Policy Analysis Report

To: President Shamann Walton
CC: Board of Supervisors
From: Budget and Legislative Analyst’s Office
Re: Options for the Adoption of a Policy Regarding Itemized Assessments of De-Risking Activities for Major Capital Projects
Date: March 31, 2022

Summary of Requested Action

The Board of Supervisors directed the Budget and Legislative Analyst to issue a report analyzing options for the adoption of a policy regarding itemized assessments of de-risking activities for major capital projects. This direction was given in Board Resolution 496-21 (File 21-0703), which was unanimously adopted on October 19, 2021.

For further information about this report, contact Dan Goncher at the Budget and Legislative Analyst’s Office.

Executive Summary

- The 2020-2021 San Francisco Civil Grand Jury made the Van Ness Improvement Project the subject of one of their reports. The project had significant cost and schedule overruns, and in their report, “Van Ness Avenue: What Lies Beneath,” the Grand Jury found that one of the major factors contributing to the overruns was unknown underground utility conditions. Furthermore, the Grand Jury concluded that the Van Ness Improvement Project delays are emblematic of systematic issues that the City faces when delivering major capital infrastructure projects, including procedures around project scoping and risk identification.

- One way to address risks on a capital project is to perform de-risking work, which the Grand Jury defines as “the process of making a project more predictable by reducing the possibility that something can go wrong.” The Grand Jury found that the Van Ness Bus Rapid Transit project could have mitigated the underground risks with better de-risking activities. The Grand Jury therefore recommended that the City adopt a policy that all major capital projects must publish a list of de-risking activities that were performed prior to starting construction.
City departments vary in their approach to minimizing risks associated with major capital projects. Although no departments have a formal written policy on de-risking in the manner outlined by the Grand Jury, most departments undertake some form of de-risking activities on projects depending on the scope of the project.

When asked about a potential citywide de-risking policy, department representatives emphasized the importance of flexibility regarding such a policy because of the variation in project types across departments. Variations in project size, location, and type affect the kinds of risks the project faces and the kinds of de-risking activities that could be done. Department representatives said that a one-size-fits-all policy regarding de-risking activities for major capital projects would be challenging to implement successfully. Therefore, we analyzed options for departments to waive the requirement, or create department-specific de-risking policies, as part of our analysis.

In addition to flexibility, other factors we analyzed for this policy include when to publish the de-risking activities, where to publish them, and whether there should be a threshold to determine which major capital projects are subject to the de-risking policy.

Policy Options

Based the fieldwork we conducted, which included interviews with department representatives and a review of industry best practices, we did not find enough evidence to support the adoption of a policy regarding itemized assessments of de-risking activities for all major capital projects in San Francisco. Such a policy might be challenging to implement because of the variation in project management practices across departments and because of the wide variety of types of capital projects managed citywide.

However, the Board might choose to implement the policy because it could lead to the improved scoping of major capital projects, increase the accountability of capital project sponsors, and reduce potential project delays.
If the Board chooses to implement a policy requiring that project sponsors publish a list of de-risking activities performed before a project’s construction phase, we recommend that the Board consider the following as a minimum requirement at various project thresholds:

1. For projects with budgets of $100 million or larger:
   a. Instruct department heads to create an internal, written policy regarding which de-risking activities must be published.
   b. Require that the list of de-risking activities be posted to the individual project website or, if one does not exist, to the sponsoring department’s website.
   c. Require the list be posted pre-bid (for projects delivered through the Design-Bid-Build method only).

2. For projects with budgets between $50-$100 million:
   a. Instruct department heads to create an internal, written policy regarding which de-risking activities must be completed prior to construction.
   b. Require that departments incorporate the performance of the required de-risking activities into existing project management processes, such as DPW’s Quality Assurance Quality Control Plan process.

3. Allow department heads to waive the de-risking policy requirement for projects with budgets of less than $50 million at their discretion.

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*Project Staff: Dan Goncher, Anna Garfink*

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1 For Design-Build, CMAR, and CMGC projects, the list should be published before the construction phase; this would likely be after the Construction Manager is procured as the Construction Manager typically is brought on early in the design process.
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Background

The Van Ness Improvement Project

The Van Ness Improvement Project is a major capital project involving infrastructure upgrades and the installation of bus rapid transit (BRT) lanes along the length of the Van Ness corridor. The project was first studied for feasibility following the 2003 passage of the Prop K sales tax and in 2013 the Board of Supervisors voted to authorize the Van Ness BRT project. The original goals of the project, as stated by the San Francisco County Transportation Authority in the initial 2006 feasibility study, were to:

1. Improve the level of service for existing transit passengers;
2. Establish an efficient north/south link in San Francisco’s transit network;
3. Support the identity of the Van Ness corridor through a robust landscape and urban design program that also integrates new transit infrastructure with adjacent land uses; and
4. Develop standards for implementing BRT services citywide.

The project spans Van Ness Avenue from Lombard Street to Mission Street and includes replacement of aging sewer, water, and streetlight infrastructure throughout the corridor, improved pedestrian safety designs, and two center-running BRT lanes (one northbound, one southbound) with nine new median bus stops. As of March 2022, the project is nearing completion, and the San Francisco Municipal Transportation Agency (SFMTA) estimates that BRT service will begin on the corridor on April 1, 2022.

The Civil Grand Jury Report

The current project completion date is nearly three years later than the project was originally scheduled to be completed, and the budget has increased from its original estimates as well. The significant schedule and cost overruns of the project were the subject of a 2020-2021 San Francisco Civil Grand Jury report entitled “Van Ness Avenue: What Lies Beneath.” The original project budget was estimated at $309 million, including $193 million in construction costs, with construction beginning in 2016 and a planned construction completion date of late 2019. However, the final budget for the project has increased – as of June 2021 it was $346 million, which is 12 percent higher than the original budget – and the revenue service date is scheduled for April 1, 2022.

