Project Development Manual

Appendix 4

Project Objectives

December 2004
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APPENDIX 4

PROJECT OBJECTIVES

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1.0 INTRODUCTION

1.1 PURPOSE

Good project objectives are the building block of successful projects. Setting meaningful and well worded project objectives is one of the most important aspects of good project management practice. Once established, project objectives guide all project decisions from that point on. The purpose of this appendix is to provide guidance on establishing project objectives and give examples of measurable project objectives. Furthermore, the intent is to provide information, ideas, and wording for the development of project objectives which are appropriately specific, e.g., they identify needed actions and measurable results (quantitative and qualitative). The appendix is not intended to be an exclusive list from which to choose objectives. Actual project objectives are to be based on the specific need(s) of each project. Setting good project objectives is tantamount to project success.

1.2 DEFINITIONS

1.2.1 Project Goals

Project Goals are high level statements that provide an overall context for what the project is trying to accomplish. Project goals should align with Department goals for the corridor, region, and/or system (this will be referred to as Department goals from here on). The Initial Project Proposal (IPP) should clearly state the Department goal, the project goal, and their relationship. Because the Department goals are set at a high-level, it may take more than one project to achieve. Project goals should be set with cost, schedule, and Department goals in mind.

1.2.2 Objectives

Following are the characteristics of well established project objectives:

- Project objectives are what the project is to accomplish; the desired results of the project; the outcomes of the project that meet the project goals.
- Project objectives are definitive statements that describe the tangible outcomes that the project will deliver.
- Project objectives refine the project goals with clear and concise statements that provide measurable evaluation criteria for achieving the project goals.
- Project objectives are unique to each project. They provide basis for comparing how alternatives may provide effective and efficient solutions to the identified project goals, conditions and needs.
- Project objectives provide a framework for developing alternatives. If alternatives can not be formulated based on stated objectives, the objectives may be written at too high a level. On the other hand, if objectives describe the characteristics of the alternatives and describe how to solve an identified need, they are written at too low a level.
Alternatives are specific solutions which fulfill the objectives and may provide an efficient and effective solution to the identified conditions and needs of the project. Alternatives must support the objectives but objectives must not be constrained by the alternatives. Refer to PDM Chapters 2 and 3 for details on developing alternatives.

2.0 DEVELOPING PROJECT OBJECTIVES

Developing project objectives is an iterative process done during project scoping, see PDM Chapters 2 and 3 for details on project scoping. Based on a scoping level of detail (engineering, social, economic and environmental study and public involvement, including advisory and interested agencies and other stakeholders), quality objectives can be established. Quality project objectives guide decision making and assist designers to develop the “right” project for the project context during preliminary design. Without a well defined, well established and well justified objective, it will be difficult to determine which alternatives are feasible; reasonable, prudent, and practicable.

Please note that following a well thought out Public Involvement (PI) Plan (see PDM Chapters 2 and Appendix 2 for more info on project development and PI) is the corner stone for developing projects and project objectives.

The following sections provide guidelines on how to develop quality project objectives without specific reference to PI; PI is integrated into our processes.

2.1 DEVELOP OBJECTIVES WITH THE DEPARTMENT GOALS AND PRIORITY RESULT AREAS (PRAs) IN MIND

Develop project objectives to meet project goals. The IPP should describe the project goals and its relationship to the Department goals for the corridor/region/system. Department’s goals are established based on the five priority result areas (i.e., mobility and reliability, safety, economic sustainability, security, environmental conditions).

Evaluate project goals and objectives against the current Statewide Transportation Master Plan and any other Transportation Long Range Plans (LRPs), i.e., Major Investment Studies (MISs), Corridor Studies, site related safety studies, etc. to make sure that project goals and objectives are aligned with the Master Plan, LRP, TIP or STIP. If project developers recognize a need to modify the Master Plan/LRP they should provide feedback to the Regional Planning and Program Manager (RPPM). If the project is not consistent with the Statewide Transportation Master Plan and/or the Long Range Plan for the region and/or corridor, these plans must be revised to reflect the change in direction. Otherwise, the project must be revised to conform to the wider area plans.
2.2 IDENTIFY THE PROJECT NEEDS

- Identify specific conditions and needs of the existing transportation system.
- Identify opportunities to improve the existing transportation system that are not specifically derived from existing conditions and needs.

2.3 DEFINE THE PROJECT CONSTRAINTS

Define things that restrict or constrain what alternatives may be pursued. The constraints and the acceptance criteria (see next section) would help establish screening criteria.

