is the responsibility of the Larimer County Office of Emergency Management to update this Annex regularly to reflect the necessary changes.

VIII. References

The PFP Matrix is loosely based upon the academic literature

JOSEPH, LIANA N., et al. “Optimal Allocation of Resources among Threatened Species: A Project Prioritization Protocol.” *Conservation Biology*, vol. 23, no. 2, 2009, pp. 328–338., https://doi.org/10.1111/j.1523-1739.2008.01124.x.

The Mitigation Project Implementation Framework is based upon the Rogue Community College Grant Development Planning Guidelines
https://web.roguecc.edu/sites/web.roguecc.edu/files/Sites/Grants/pdf/GrantsTeamPlanningModel%207-6-15.pdf