The 2020-2021 Civil Grand Jury investigated the causes of schedule delays and cost increases and made over a dozen findings and recommendations related to the City’s ability to deliver major capital projects like Van Ness BRT. The Grand Jury’s major finding was that the Van Ness BRT project and its delays are emblematic of systematic issues that the City faces when delivering major capital infrastructure projects. Specifically, the Grand Jury found that:

1. Planning and design processes failed to capture the scope of the project adequately;
2. Contracting processes failed to instill accountability; and,
3. Ongoing project management failed to remediate problems efficiently and effectively.

The scope of this report is focused on item #1: Planning and design processes failed to capture the scope of the project adequately. The Grand Jury made several findings and recommendations related to City project management practices addressing scope; however, the focus of this report is on a few specific findings and one recommendation on risk management for capital projects.

De-risking Activities and the Van Ness Improvement Project

The Grand Jury found that underground utilities were a major factor in the nearly three-year delay in the Van Ness BRT project schedule and made it a focus of their report on the project. SFMTA staff have stated that it was not possible to fully know the state of the underground utilities and the subsequent time it would take to fully investigate and solve the problem before breaking ground. However, the Grand Jury disagreed with that assertion and found that the state of the underground utilities, and the risks they posed to the project schedule and budget, could have been identified in advance with proper de-risking work (the Grand Jury defines de-risking as “the process of making a project more predictable by reducing the possibility that something can go wrong”). Though the term “de-risking” is less common, de-risking activities on major construction projects are very common and range from exploratory potholing to monthly meetings between various stakeholders to discuss challenges in the project. The Grand Jury found that the SFMTA’s de-risking activities on the Van Ness BRT project were insufficient. Specifically, their findings on de-risking activities were:

- F1. The delays in completion of the Van Ness BRT Project were caused primarily by avoidable setbacks in replacement of the water and sewer infrastructure.
- F2. The potential impact of utility replacement on the cost and duration of the overall project was given insufficient consideration in the initial planning process.
- F3. The potential impact of utility replacement was known to City engineers to be a major risk but was only considered a moderate risk and assigned no mitigation strategy in the official risk register.
- F4. Project timelines could not be estimated accurately because documents did not reflect the extent and location of underground utilities accurately.
- F6. Practical work during preconstruction that could have de-risked the subsequent construction phase of the project was insufficient.

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2 Potholing is defined by the Grand Jury as “the practice of digging a series of test holes to expose underground utilities in order to ascertain their horizontal and vertical locations.”

3 Note: Finding 5 (F5) as well as findings 7 through 14 (F7 to F14) did not pertain directly to de-risking activities and are therefore not included in this list.
Though there were several findings, and four recommendations, related to de-risking, the BLA was directed to address the following recommendation by the Board of Supervisors in Resolution 496-21:

*By June 2022, the City should adopt a policy that all capital project sponsors publish, before proceeding to the construction phase, an itemized assessment of de-risking activities actually performed.*

This report identifies and analyzes the major options the Board should consider for the adoption of a citywide policy on itemizing and reporting de-risking activities. We spoke with representatives of all departments authorized to sponsor capital projects to understand the potential benefits and risks of such a policy. These departments include:

- Public Works (DPW)
- San Francisco Public Utilities Commission (SFPUC)
- San Francisco Municipal Transportation Agency (SFMTA)
- Recreation and Parks (REC)
- Port of San Francisco (Port)
- Airport

Our findings are summarized in the following section.

**Analysis**

**De-risking in San Francisco**

Identifying and recording the potential risks to a project’s scope, schedule, and budget are already common practices among City departments that sponsor major capital projects. Indeed, the Grand Jury recommended that citywide, all capital projects must include an itemized risk assessment, and the Board of Supervisors reported that that recommendation had already been implemented. However, our interviews with City department representatives revealed that there is variation in the types of projects that are sponsored by different departments citywide and, therefore, there is variation in which projects get itemized risk assessments (also called risk registers or risk matrices in the construction industry), what kinds of risks are identified, and how much de-risking is done to reduce the size of the identified risks.

Departments vary in which projects get risk registers, how formally they document the risk registers, and how much de-risking they do for different projects. Furthermore, no department has a specific formal written policy regarding risk registers or de-risking activities in the manner outlined by the Grand Jury, including defining the types of projects that require risk registers and
the amount of de-risking required for each project.\footnote{In response to our draft report, staff from DPW, SFMTA, and SFPUC noted that they have procedures in place to either de-risk on all projects (DPW shared Procedure 10-05-01 which is a Quality Assurance/Quality Control procedure that includes required reviews based on project type), prepare a risk management plan (SFMTA), or generally cover the pre-construction and construction phases (SFPUC). However, other than from DPW’s Procedure 10-05-01, we did not receive a formal written policy from any of the departments that we interviewed that specifically defines which projects require de-risking activities nor the amount of de-risking required.} The variation in approaches to risk management and the variation in types of capital projects constructed by each department (projects can range in size and scope from the $346 million Van Ness BRT project to the $3.3 million Shoreview Park Renovation Project by Recreation and Parks) led department representatives to emphasize with us the importance of flexibility when developing a citywide de-risking policy.

At DPW, a culture of institutional knowledge-sharing and nearly a century’s worth of experience managing right-of-way projects has led to a reliance on project managers and engineers to understand the types of risks that will be associated with a project based upon that project’s specific scope, size, complexity, and location, and to respond accordingly. Bruce Robertson, Deputy Director for Financial Management and Administration at DPW, said that creating risk registers was already a basic core function of DPW’s project management process, although only for larger capital projects. Carla Short, Public Works Interim Director, added that identifying the steps to be taken to minimize the risks identified was also already part of DPW’s risk management process.