Project constraints include, but are not limited to:
- Cost
- Staffing
- Time/Schedule
- Department Flexibility/Adaptability: Degree to which Department processes or policies may have to change to implement the new project.
- Technology
- Policy constraints
- Customer constraints
- Security constraints
- Legal constraints
- Privacy constraints
- Accessibility constraints
- Engineering constraints
- Environmental constraints
- Right-of-Way constraints
- Other resource constraints

2.4 IDENTIFY ACCEPTANCE CRITERIA

Acceptance criteria consist of measurable criteria and quality criteria for the desired outcome that meets the project goals for the transportation system. For example, bridge condition rating, pavement condition, and operating speed are measurable criteria while security and safety are quality criteria. The acceptance criteria and the constraints (see above section) together form the basis for establishing project objectives.

Quality factors include, but are not limited to:
- Usability
- Reliability
- Safety
- Security
- Efficiency
- Flexibility
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- Maintainability
- Relevance and currency of information
- Response effectiveness
- Aesthetic appeal
- Social Acceptance
- Cost Effectiveness
- Environmental conditions

2.5 ESTABLISH THE PROJECT OBJECTIVES

Based on the information developed under the above sections and following a well thought out PI Plan develop project objectives that are:

- Specific
- Aligned with project goals
- Acceptable
- Measurable

Prioritize the objectives to identify those that are the most critical to the success of the Department, and/or transportation system.
3.0 **EXAMPLE PROJECT OBJECTIVES**

Objectives should be tailored to the specific project in accordance with the guidance provided in this Appendix. Every project is unique and unique project objectives should be developed accordingly. The following examples are for illustration purposes that are intended to be a list from which to pick project objectives.

Note: The use of the front slash (/) in the examples is intended to read as “and/or”. The use of parenthesis around words and characters is intended to be read as “or”.

3.1 **HIGHWAY**

The following example objectives are intended to address possible highway condition goals:

- Improve existing geometric design through the application of appropriate design standards to ensure an acceptable operating speed of ___ and improve average trip time by ___ minutes (%).
  - Possible alternatives:
    - Eliminate existing non-standard features
    - Increase the right shoulder from .6m to 2.4m.
    - Improve the superelevation from 4% to 6%
    - Increase the horizontal curve from 150m to 200m

- Improve traffic flow at an acceptable operating speed of ___ mph and provide efficient / safe operation at Level of Service ____ for major traffic movements.
  - Possible alternatives:
    - Eliminate existing geometric deficiencies
    - Improve sight distance at the intersection from 60 m to 110m
    - Provide actuated traffic signals at three intersections

- Improve capacity and safety to provide efficient operation at LOS ___ / provide acceptable operating speed of ___ mph / reduce accidents by ___ accidents (%) per year / reduce user costs by $___ (%).
  - Possible alternatives:
    - Rebuild the highway section using established minimum design geometric standards.
    - Provide access control and management by reconstructing the curb cuts.
    - Provide right turn lanes at selected intersections.
    - Implement a coordinated signal system.
    - Provide a separate multi-use path.

- Improve highway design features and aesthetic conditions to enhance the view of road, and reduce the noise impact on the surrounding environment to / by ___ decibels.
  - Possible alternatives:
    - Provide landscaped earth berms along the segment of road.
    - Provide noise walls along the highway segment which meet current standards and are acceptable to the adjacent property owners.
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- Improve the highway geometric elements and incorporate appropriate design features to safely accommodate bicycle and pedestrian access / reduce the occurrence of pedestrian and vehicle accidents by ____ accidents (%) per year, and ensure ADA compliance within the project limits.
  o Possible alternatives:
    - Eliminate identified non-standard features through highway reconstruction.
    - Provide a 4.5m shared use lane.

- Improve highway operations and safety conditions using effective access management techniques to maintain a Level of Service of ___ / reduce vehicle conflicts / reduce the accident rate ___% / improve flow of traffic / improve operating speed to ___ mph.
  o Possible alternatives:
    - Implement an integrated freeway and arterial network surveillance and control system.
    - Construct a two way median left turn lane.
    - Restrict left turn movements at various intersections.
    - Restrict curb cuts.
    - Provide ramp metering.

- Develop a properly scaled MP&T plan to safely accommodate traffic movements / safely accommodate pedestrians and bicyclists / maintain adequate local access to business / minimize detour travel time disruption to ____ minutes / minimize delay to mainline traffic to ____ minutes.

