

**ATTACHMENT 2 - Appendix IV: Local Partnership Competitive Program Project Nomination – (Section G – Project Information Areas) – Instructions and References**

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**A. Climate Change Resilience and Adaptation**

Climate change resilience refers to the capacity of any entity, such as a transportation agency, to prepare for weather-related disruptions, to recover from shocks and stressors, and to adapt and grow from a disruptive experience. Climate change impacts – including increased wildfires, droughts, landslides, rising sea levels, floods, severe storms, heat waves, and impacts to wildlife – are occurring and will only become more frequent and severe. Climate change poses many threats to our communities' health, well-being, environment, and property, and to the resilience of the State's transportation system upon which we all rely.

Climate resilience and adaptation are often discussed together; however, adaptation is typically an action or set of actions, while resilience describes the desired outcome. Resilience is achieved through a series of adaptation steps that aim to make adjustments in natural or human systems in response to actual or expected impacts from climate change and extreme weather events.

Incorporating adaptation elements into transportation projects will enhance the resiliency of California's transportation system to protect the infrastructure itself as well as Californians from climate impacts. Preparing for the impacts of climate-related disasters will also support preparedness for other potential disasters, such as earthquakes. These measures are critical to ensure the safety of Californians, the health of the State's economy, and they will extend the lifespan of our infrastructure.

**Project Benefits: Climate Resilience and Adaptation**

To communicate a project's benefits related to advancing climate change resilience, an applicant should identify both the climate change impact(s) that are occurring or anticipated, and the adaptive strategies. Identifying which climate change impacts will be felt, as well as the level of risk they pose, to a transportation asset is a key step in identifying the appropriate adaptation strategies.

Climate change impacts include:

- Changes in temperature, including more frequent and severe extreme heat events
- Changes in precipitation, including extreme rainfall and drought
- Wildfire
- Sea level rise and storm surge

Secondary climate change impacts include, but are not limited to the following:

- Flooding
- Severe Storms
- Landslides
- Cliff retreat

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It is recommended that the applicant evaluate multiple adaptation strategies during the development of the project and provide sufficient evidence for choosing certain strategies over others.

Examples of climate change adaptation strategies:

- Including roadway warning systems for extreme weather events.
- Realigning or relocating transportation infrastructure that is impacted by sea level rise.
- Incorporating nature-based solutions, such as wetlands restoration, along transportation corridors to protect infrastructure from flooding and storm impacts.
- Including transit shelters with shade, water, or other means of cooling in locations expected to see temperature increases.
- Replacing wooden infrastructure with fire-resistant infrastructure in areas vulnerable to wildfire.
- Including energy storage solutions to both safeguard against loss of power and to support electric vehicles in case of climate-related grid disruptions (which can include public power safety shut-offs (PSPS)).
- Including a wildlife crossing element for species that are intended to shift migratory patterns due to climate change.
- Incorporating ‘Complete Street’ elements, such as street trees, to provide cooling and shade for pedestrians and bicyclists in locations expected to see temperature increases.
- Providing evacuation planning and infrastructure to deploy expanded throughput or transportation options and temporary increases in person throughput (such as through reversible lanes) in corridors that have been identified to support emergency evacuation.

### **Resources**

The resources below are included to assist applicants with measuring and communicating the potential climate change impacts to projects and adaptive strategies that can be pursued. These resources are not intended to be an exhaustive list, and applicants are encouraged to also refer to local resources (climate action plans or climate adaptation plans for instance) and expert testimony.

#### **State Resources to Identify Climate Change Impacts:**

These resources were created by the State to both identify climate impacts in California as well as provide guidance on adaptation and resilience planning.