Other departments vary in their risk identification and mitigation strategies. At the Airport, project managers utilize the practice of partnering to minimize risks on major capital projects. Judi Mosqueda, Director of Project Management for Planning, Design, and Construction at the Airport, explained that the practice involves bringing in a neutral third party to facilitate monthly collaborative sessions between City project staff and the contractor team. The partnering sessions are a chance for the team to discuss risks as they arise and brainstorm risk mitigation measures as a team. At the SFMTA, project teams are required under the Project Operations Manual (POM) and Federal Transit Authority guidelines to implement a risk management plan that identifies, measures, and mitigates risks as defined in an individual or comprehensive Project Management Plan. Additionally, SFMTA and SFPUC staff have been working towards incorporating risk registers and risk identification into their capital project management, and representatives for both agencies agreed that risk registers are a best practice for major capital projects. At the Port and REC – two smaller departments with much smaller capital budgets – de-risking is done on a project-by-project basis. At the Port, it depends on the size of the project budget and the risks identified. DPW provides design and construction management services for
most large capital Recreation and Park projects, so REC project managers follow DPW’s methods regarding risk.

**Industry Best Practices**

Several industry best practice documents include guidance on identifying and measuring risk throughout the design and construction phases of a project. We found that these best practices are consistent with the internal practices reported by most City department representatives. The American Public Works Association’s *Public Works Management Practices Manual* recommends thorough planning of utility coordination when designing a project, including utility coordination committees, uniform utility placement guidelines, and excavation damage prevention guidelines; however, nowhere in the manual does it suggest publishing the efforts taken to identify, coordinate, or work around underground utilities. Additionally, the American Society of Civil Engineers’ *Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*, which the Grand Jury cites in their report, also does not include a procedure to publicly report the efforts taken by capital project managers to identify underground utility data.

**Policy Options: Publishing De-risking Activities Citywide**

**Types of De-risking Activities to Include**

There is great variation in the types of capital projects, and their associated risks, across departments. As a result, there is also variation in the types of de-risking activities that are appropriate. Risks vary from unknown underground utilities, supply chain problems, political sensitivities, and equipment maintenance problems. Risk registers put together by City staff typically capture all of these risks. Examples of risk registers used by SFPUC and the Airport have been included in Appendix A of this report.

Department representatives repeatedly emphasized to us the need for flexibility when interpreting a potential de-risking policy so that the policy can be suited to the individualized nature of most major capital projects in San Francisco and warned against a prescriptive, one-size-fits-all policy. Exhibit 1 below shows several options for specifying the types of de-risking activities in a citywide de-risking policy that the Board could implement.
## Exhibit 1: Options of De-risking Activities to Include in Citywide Policy

<table>
<thead>
<tr>
<th>De-risking Activities to Include</th>
<th>Benefits</th>
<th>Risks</th>
</tr>
</thead>
</table>
| Instruct department heads to create internal, written policy regarding which de-risking activities must be published. | • Flexibility for departments  
• Instills accountability | • Discrepancies due to different interpretations by each department  
• Some departments may not follow through with the requirement |
| Prescribe a policy of which de-risking activities must be included, but allow department heads to waive requirement for certain projects at their discretion. The Board could require departments to document justification for waiving requirements under this option for greater accountability. | • Flexibility for departments  
• Support from departments | • Some projects will not get reported on |
| Prescribe a list of de-risking activities that must be reported for every project that meets the policy threshold (see “Project Threshold,” below). | • Consistent across departments and projects | • Some projects could be delayed due to difficulty meeting strict reporting requirements, which would lead to cost increases  
• Lack of support from departments  
• Challenging to implement |

Source: BLA analysis

The benefits of a more prescriptive policy are that there would be more citywide consistency across departments and projects regarding reporting on de-risking activities. Whichever type of de-risking activities the Board elects to include in the policy would be required to be reported on by every department for every project that meets the threshold. However, department
representatives indicated to us that such a policy could be challenging to implement for several reasons. First, types of risks, and their corresponding de-risking activities, can vary across departments and across types of projects. Creating a uniform list of citywide de-risking activities could lead to a situation where the list includes de-risking activities that would not otherwise be necessary for certain projects or omits some critical de-risking activities for others. Additionally, narrowly prescribing the list of which activities must be reported on could lead to project delays as some departments could struggle to adhere to the requirements and it could take longer to publish the list and, therefore, could take longer to proceed to the construction phase of a project. Delays in construction projects cost money, sometimes hundreds of thousands of dollars per month for major projects, and so this de-risking policy could lead to a kind of situation it is intended to prevent. Providing departments with either the opportunity to waive the requirement for certain projects or the ability to create their own policy regarding the types of de-risking activities they will report on would ensure that departments have a policy that they are able to implement smoothly and without delays, although it could lead to inconsistencies citywide regarding the types of de-risking activities reported.