3.2 BRIDGE

The following example objectives are intended to address possible goals for a bridge project:

- Eliminate identified deficiencies using treatment strategies which provide the lowest life cycle maintenance costs restoring bridge condition rating to ____, or greater, and extend its service life by ____ years.

- Rehabilitate deficient structural elements to return the bridge to a non-deficient condition and maintain a condition rating of ____ for ____ years.

- Increase maximum life cycle of bridgework by ____%. (Allows for; the public’s demand to “get in, get out, and stay out” and, reduces construction congestion, overall material and resource use.)

- Repair / eliminate identified deficiencies to restore the integrity of the structural elements to ensure the bridge remains serviceable for ____ years.

- Restore the functional condition of the bridge to a rating of ____.
Rehabilitate bridge elements to restore the condition rating to ___. Improve the approach capacity to accommodate future traffic volumes / provide efficient turning movement operation for ETC + ___ design year forecasts.

Restore deck / deck wearing surface to a condition of good repair for ___ years and improve skid resistance to maintain safe operating conditions.

Provide adequate capacity for forecast ETC + ____ design year traffic.

3.3 PAVEMENT

The following example objectives may be appropriate to address project pavement goals:

- Improve / rehabilitate ____ Km of distressed pavement surface from MP____ to MP____ to restore pavement to fair / good / excellent condition and extend its expected service life ____ years.
  - Possible action items:
    - Full depth reconstruction on current alignment.
    - Repave to 3R standards

- Restore / improve ____ Km of pavement from MP____ to MP____ to a surface condition of ___ (measured by a minimum specified IRI – International Roughness or pavement surface score) using an effective pavement treatment strategy that ensures the lowest life cycle cost of maintenance and repair over an expected service life of ____ years.
  - Possible alternatives:
    - Recycle and reconstruct the wearing surface.
    - Stabilize the base and reconstruct the full depth pavement.

- Rehabilitate pavement in areas where the surface condition score is under ___, improving ride quality to smooth / very smooth condition, and restore the pavement to an average surface condition of ___ within the project limits.
  - Possible alternatives:
    - Joint and crack sealing with spall repair and full-depth
    - Segment replacement.
    - Bonded concrete overlay.

- Correct / eliminate identified pavement deficiencies using an effective pavement treatment strategy to prevent further degradation of pavement condition, and maintain a structurally sound pavement over an expected service life of ____ years.
  - Possible alternatives:
    - Sawed and sealed Asphalt concrete overlay.
    - Asphalt concrete overlay preceded by cracking and seating.

- Repair / rehabilitate pavement areas with structural failures to eliminate faulting / breaking / alligator cracking restoring the pavement to good / excellent condition to reduce the incident of vehicle damage claims / reduce motorist complaints and maintain
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a ride quality (measured by a minimum specified IRI – International Roughness or pavement surface score) for ___ years.

- Possible alternatives:
  - Rehabilitate by cold milling with multiple-course overlay.
  - Rehabilitate by cold in-place recycle with multiple-course overlay.
  - Reconstruct with full depth asphalt concrete pavement.

3.4 ENVIRONMENTAL

In many cases, qualitative environmental objectives may appropriately address the Department’s environmental project initiatives. However, in order to adequately assess improvement to the environment, if possible, quantitative measures are preferred. Projects should provide a catalyst to stimulate a wide range of options to mitigate potential environmental impact and otherwise avoid harm to the environment. Also, adequate funding for environmental improvements, within the context of the affected area, must be ensured.

Many individual environmental objectives could be initiated in an effort to achieve the Department goal to improve the environment. The following example objectives may be appropriate to measure the success of a particular project:

- Material Resources - Minimize the use of clean natural materials within the project. Use of recycled products within our projects is preferred to clean natural materials (i.e.; RAP, recycled tires, fly ash, glass, etc.)
  - Possible alternatives:
    - Reduce the amount of clean natural materials within the project to less than ____% new soil used/surface area of construction? (i.e., Cuts and fills for project are balanced to minimize need for clean materials.)
    - Maintain ____% new soil used/surface area of construction.
    - Increase use of recycled products within the project greater than ____% recoverable materials used of total.

- Wetlands - Minimize the functional impacts to viable wetlands by increasing the total effective wetlands by ____ %.

