**Regulation:** 940.11(c)(4) - Alternative Analysis

**Purpose:** Evaluating and documenting all alternatives considered for the project. All alternatives will have a cost and benefit analysis, with the selected alternative having enough detail to develop the Concept of Operations and to provide something tangible for stakeholder review. This document should also take into account future needs and the future vision and strategy of CDOT.

**Benefits to CDOT:** It will allow CDOT to show the taxpayers that the best option was selected. Through doing a cost benefit analysis of each option, the best long term option will hopefully become clear. Focusing on selecting a sustainable (both in life cycle and cost), will help CDOT better maintain existing devices. It will also be used to ensure the option that is selected can easily be integrated into CDOT’s existing network and that the selected option is compatible with existing CDOT devices.

**Note:** While navigating through the SEA process, it is critical to remember that all SEA documents are only for the technology aspect of a project.

1. **General Information:**

|  |  |
| --- | --- |
| Project: |  |
| Project Subaccount Number: |  |
| PM Name: |  |
| PM Email: |  |
| PM Phone: |  |

1. **Service Package:** Project reason and service package

|  |  |
| --- | --- |
| Define the purpose and objective of the project and the problem the project is addressing |  |
| What service package(s) addresses the problem and are applicable to this project? |  |

1. **Alternative Options:** Identify the alternative options for the **technology portion** of the project and provide a brief summary that consists of just a few sentences. Items in blue are examples and are intended to be deleted. Additional rows may be added.

|  |  |  |
| --- | --- | --- |
| Alternative | Title | Description |
| 1 | Not doing the project or the technology elements |  |
| 2 | Building per the service package (no modifications) |  |
| 3 | Modify the service package via option A |  |
| 4 | Modify the service package via option B |  |

1. **Decision Matrix:** This is a high level table and just needs approximate costs. Please add more columns for additional alternatives if needed. Many projects with ITS elements have significant costs to maintain and replace. Since many technologies have a shorter life cycle it is critical that replacement costs are taken into account to ensure the system can continuously function as desired. Part of the SEA process is taking into account the impacts of the system all the way from conceptualization through decommissioning the system. Maintaining ITS devices is a significant portion of the ITS & Network Service Branch budget. This requires planning for budget and also resources. If maintenance costs and resource needs are so high that the Branch is unable to absorb the costs and additional budget is not given, the project should be reconsidered since the system will fail within a few years if proper maintenance is not performed.

Since this is still a very preliminary phase, the below matrix has been created with ranges to help ease the process. Certain line items may need to be completed with the assistance of the ITS & Network Service Branch. The ideal alternative should have one of the lower scores.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Cost Description | | Value To Be Used | Alternative 1 - Not doing the project | Alternative 2 - Building per the service package (no modifications) | Alternative 3 - Modify the service package via option A | Alternative 4 - Modify the service package via option A |
| Construction Costs | Cost to build | 1 - $0 to $500K  2 - $500K to $1MM  3 - $1MM to $5MM  4 - $5MM to $20MM  5 - $20MM and above | 1 |  |  |  |
| Cost to develop software (if needed) | 1 - $0 to $25K  2 - $25K to $50k  3 - $50k to $100k  4 - $100k to $200k  5 - $200k and above | 1 |  |  |  |
| Maintenance Costs | Increase to yearly routine ITS maintenance costs for the installed system | 1 - 0 to 100 Man Hours  2 - 101 to 200 Man Hours  3 - 201 to 300 Man Hours  4 - 301 to 499 Man Hours  5 - 500+ Man Hours | 1 |  |  |  |
| Cost to replace installed devices and supporting devices such as switches, after life cycle | 1- $0 to $30,000  2 - $30,000 to $50,000  3 - $50,000 to $100,000  4 - $100,000 to $200,000  5 - $200,000 and above | 1 - $15000 |  |  |  |
| Benefits | Overall benefit of the system - project purpose | 1 - Completely meets the purpose and objective of the project  3 - Partially meets the purpose and objective of the project  5 - Does not meet the purpose and objective of the project | 5 |  |  |  |
| Anticipated to reduce crashes | 1 - Significant crash reduction  3 - Slight crash reduction  5 - No crash impact | 5 |  |  |  |
| Workflow automation | 1 - Fully automates a system which will save time and money.  3- Zero automation, but does not increase time or money.  5 - Zero automation and increases time and money. | 3 |  |  |  |
| Total Score, With Lower Scores Preferred | | | 17 |  |  |  |

1. **Selected Alternative:** The lowest score in the above chart does not necessarily mean it is the required option. State which alternative was selected and why.

|  |  |
| --- | --- |
| Selected Alternative |  |
| Explanation for Selecting |  |

1. **Non Selected Alternative:** For documentation purposes, provide a brief explanation why the other alternatives were not selected.

|  |  |
| --- | --- |
| Alternative Not Selected | Reason For Not Selecting |
| 1 |  |
| 2 |  |
| 4 |  |

1. **Stakeholder Consideration:** Document the stakeholders impacted by current and future costs. Make note of if the stakeholder was involved in the selection of an alternative.  More rows can be added as needed. Items in blue are intended to be modified.

|  |  |  |
| --- | --- | --- |
| Stakeholder Name | Stakeholder Position | Stakeholder Comments on the Selected Alternative Contributed to the selection of alternatives. (Y/N) |
|  | ITS Maintenance |  |
|  | ITS Network |  |
|  | ITS Asset Management |  |
|  | ITS ATMS Application Owner |  |
|  | Signals Asset Management |  |
|  | Region 1 Maintenance Patrol |  |
|  | Local Agency |  |
|  | Freight Group |  |