When to Publish the List of De-risking Activities

The Grand Jury’s recommendation leaves some room for flexibility regarding the timing of publishing the de-risking activities. They recommended that it should be published before construction begins, but that leaves a wide window in which to publish. Several department representatives, and the SFMTA in their formal response to the Grand Jury, voiced concern for the validity of the bidding process if de-risking activities are published in a manner that enables bidders to use them to their unfair advantage during the procurement process. Specifically, if construction contract bidders are provided a definitive list of de-risking activities by the City, then the contractor might be able to take advantage of that list by turning any deviation from what is identified during the de-risking process (i.e., the number of utilities underground) into a change order that drives up the cost to the City. The current practice, with no definitive list of de-risking activities, puts identifying, measuring, and mitigating risks onto the contractor in a CMGC contract. Several department representatives emphasized in our interviews that, with underground construction work, it is impossible to perfectly mitigate every single risk, and there will always be unknowns. Publishing a list of de-risking activities prior to the award of a construction contract could make it much easier for a contractor to take advantage of the City with respect to those unknowns. However, this could be mitigated somewhat through the use of alternative project delivery methods that engage the general contractor in the design process and therefore place more responsibility for de-risking onto the general contractor. Exhibit 2 below shows the options for the timing of publishing the de-risking activities with associated benefits and risks. Note that these options apply to projects that utilize traditional project delivery methods, namely Design-Bid-Build because the contractor would not be typically brought onto the project during the design phase.

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Budget and Legislative Analyst
### Exhibit 2: Options for Timing of Publishing De-risking Activities

<table>
<thead>
<tr>
<th>Timing</th>
<th>Benefits</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publish pre-bid</td>
<td>• More time to catch a potential risk and mitigate it before construction starts</td>
<td>• Contractors could take advantage and submit more change orders during construction</td>
</tr>
<tr>
<td>Publish post-bid $^{5}$</td>
<td>• Avoid unfair bidding advantages while maintaining accountability</td>
<td>• Legal risks regarding withholding information from bidders</td>
</tr>
<tr>
<td>Do not proactively publish, but create list and publish at discretion of department head</td>
<td>• Reduces risk of conflicts with bidders</td>
<td>• Does not instill same level of accountability as publishing publicly</td>
</tr>
<tr>
<td>Do not proactively publish, but incorporate into existing project management checkpoints (e.g. DPW’s Quality Assurance Quality Control Plan)</td>
<td>• Easy to implement</td>
<td>• Decentralized – implementation could look different for each department depending on their internal project controls</td>
</tr>
<tr>
<td></td>
<td>• Avoids potential conflicts with bidders</td>
<td>• Does not instill same level of accountability as publishing publicly</td>
</tr>
<tr>
<td></td>
<td>• Holds project sponsors accountable for completing de-risking activities</td>
<td></td>
</tr>
</tbody>
</table>

Source: BLA analysis

Publishing the list of de-risking activities after the bid is completed is inadvisable for legal reasons. According to a Deputy City Attorney we spoke with, this would likely lead to bidders protesting the outcome of a bid, arguing that they would have bid differently – and possibly won the bid – had they known about the list of de-risking activities. The risks associated with publishing the list before the bid are smaller, but still present (e.g., higher bids). Some City staff

$^{5}$ Note: This option is only relevant to projects that utilize the Design-Bid-Build project delivery method. For projects that utilize the Construction Manager/General Contractor (CMGC) or Design-Build project delivery methods, a contractor would be selected early in the project timeline and would presumably be assisting with or leading the identification of risk and de-risking activities.
we spoke with expressed their concern that more information presented to bidders and included in their proposals means more potential change orders (and higher costs) down the line if real conditions deviate from the designs. Since it is impossible for preconstruction de-risking activities to eliminate every single uncertainty from a project, some department representatives have suggested that publishing the list of de-risking activities before the bidding process could lead to more change orders as unexpected deviations occur. However, a Deputy City Attorney specializing in construction we spoke with believes this to be a minimal risk, as publishing the list of de-risking activities does not create conditions giving rise to change orders; rather, those conditions exist regardless and it becomes an issue of increased accuracy in cost predicting. Furthermore, this issue is less relevant if project sponsors utilize the Construction Manager/General Contractor (CMGC) or Design-Build methods of delivering the project. Both methods differ from the traditional Design-Bid-Build method of delivering a capital project by partnering with the contractor during the early stages of design. In these instances, the contractor is part of the project team in the preconstruction phase and should therefore be expected to lead the de-risking work, making the risks associated with publishing the de-risking work pre-bid moot.

To avoid the issues of when to publish the list of de-risking activities performed, the Board could choose to not pass an ordinance requiring the list be published publicly. Instead, the Board could require that a list be created for certain types of projects and published at the discretion of the department head, though the document would likely still be subject to Sunshine requests. Furthermore, the Board could require that performing de-risking activities, and being held accountable for doing so, be incorporated into existing project management systems. This option reduces the risk of conflicts with the bidding process but still requires de-risking activities be performed and documented. Many departments already require that project managers certify the completion of key project milestones prior to proceeding to the construction phase of a project – for example, that a project has had a constructability review done – in the form of a checklist to be signed off by key project managers. DPW’s Quality Assurance Quality Control Plan, for example, could be amended to clarify and amplify “de-risking activities completed” by way of the Quality Assurance Quality Control process throughout the design phases. This would hold project sponsors accountable for completing the de-risking activities prior to construction, and it would be relatively easy for departments to implement, although there would be some variation across departments given the variation in internal controls process.

Project Threshold

Throughout our conversations with department representatives, it became clear that not every capital project constructed in the City has a risk register or de-risking activities associated with it. Projects that go through such extensive risk identification and mitigation efforts are primarily large and/or complicated. For this policy, the Board could set a threshold to determine which
major capital projects would be subject to the requirement. Exhibit 3 below shows three options for the Board to consider if it chooses to set a threshold for requiring de-risking.