- Invasive Species - Minimize the spread of invasive species by incorporation of proactive measures to minimize spread within the project.
  - Possible alternatives:
    - Eliminate /eradicate invasive species prior to construction.
    - Monitor equipment movement to and from the construction site.
    - Provide quality control of seed mixtures.
    - Provide design features to contain the spread of milfoil (i.e., hose at boat launch)

- Enhance water quality
  - Possible alternatives:
    - Providing storm water detention for ____ year rain storm for all impervious surfaces.
    - Maintaining disturbance to natural ground to less than ____% of total green space.
Preparing an environmental control plan and monitor progress during construction to minimize erosion runoff and contain groundwater and surface water pollutant discharge.

- Enhance preservation of significant historic properties and cultural sites.
  - Possible alternatives:
    - Rehabilitate an historic bridge within Department guidelines.

- Reduce environmental impacts (i.e., air quality / energy usage) and mitigate associated effects. Quantify measures of success via _____% reduction in emissions / _____% reduction in vehicle miles traveled / restrict impacted area to _____% total project area.
  - Possible alternatives:
    - Provide coordinated signal timing.
    - Construct bus pull-offs
    - Provide right turn lane at the intersection

- Improve the visual built environment. Measure success by measuring the surface area of the rehabilitated pavement. Evaluate the landscape development, including the planting and other installed features that contribute to roadside or street ambiance by comparing the finished project with the improvement as measured by the _____ dollar change in property / rental values / _____ increased sales tax revenue, and increased pedestrian activity (pedestrian volume change) and _____ number of business relocations to the improved district.
  - Possible alternatives:
    - Rehabilitate the highway pavement and improve the landscape

- Complete construction in _____ months.

- Implement traffic calming measures where appropriate.

- Develop strategies for travel demand management techniques (i.e., ride sharing incentives, telecommuting, and strategies for encouraging commuter bicycle and pedestrian travel.)
3.5 CORRIDOR OBJECTIVES

The following sections provide guidance on example objectives for Corridor Studies.

3.5.1 Capacity/Mobility

- Improve existing facilities and services balance feasible transportation modes to reduce vehicle hours of delay by ___ hours (%) / reduce person hours of delay by ___ hours (%) / reduce ton hours of delay by ___ hours (%) / reduce the person mile cost by $___ (%) / reduce the ton mile cost of freight by $___ (%) / ____% increase use of alternative transportation modes (such as walking, bicycling, mass transit, etc.)

- Improve the existing infrastructure and system management performance using the most cost effective methods and technologies to maintain a Level of Service of ___ / operating speed of ___ mph / travel time of ___ minutes, and improve safety to reduce accidents by ___ % / accident rate to ___ accidents per year / the accident rate by ___ acc/mvm.

- Improve traffic flow within commuter corridor using cost effective infrastructure improvements and trip demand reduction measures to facilitate traffic operation at an operating speed of ___ / reduce average travel time by ___ hours (%) / reduce person hours of delay by ___ hours (%) / reduce ton hours of delay by ___ hours (%) / reduce the ton mile cost of freight by $___ (%).

- Restore corridor capacity and operational characteristics to Level of Service ___ / sustain the current ___ % rate of economic growth / reduce consumption of fuel by ___ gallons (%) per year / reduce emissions by ___ tons (%) per year / provide safe access for future area development / improve travel time predictability at the posted speed limit for an ETC + ___ forecast period.

- Develop system improvements using the most cost effective methods and techniques to maximize the capacity of the existing facilities for an additional service life of ___ years / minimize the premature investment in new improvements for a ___ year forecast period.

- Develop effective infrastructure measures that improve system mobility (e.g., reduce travel time by ___ minutes or %), improve safety (e.g., reduce accident rate by ___ accidents per year or % per year), sustain economic growth (e.g., support trade and job growth), improve environmental conditions (e.g., reduce air emissions by ___ tons (%) per year), improve system security (e.g., develop threat detection, prevention, preparation, and response policy and standards), minimize impacts, and are acceptable to the community.

- Implement an incident management program to reduce person / vehicle / ton hours of delay by ___ hours (or %), and improve corridor travel time predictability by ___ (minutes) (%) / reduce travel time variability by ___ minutes (%).

- Mitigate capacity and mobility deficiencies through the application of effective infrastructure improvements and feasible trip demand reduction measures (TDM, transit/intermodal, etc.) to reduce person / vehicle / ton hours of delay by ___ hours (%).
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- Develop a properly scaled transportation improvement based on design year traffic forecasts and current design standards to reduce hours of delay for people / vehicles / goods by ___ hours (%) and reduce the person mile / ton mile cost by $___ (%).