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- Cal-Adapt: Cal-Adapt provides State-endorsed climate change projections for the primary climate impacts listed above through various tools and datasets, providing climate information specific to California. <http://cal-adapt.org/>
- California Heat Assessment Tool: This tool allows applicants to understand and identify how extreme heat from climate change will impact specific communities across the state. It is available here: <https://www.cal-heat.org/explore>.
- California Ocean Protection Council's Sea Level Rise Policy Guidance: For sea level rise specifically, applicants should consult the OPC's sea level rise guidance for additional information on evaluating and planning for sea level rise risk that is not captured on Cal-Adapt. [https://opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20180314/Item3\\_Exhibit-A OPC SLR Guidance-rd3.pdf](https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A OPC SLR Guidance-rd3.pdf)
- Caltrans Vulnerability Assessments: To ensure the resiliency of the State Highway System, Caltrans conducted vulnerability assessments statewide to identify vulnerable segments to climate change and extreme weather events. These reports can be used to see vulnerability of the State Highway System to various climate impacts in Caltrans Districts. <https://dot.ca.gov/programs/transportation-planning/2019-climate-change-vulnerability-assessments>
- Fire Hazard Severity Zones Map: While most of California is subject to some degree of fire hazard, there are specific features that make some areas more hazardous. This mapping utility may help applicants identify areas based on the severity of fire hazard that is expected to prevail there, considering factors such as fuel, slope, and fire weather. The map is intended to be used for implementing wildland-urban interface building standards for new construction and property development standards such as road widths. This resource is available here: <https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/>
- State Guidance on Resilience Planning: The Adaptation Planning Guide: This resource, which is accessible in an interactive format as well as for download on the State's Adaptation Clearinghouse, was created by the State in 2020 to provide guidance to local governments on local adaptation and resilience planning. It contains a step-by-step process that communities can use to plan for climate change (including identifying climate impacts), and it was designed to be flexible and responsive to community needs. It also contains a summary of statewide guidance, resources, and tools, as well as best practices, best available science, and the latest updates to state plans, policies, programs and regulations. Importantly, equity and community engagement considerations are integrated throughout all planning phases. <https://resilientca.org/apg/>

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- Strategic Fire Plan for California: CalFire’s Plan provides objectives to achieve a vision for infrastructure that are more fire resistant and a natural environment that is more fire resilient. Applicants may review Unit Strategic Fire Plans to explore county-specific fire management strategies and tactics that should be considered when designing projects. This resource can be found here:  
<https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/fire-plan/>
- Defining Vulnerable Communities in the Context of Climate Adaptation: This resource guide includes information on publicly available tools and resources that may be used to define vulnerable communities in an adaptation context. While definition of “vulnerable communities” provides clarity on the underlying factors of community vulnerability, and how these are exacerbated by climate impacts, a definition alone may not provide the level of detail needed to take actionable steps within the context of climate adaptation plans and implementation actions. The California Governor’s Office of Planning and Research, with input from the Integrated Climate Adaptation and Resiliency Program (ICARP) Technical Advisory Council, developed this resource guide as a starting point for practitioners to use when first considering how to define vulnerable communities in an adaptation context. [https://opr.ca.gov/docs/20200720-Vulnerable\\_Communities.pdf](https://opr.ca.gov/docs/20200720-Vulnerable_Communities.pdf)
- California’s Fourth Climate Assessment: California’s Climate Change Assessments contribute to the scientific foundation for understanding climate-related vulnerability and informing resilience actions. There were some studies performed on transportation in the Fourth Climate Change Assessment, which can be found under “Technical Reports”. The Statewide Summary Report also offers a statewide view of climate impacts to various sectors.  
<http://www.climateassessment.ca.gov/>

### Identifying Adaptation Strategies

- Caltrans Adaptation Strategy Report: This report was released in 2020 to provide information and recommendations to Caltrans on integrating adaptation into project planning and implementation. Appendix A, which starts on page 100, provides detailed information on the representative types of projects that Caltrans will likely be implementing more regularly in the future due to climate change and associated changing weather patterns. This information may also be useful for applicants in considering various adaptation strategies to climate impacts.

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- California Adaptation Clearinghouse: The Adaptation Clearinghouse is the State of California’s consolidated searchable database of resources for local, regional, and statewide climate adaptation planning and decision-making. These resources include examples of adaptation strategies for transportation projects. Also as mentioned above, the Adaptation Planning Guide, housed on the site, can offer guidance on adaptation strategies as well. <https://resilientca.org/>
- Sacramento Area Council of Governments (SACOG) Project-Level Adaptation Strategies Guidance Document: This report provides guidance for transportation practitioners for addressing climate change risk at the project-level in the Sacramento Region, but practitioners working in other regions may also find it useful. [https://www.sacog.org/sites/main/files/sacog\\_project-level\\_climate\\_adaptation\\_strategies\\_for\\_transportation\\_guidance\\_report.pdf](https://www.sacog.org/sites/main/files/sacog_project-level_climate_adaptation_strategies_for_transportation_guidance_report.pdf)
- California Coastal Commission Sea Level Rise Policy Guidance: This guide provides an overview of the science on sea level rise for California as well as adaptation strategies. [https://documents.coastal.ca.gov/assets/slr/guidance/2018/7\\_Ch7\\_2018Adopted\\_SLRGuidanceUpdate.pdf](https://documents.coastal.ca.gov/assets/slr/guidance/2018/7_Ch7_2018Adopted_SLRGuidanceUpdate.pdf)

### B. Protection of Natural and Working Lands and Enhancement of the Built Environment

Natural and working lands have the potential to sequester carbon, reduce greenhouse gas emissions, and increase the capacity for California to withstand climate impacts.<sup>1</sup> In addition, projects can increase carbon sequestration in the natural and built environments through natural and green infrastructure. [Executive Order B-30-15](#) directs state entities to give priority to natural and green infrastructure in its plans and investments.