**Exhibit 3: Options for Project Thresholds to Trigger De-risking Policy**

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Benefits</th>
<th>Risks</th>
</tr>
</thead>
</table>
| Dollar cost of project | • Consistent across departments and project types | • Challenging to set the best threshold
• Does not necessarily reflect project complexity |
| Physical size of project | • Consistent across departments and project types | • Challenging to set the best threshold
• Different criteria would be needed for buildings and SFPUC pipelines |
| Allow departments to determine a threshold policy | • More flexible for departments
• Departments deliver different scopes of work | • Not consistent across departments or project types
• Departments could set the threshold too high or too low |

Source: BLA analysis

Dollar cost of the project – either total cost, or construction costs – appears to be the most logical threshold and was mentioned frequently in interviews with department representatives. However, determining the best dollar threshold could be challenging due to the wide variety of costs of capital projects across the City. A threshold between $50-$100 million for the total project budget was suggested, although that range itself is wide and could potentially leave out whole departments that rarely, if ever, have projects that cost $50 million or more. Therefore, the size of the threshold will determine the prescriptiveness of the policy: a lower threshold would incorporate more projects and lead to more de-risking activities being published, and potentially greater bureaucratic challenges to implementing the policy, while a higher threshold would include far fewer projects, but likely be much easier to implement. A flexible threshold would allow departments to decide on a project-by-project basis whether it is important to report on de-risking activities and this could be determined by the risk level of the project.
**Publishing Location of De-risking Activities**

The question of where to publish the list of de-risking activities performed will affect the implementation of this potential policy. Exhibit 4 below shows the different possible publishing locations and their accompanying benefits and risks.

**Exhibit 4: Options for Publishing Location of De-risking Activities**

<table>
<thead>
<tr>
<th>Location</th>
<th>Benefits</th>
<th>Risks</th>
</tr>
</thead>
</table>
| Capital Planning Committee (CPC), Annual Checkpoint Meetings | • Existing project reporting processes  
• Centralized | • Would miss some projects, because not all projects go through CPC  
• Limited staff capacity  
• Increased burden on project managers to send list to CPC |
| Controller, City Services Auditor             | • Existing quality controls for citywide services  
• Centralized  
• Sufficient resources | • Project audits are typically conducted after projects are completed  
• Increased burden on project managers to send list to Controller |
| Department of Public Works                    | • Existing citywide project management expertise & public recognition  
• Centralized | • Limited staff capacity  
• Increased burden on project managers to send list to DPW |
| Project sponsor’s website                     | • Easiest to implement  
• Existing information hub for each project | • Not always publicly recognized as owner of project  
• Decentralized (may be difficult for the public to find) |

Source: BLA analysis

Several department representatives, including those from DPW, indicated that publishing the information in a centralized location was the best idea as it would be easiest for the public to find, but that it would be much harder to implement the policy and there is no clear best centralized location. The Capital Planning Committee (CPC) makes sense to host the de-risking lists as an existing clearinghouse for capital projects, but it does not work with every major capital project in San Francisco and could therefore leave out some projects. The Controller’s Office, similarly, is an existing
centralized City agency with guaranteed funding for the City Services Auditor,\(^6\) but it does not currently serve a function like this and might need to hire additional staff. DPW representatives were enthusiastic about the idea of the Department being the centralized publishing location, but they stated that they do not have the staff capacity to manage it and would need additional resources to do so. However, other department representatives, including representatives from smaller departments, indicated that the best publishing location for them would be on their own websites or on individual project websites. This option would ensure that the information is posted publicly without putting an additional procedural step on project managers that could result in project delays, which lead to increased costs. Further, Controller’s Office staff stated that DPW or the City Administrator’s Office would be good options as the new DPW will be focused solely on infrastructure and the City Administrator’s Office already serves a central role in sharing practices and policies across the City.

**Status Quo: No Published De-risking Activities Policy**

The Board could choose to not implement this recommended policy on de-risking. Nearly every department representative we interviewed expressed hesitation regarding the usefulness of this policy and whether it would achieve its intended goals. The risk of not implementing the policy is that there would continue to be no citywide accountability mechanism regarding whether project sponsors de-risk their capital projects appropriately. However, the benefits of not implementing the policy include:

- **Existing department efforts:** Many departments we spoke with either already apply de-risking strategies to major capital projects or are in the process of improving them. The SFMTA and SFPUC, in particular, have re-examined their de-risking efforts in the past year and are working to improve them.

- **No additional bureaucracy or slowdowns:** The policy could become a cumbersome process that project sponsors must complete before moving ahead to the construction phase of a project, leading to further delays in schedule and increased cost overruns. Regardless of how it is implemented, the policy is another step that project managers must complete that will inevitably take time and cost money. Several department representatives were concerned that this would inadvertently lead to the very schedule delays that the policy is intended to avoid.

\(^6\) Charter Section F1.113, approved by voters through Proposition C in November 2003, established the Controller’s Audit Fund with a baseline funding amount of 0.2 percent of the City budget to fund audits of City services.
Policy Options

Based on the fieldwork we conducted, which included interviews with department representatives and a review of industry best practices, we did not find enough evidence to support the adoption of a policy regarding itemized assessments of de-risking activities for all major capital projects in San Francisco. Such a policy might be challenging to implement because of the variation in project management practices across departments and because of the wide variety of types of capital projects managed citywide.

However, the Board might choose to implement the policy because it could lead to the improved scoping of major capital projects, increase the accountability of capital project sponsors, and reduce potential project delays.

If the Board chooses to implement a policy requiring that project sponsors publish a list of de-risking activities performed before a project’s construction phase, then we recommend that the Board consider the following as a minimum requirement at various project thresholds:

1. For projects with budgets of $100 million or larger:
   a. Instruct department heads to create an internal, written policy regarding which de-risking activities must be published.
   b. Require that the list of de-risking activities be posted to the individual project website or, if one does not exist, to the sponsoring department’s website.
   c. Require the list be posted pre-bid (for projects delivered through the Design-Bid-Build method only).  