- Correct capacity deficiencies to facilitate traffic movement at Level of Service of ___ / reduce average travel time by ___ hours (or minutes) (%) / provide an acceptable operating speed of ___ / reduce travel time variability by ___ minutes (%).

- Improve traffic operations using the most cost effective transportation system management (TSM) measures to provide efficient traffic flow at Level of Service ___ / increase the operating speed by ___ mph (%) / reduce fuel consumption by ___ gallons (%) per year / reduce emissions by ___ tons (%) per year / reduce accidents by ___ % / reduce accidents by ___ accidents per year for major traffic movements.

- Reduce vehicle / person / ton hours of delay by ___ hours (%) per year and improve travel time predictability / variability by ___ minutes per incident due to traffic congestion caused by recurring or non-recurring interruptions through the implementation an incident management program and measures.

- Mitigate peak hour mobility problems and increasing delay with properly scaled infrastructure improvements to provide an acceptable operating speed of ___ mph / reduce average trip times by ___ minutes (%) / Level of Service of ___ for ETC + ___ design hour traffic volumes.

3.5.2 Safety

- Develop project improvements incorporating effective accident reduction measures which improve operational conditions and reduce / eliminate vehicle conflict and reduce accidents by ___ % per year / ___ accidents per year.

- Improve safety conditions to reduce recurring vehicle and pedestrian conflicts at identified locations reducing the pedestrian and vehicle accident rate by ___ % per year / ___ accidents per year.

- Eliminate / improve / correct identified non-standard features at high accident locations using the appropriate design standards to reduce accidents by ___ accidents per year and improve the accident rate to the statewide average.

- Correct / eliminate geometric deficiencies to improve stopping sight distance / reduce run off the road accidents / reduce side swipes and reduce personal injury accidents by ___ % per year / ___ accidents per year / property damage cost by $___ / $___ per year.

- Improve / correct intersection geometric and operational deficiencies to address turning movement conflicts and reduce accident occurrence by ___ % per year / ___ accidents per year.

- Correct geometric deficiencies at high accident location to address accident severity and reduce accident cost by $___ accident / $___ per year.
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- Mitigate the potential for vehicle conflict through the application of the most cost effective access management and operational techniques and improve the accident rate to the statewide average.

3.5.3 **Environmental**

In many cases, impact to the environment can only be determined in the long term. Measurable, quantitative environmental objectives should be developed whenever possible in order to evaluate the overall Department goal of improving the environment on a system wide basis. In order to meet this goal, nearly every project should establish an objective to minimize impact to the environment and meet or exceed the statutory environmental requirements set forth in federal and state law.

Some example environmental objectives which address corridor wide goals are:

- Quality of life - Provide improvements to the aesthetics within the context of the project. Measure success by evaluating customer satisfaction related to “quality of life” principles. For example measure change in property sales and rental values (commercial and residential), / change in commercial/residential occupancy rates, / impact on retail sales (i.e., sales tax receipts), / change in pedestrian activity measured in volume at various times of the day /week. Also, maximize project life cycle to reduce traffic impacts and worker exposure to traffic due to recurring construction and maintenance activities by _____% / reduce overall material and resource use by ____%.

- Develop project alternatives that result in an overall improvement in air quality as measured by _____% reduction in emissions and traffic congestion measured by _____ improvement in Level of Service (LOS) / _____ hours (%) reduced delay.

- Reduce energy usage by ____% and increasing the ratio of person miles traveled to vehicle miles traveled to ____.
  - Possible alternatives:
    - Encourage mass transit ridership by offering incentives.
    - Build sidewalks / multiuse path along an urban arterial.
    - Provide a High Occupancy Vehicle (HOV) lane.

3.5.4 **Economic**

- Develop project improvements which reduce travel costs. Measure results in terms of _____$ cost savings per passenger mile / _____$ cost savings per freight mile (tons).

- Provide infrastructure improvements which improve the efficiency of operation. Measure success by evaluating the increase modal interconnectivity in terms of volume of customers served (i.e., Park and ride – parking lot utilization, transit utilization, bicycle usage)

- Improve the urban streetscape to include better sidewalks, bike path and improved drainage and wearing surface. Measure success by the change in commercial and residential real estate values, increase in number of jobs and increase in pedestrian volumes.