This project information area looks at whether the project employs land conservation measures and integrates natural or green infrastructure.

#### Employ Land Conservation Measures

Projects should aim to protect natural and working lands from conversion to more intensified uses and enhance biodiversity by supporting local and regional conservation planning that focuses development where it already exists and aligns with conservation priorities to reduce transportation’s impact on the natural environment. Examples of land conservation measures include:

- Prioritizing large habitat preservation, particularly in any environmentally sensitive areas, and locating construction along existing transportation corridors.
- Avoiding habitat/population fragmentation and invasive species expansion.

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<sup>1</sup> CalEPA, et. al., January 2019 Draft California 2030 Natural and Working Lands Climate Change Implementation Plan, April 2019 , available at: <https://ww2.arb.ca.gov/resources/documents/nwl-implementation-draft>.

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- Design and incorporate wildlife crossing/passage structures to allow movement of plants and animals between different habitats.
- Design structures that reduce stressors (e.g., erosion and sedimentation) impacting water bodies.
- Implement species and habitat mitigation measures, such as restoration activities or establishing permanent conservation easements.

### **Natural or Green Infrastructure Solutions**

Projects should evaluate whether natural or green infrastructure solutions are available to integrate into design. These are natural/ecological processes and features that are engineered to supplement traditional built infrastructure, which can provide benefits such as water catchment, infiltration, and surface cooling. Examples of this hybrid use of natural infrastructure include:

- Planting trees along streets and walkways, and
- Creating urban greenspaces, such as public parks or gardens.

### **Resources**

The resources below are included to assist applicants with considering strategies that can be pursued to protect natural and working lands. These resources were created to both identify impacts on natural and working lands in California as well as provide guidance on conservation, restoration, and management activities. These resources are not intended to be an exhaustive list, and applicants are encouraged to also refer to local resources.

- **Areas of Conservation Emphasis:** The Areas of Conservation Emphasis is an effort from the California Department of Fish and Wildlife to gather spatial data on wildlife, vegetation, and habitats from across the state, and then synthesize this information into thematic maps to determine locations to prioritize biodiversity conservation, habitat connectivity, and climate change resiliency. The maps may help applicants to obtain a coarse level view of information for conservation planning purposes. Resource available here: <https://wildlife.ca.gov/Data/Analysis/Ace>
- **California 2030 Natural and Working Lands Climate Change Implementation Plan:** The natural and working lands implementation plan aims to coordinate all natural and working lands programs under a united approach that will move the State towards the combined goal of maintaining a resilient carbon sink and improved air and water quality, water quantity, wildlife habitat, recreation, and other benefits. Applicants may use this resource to explore mitigation strategies when siting projects in or near existing natural and working lands. Resource available here: <https://ww2.arb.ca.gov/our-work/programs/natural-and-working-lands>

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- California Biodiversity Collaborative: Established by Executive Order N-82-20, the collaborative brings together state agencies, other governmental partners, California Native American tribes, experts, business and community leaders and other stakeholders from across California to protect and restore the State's biodiversity. Applicants may engage with the collaborative during the planning process to help advise on potential project impacts and mitigation strategies. Resource available here: <http://biodiversity.ca.gov/>
- Natural Community Conservation Plans: Working with landowners, environmental organizations, and other interested parties, a local agency oversees the numerous activities that compose the development of a Natural Community Conservation Plan. The plans help applicants identify strategies that support the regional protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. Resource available here: <https://wildlife.ca.gov/Conservation/Planning/NCCP/Plans>
- State Wildlife Action Plan 2015 Transportation Companion Plan: The California State Wildlife Action Plan 2015 Update provides a vision and a framework to sustainably manage ecosystems across the state in balance with human uses of natural resources. The transportation companion plan provides guidance on methods to incorporate natural and wildlife resource conservation in transportation project planning and can help applicants identify adaptation strategies. Resource available here: <https://wildlife.ca.gov/SWAP/Final/Companion-Plans>
- TerraCount: This tool models the greenhouse gas and natural resource implications of different development patterns and management activities. TerraCount can allow applicants to evaluate the application of management activities including restoration activities, such as riparian restoration, and avoided conversion, such as avoided conversion of agricultural land to development. Resource available here: <https://maps.conservation.ca.gov/terraaccount/>