2. For projects with budgets between $50-$100 million:
   a. Instruct department heads to create an internal, written policy regarding which de-risking activities must be completed prior to construction.
   b. Require that departments incorporate the performance of the required de-risking activities into existing project management processes, such as DPW’s Quality Assurance Quality Control Plan process.

3. Allow department heads to waive the de-risking policy requirement for projects with budgets of less than $50 million at their discretion.

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7 For Design-Build, CMAR, and CMGC projects, the list should be published before the construction phase; this would likely be after the Construction Manager is procured as the Construction Manager typically is brought on early in the design process.
## T1 Program - Program Risk Register

<table>
<thead>
<tr>
<th>ID</th>
<th>Risk Owner</th>
<th>Risk Title</th>
<th>Risk Description</th>
<th>Risk Effect</th>
<th>Comments / Updates</th>
</tr>
</thead>
<tbody>
<tr>
<td>D01</td>
<td>Todd Temple</td>
<td>Construction Management</td>
<td>Critical infrastructure is required from T1c to support BAB for the opening of 18 gates.</td>
<td>- Building will not be able to open on planned date (Jul 19) if conditions are not met.</td>
<td>- Staged 3 - 3 Stage (BAB) schedule is not met.</td>
</tr>
<tr>
<td>D02</td>
<td>Kent DeRusha</td>
<td>Construction Management</td>
<td>Critical services required: HVAC, Communication Systems / Telephone Systems, Fire System, BAS</td>
<td>- HVAC</td>
<td>04.15.18 - HVAC requirement update to E17</td>
</tr>
<tr>
<td>D03</td>
<td>Kristi Hogan</td>
<td>Owner(s)</td>
<td>- Shared resources (trades) on T1 / BAB &amp; Hotel</td>
<td>- Shared supervision / Alignment of trades and schedules.</td>
<td>06.27.18 - Need more man power out there (BAB).</td>
</tr>
<tr>
<td>D04</td>
<td>Wayne (BAB)</td>
<td>Construction Management</td>
<td>- EFSO</td>
<td>- EFSO</td>
<td>08.22.19</td>
</tr>
</tbody>
</table>

### Action Owner(s)
- Todd Temple
- Kent DeRusha
- Kristi Hogan
- Henry Dunbaran

### Latest update will be on RED
1. Construction delays if all systems are not successfully integrated / operational in T1 and T2.
2. Reputational impacts to SFO if bag system system does not operate correctly / operational in T1 and T2.
3. Communication to work teams on a regular occurrence in regards to site safety.
4. Weekly co ordination meetings between T1C, BAB and BHS.
5. Requirement of acceptance from stakeholders on those clashes that can not be rectified.
7. Pull planning for coordination
8. Construction

<table>
<thead>
<tr>
<th>No</th>
<th>Risk Owner</th>
<th>Risk Title</th>
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<th>Mitigation Actions</th>
<th>Action Owner(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1P 012</td>
<td>Todd Temper</td>
<td>Installation of the Baggage Handling System in T1C</td>
<td>The operation of the Baggage system has not been fully successful due to the lack of coordination and management.</td>
<td>Very Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1P 015</td>
<td>Kristin Allen</td>
<td>Stakeholder Requests - Late Design Changes</td>
<td>There is a risk that there are late design changes requested by stakeholders that are required to be incorporated into the works.</td>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Description</td>
<td>Risk Owner</td>
<td>Risk Title</td>
<td>Risk Effect</td>
<td>Comments / Updates</td>
<td>Park</td>
<td>Impact</td>
<td>Risk score</td>
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<tr>
<td>----</td>
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<tr>
<td>TSP 317</td>
<td>Risk Title</td>
<td>Risk Description</td>
<td>Risk Effect</td>
<td>Comments / Updates</td>
<td>Park</td>
<td>Impact</td>
<td>Risk score</td>
<td>Mitigation Actions</td>
</tr>
<tr>
<td>Scott Bills</td>
<td>Management of the construction of the 37B Connector.</td>
<td>Management of the impact on tenants while maintaining schedule during construction.</td>
<td>1. Changes to design and construction methods may lead to increased costs and delays.</td>
<td><strong>09.28.19</strong> - No risk updates. 09.23.19 - There are additional add to ID’s for all levels. 01.16.19 - Will remain a risk until the work around Air France is completed.</td>
<td>High</td>
<td>Medium</td>
<td>3</td>
<td>1. HP currently working through potential options to present to Aviation Management. ONGOING. 2. Aviation Management to make decision on what options to take to Air France to achieve an agreement. COMPLETED. 3. Stakeholder communication and management. ONGOING.</td>
</tr>
<tr>
<td>TSP 321</td>
<td>Kristin Allen</td>
<td>Unplanned disruption to airport operations</td>
<td>Due to the project operating alongside fast taxiways, runways and parking aprons during this phase there is a risk that if the works are not planned and managed correctly there is a potential to disrupt or stop airport operations.</td>
<td>1. Schedule delays. Major delay to significant delays - boss case - complete site shut down. 2. Reputation/impact - Customer dissatisfaction - Travellers and Businesses: Stakeholder dissatisfaction - Operations, Airlines.</td>
<td><strong>03.19.19</strong> - No new updates. 04.23.19 - There have been no incident so far. <strong>NOTE:</strong> This is an objective of the Partnership Chair.</td>
<td>High</td>
<td>Low</td>
<td>4</td>
</tr>
<tr>
<td>TSP 323</td>
<td>Kristin Allen</td>
<td>Integration of all SFO construction projects.</td>
<td>There are multiple projects being undertaken airport wide. All understand the impact of how each project impacts on the T3 Program in required to affect the potential schedule delay or limited resource. 01.19 - Resource from TAC across multiple projects on the SFO Campus. Prioritization of activities for 9 and 20 gate modules to be completed by them (Revised).</td>
<td>1. Inability to open terminal without full transportation requirements. 2. Schedule delays to other projects are delayed and same contractor is in the same area multiple gaps within the airport. 3. Prioritization of other works may be made leading to schedule delays for the program. 4. Increased costs.</td>
<td><strong>09.28.19</strong> - No new updates. 01.18.19 - Issue arising with Team Resources being used SFO Campus wide and may not be able to meet all requirements for all projects in line with each project schedule.</td>
<td>Low</td>
<td>Low</td>
<td>4</td>
</tr>
<tr>
<td>TSP 326</td>
<td>Todd Temple</td>
<td>Production rates and quality of work</td>
<td>Due to limited availability of resources throughout all trades, there is a risk that subcontractors may not be able to achieve planned production rates that is expected leading to potential delays and quality issues.</td>
<td>1. Schedule delays as contractor may not be able to work to expected production rates or completely understanding working methods within an airport environment. 2. Quality issue with end product if not inspected sufficiently.</td>
<td><strong>04.23.19</strong> - Roof quality and efficiency of the work force for certain trades. Workers sent by the unions are not the most preferable timescale and changes are required.</td>
<td>Medium</td>
<td>Medium</td>
<td>3</td>
</tr>
<tr>
<td>TSP 328</td>
<td>Kristin Allen</td>
<td>SFO Logistics - Site logistics</td>
<td>Site logistics and materials spaces, access and times SFO Resources, changes and space allocation effect the projects schedule</td>
<td>1. Delays to selections of works if planned access routes are changed with other projects in line with each project schedule. 2. Quantity issue with end product if not inspected sufficiently.</td>
<td><strong>03.18.19</strong> - Site logistics are not on schedule. Moving into stage 1.5 and 2 it should be reevaluated.</td>
<td>Low</td>
<td>Low</td>
<td>9</td>
</tr>
<tr>
<td>TSP 329</td>
<td>Kristin Allen</td>
<td>Mock Ups - Timely delivery</td>
<td>Mock Ups - Timely delivery and decision making in line with project / program schedule</td>
<td>The various mock ups required by both projects are required to be delivered in a timely manner to allow for the appropriate reviews and approvals granted by SFO in order to deliver relevant changes when needed and not delay the schedule. There is a concern that first to place may not be a viable option as if not accepted then there may be significant schedule impacts and cost increases. The more specialized the mock up the more difficult it gets if schedule slips or changes are required.</td>
<td>1. Schedule delays for delivery of materials if approvals are not granted in preferred timeline and changes are required. 2. Schedule delays if any changes to materials are to be obtained from outside suppliers and have a long lead time. 3. Delay to open if certain areas that require for opening are not completed due to changes in design or last approved</td>
<td><strong>09.28.19</strong> - There is a concern with the entry vestibule mock up set and General are working on a proposal and how we can evaluate the entry vestibule without having it completely completed. <strong>04.23.19</strong> - Major pending Mock-ups: SFO In addition to the above. <strong>06.18.19</strong> - Mock-ups at an plan.</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>
There is a large amount of doors that are not being turned over in a timely / coordinated timeframe.

If not adequately planned for, accounted for and an accurate schedule of works there is a risk that access control may not be available in line with opening schedule.

Co ordination for construction access and door turn over from landside / airside.

1. Liability to fully open at 18 Gate due to issues with access / security systems.
2. If Hardware is not in place - doors can not be keyed in time - additional costs and for Schedule delay
3. New Security Resources for all doors not neted - additional costs not in estimates
4. Work over time to complete works - Additional Costs not in estimates
5. Resource allocation and availability - Schedule delay
6. Other activities may be pushed back leading to schedule delays
7. r-time between TCO and T1P

1. Not having a fully functional boarding area.
2. Reputation impacts and customer dissatisfaction (Customer experience impacts)
3. Poor operations, if trained staff

1. Schedule delays due to changes being requested by stakeholders or systems not being signed off and accepted in timely manner.
2. Reputation Impacts - Paul Experience Impacts
3. Early inclusion stakeholders during testing and commissioning to reduce impact of errors
4. CAS activities related to ramp operations, which is considered most crucial and most complicated are at highest risk due to certain systems not being ready, 11.27.18 - 18 Gate T1C - Feb 11, 2020

1. Weekly Executive meetings and Site Walks to visualize progress and delivery, FP/PROPOSAL should have the ability to complete walk with key stakeholders groups from April to May, risk stakeholders by group to gain better understanding and visualization.
2. Early communication of issues / concerns to higher levels / Senior Management: 2. Creation of weekly / monthly reports to allow for the escalation of issues early to management.
3. Identification exercises to be conducted to gain understanding of stakeholders expectations of what is being delivered. Learn from previous projects (sessional learn) at this has been highlighted as a previous issue on several projects.

1. White paper has been sent to the team
2. Austin Webber is adding sample doors photos to help the process.
3. CAS to use the SOA-wide Cohen's report meeting to coordinate and streamline the commissioning process for ASIAC and 9 - Gate activation.
4. CAS to put more efforts into pre-tests for Door turnovers and better QA/QC with a goal to get Doors approved in the first go - ONGOING

1. Cannock control from HP for 9 Gate turn over required. ONGOING

1. CAS activities related to ramp operations, which is considered most crucial and most complicated are at highest risk due to certain systems not being ready, 11.27.18 - 18 Gate T1C - Feb 11, 2020

1. White paper report on ramp operation and trades required to complete ramp operations and trades.
2. Communication at the Builder 2 Builder on progress.
3. Stakeholder meetings when required to communicate the scope being delivered for 9 / 18 Gate

1. Strict action tracking of Actions.
2. Creation and management of Issue Log.
3. Manual Operations as fall back plan. PROPOSED.
4. Implementation of functional areas early. ONGOING
5. Early inclusion stakeholders during testing and commissioning to reduce impact of delays.
6. Both contractors (AWP & HP) are including in their schedule commissioning activities.

1. Weekly Executive meetings and Site Walks to visualize progress and delivery. PROPOSED
2. Creation of a log to track issues and be able to report for corrective actions
3. CAS activities related to ramp operations, which is considered most crucial and most complicated are at highest risk due to certain systems not being ready. 11.27.18 - 18 Gate T1C - Feb 11, 2020

1. Weekly Executive meetings and Site Walks to visualize progress and delivery. PROPOSED.
2. Creation of a log to track issues and be able to report for corrective actions

1. Weekly Executive meetings and Site Walks to visualize progress and delivery. PROPOSED.
2. Creation of a log to track issues and be able to report for corrective actions
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</table>
| T1P | Management | Suzanne Culin, Kristen Allen, Ryan Louie | Wayfinding - New Signage Around Airport leading to changes of signage at Terminal 1 project | Signage at new Terminal 1 pre and post security needs to be updated to support airport new signage infrastructure. | 1. Additional costs for any change and change orders submitted.  
2. Potential delays to schedule if changes and change orders are required.  
3. If changes are required to be made after design complete there is potential for additional costs for any changes elements or may impact construction schedule if any changes have to be made before opening and interact with construction activities.  
4. Any changes may be required to be go through BICE to receive an addendum to architecture design package. | Notice of relocation in advance indicating wherever they are going to be. Put a warning in advance on website to notify people where to go. | 6 | 1. Design, scope and information needs to disseminate quickly enough for signage fabrication.  
2. Post security signage completed by BAM for 9-Gates.  
3. 18 Gate - Double check with 9MGA team to run over through all drawings for any changes. | Todd Temple
Suzanne Culin |
| T1P | Commissioning | Todd Temple | Baggage Handling System testing at 18 Gate | Out of flow on the commissioning schedule. | Significant schedule delay for commissioning during 18 Gate | - 90% completed on punch list for 9 Gate | 16 | 1. Late stage testing  
2. TSA requirements on test script for their acceptance / approval  
3. Airport / Airlines expectations and acceptances | Dave Piantka
David Delaney |
| T1P | Construction | Kent DeRusha | Staff and labor parking limited capacity cost implications. | Requirement of increased number of parking spaces. Site logistics mean there are limited number of spaces with Core Trade workers required to have parking to be a certain distance from site.  
2. Numbers of people on site will fluctuate throughout the project lifecycle. Issues may arise if spaces required are not accurately forecast leading to a potential threat that spaces may be re allocated to other projects within SFO.  
3. Increased costs if on site parking for specified trade workers can not be allocated.  
4. Inefficiencies generated by dwell time for travel to and from remote parking.  
5. Potential for SFO to reduce number of spaces if what is requested is not utilized reducing the number of spaces available. | Parking pass that had not been used in 90 days are being deactivated without notification. Contractors expects that more passes will be made available if the need arises. | - Communication at regular periods (OAC meetings) on the importance of forecasting as accurately as possible. | Andrew Miller
Scott Stewart |
| T1P | Construction | Michele Charles | Staff and labor parking limited capacity cost implications. | Requirement of increased number of parking spaces. Site logistics mean there are limited number of spaces with Core Trade workers required to have parking to be a certain distance from site.  
2. Numbers of people on site will fluctuate throughout the project lifecycle. Issues may arise if spaces required are not accurately forecast leading to a potential threat that spaces may be re allocated to other projects within SFO.  
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Scott Stewart |
## WW-662R POWER FEED & PRIMARY SWITCHGEAR

**Status Update:**
2/10/21
Updated By: JG & AV
Project Team: WW-662R CM Team

### PROJECT RISK REGISTER

<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Risk Category</th>
<th>Risk Description</th>
<th>Current Assessment</th>
<th>MITIGATION</th>
<th>Action Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-7</td>
<td>ADA Compliance</td>
<td>Request for SCR, approval of switchgears and substations.</td>
<td></td>
<td></td>
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<tr>
<td>C-8</td>
<td>Regulatory</td>
<td>Verify installation of switchgear and substations.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-9</td>
<td>Weather Design</td>
<td>Provide emergency power to ensure project in the event of severe weather conditions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-10</td>
<td>WECS/SCR Approval Method and Demands</td>
<td>Completion of WECS/SCR approval and demands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-11</td>
<td>Steel Circuit Board Design</td>
<td>Design Engineer to review design and ensure it meets the standards for electrical integrity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Risk Score Key
- Low (1 - 6)
- Medium (7 - 15)
- High (16 - 22)
- Very High (23 - 24)
- Extreme (25)

### Risk Color Key
- Green: Action End Date within 90 Days
- Yellow: Risk (Column B) with Last Active Action Overdue
- Red: Open or Mitigated Risk Expiration Date (Column L) Overdue
- Black: Action Start Date (Column Z) Overdue and Action Status (Column AC) is Proposed

### Risk Score
- Probability of Occurrence (P)
- Most Likely
- Likely
- Min (Days)
- Max (Days)
- Cost Impact
- Score

### Risk Mitigation
- Coordination Meeting
- Request SCR, approval of switchgears and substations.
- Verify installation of switchgear and substations.
- Provide emergency power to ensure project in the event of severe weather conditions.
- Completion of WECS/SCR approval and demands.
- Design Engineer to review design and ensure it meets the standards for electrical integrity.