
Tree Risk Management in an Urban Forestry Context

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Cities have a long history of managing a diverse range of complex risks. Concepts, historically used to manage risks in the built environment can also be applied to public-owned trees, but rarely are. This absence of system-level risk guidance within urban forestry management often results in poor choices at the policy and operational levels. Additionally, in the rare instance of tree-related litigation, the lack of system-level policies results in a narrative that often misrepresents the municipality's forestry program. The uncertainty associated with public-owned trees is significant and complex. Fortunately, several instruments exist that enable California communities to define context-driven, reasonable tree risk management strategies. These same instruments provide metrics to monitor progress.

Tree Risk Assessments versus Tree Risk Management

Historically, within urban forestry and arboricultural, the technical aspects of tree risk assessments have been the primary focus of research and training with little consideration for discussions on system-level management. A review of tree-related cases demonstrates the clear need for comprehensive guidance on system-level tree risk management. In litigation, the typical focus is on the risk assessment of the subject tree, often ignoring the larger and important context of the decisions required at the system level. Compounding this issue is that most individuals that serve as expert witnesses may be a qualified tree risk assessors, but may lack the credentials to provide risk management opinions.

A documented tree risk analysis and management strategy decreases a municipalities risk exposure in several areas. First, the city defines their risk exposure and identifies the strategy to address the issues unique to their community with the resources they have available. This allows the city to define their policies and minimize external interpretations that may

misrepresent the city’s program. Second, a thoughtful strategy allows for uniform understanding and consistent implementation across all staffing levels. This benefit allows more efficacious use of limited resources and encourages responses that are appropriate for the situation.

Tree Risk Management Guidance

Developing comprehensive tree risk management strategies at a system level has been slow to develop in the United States. As mentioned, the risk associated with trees is complex. Trees are biological structures that grow, change and evolve. External factors, such as fluctuating dynamic loads and variable target presence, further complicate the risk assessment process. Several tools are available that assist managers in placing a tree that has been assigned with a subjective risk rating within a system-level framework. One tool that provides a simple framework on this topic is As Low as Reasonably Practical, or ALARP.

To risk managers, ALARP is more than likely a known entity. Within urban forestry, it is little known, but provides a simple framework that serves numerous purposes. ALARP has its origins in the early 1970’s in the United Kingdom with the Federal Health and Safety Executive (HSE) and should serve as an important tool for California communities to devise a reasonable and proactive tree risk management program. Additionally, the framework provides an instrument for articulating their program in the rare instance of tree-related litigation.

The ALARP Tolerability of Risk Framework shown in **Image 1**, with its attention to trees, is a modified version of the traditional ALARP framework. It provides the underpinnings for a proactive and defensible tree risk management program. The graphic assigns a relationship between tolerance levels and the level of tree risk identified. At the top of the triangle, risk is deemed intolerable and actions should be taken to address them. In contrast, at the bottom of the triangle, risk is so low it is considered broadly acceptable. The area between the two extremes is the tolerable region in which risks are tolerated in exchange for the benefits that are derived.

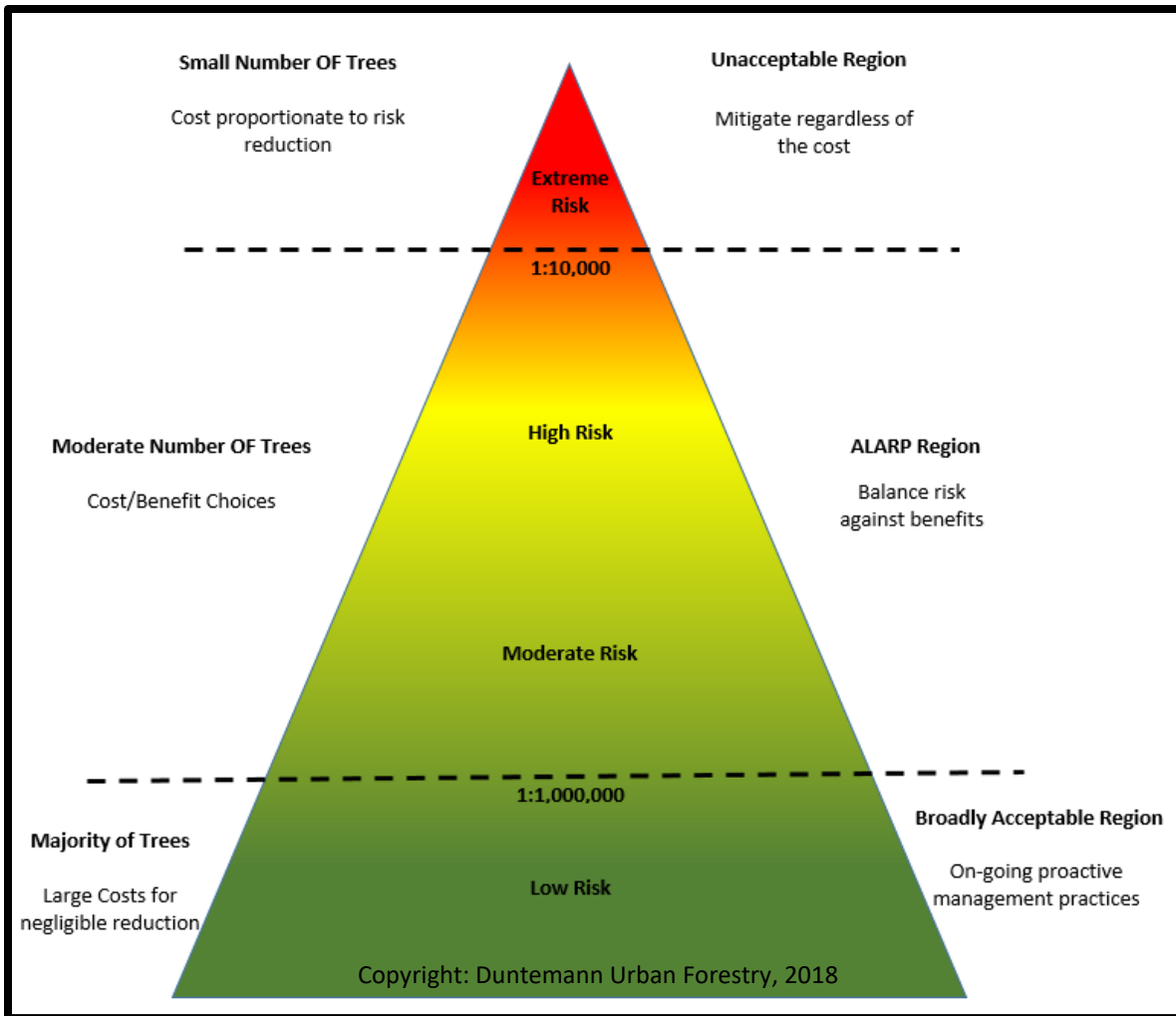


Image 1 – ALARP Tolerability of Risk Framework

The Framework, and ALARP in general, reinforces several important concepts specific to managing public trees at a system level:

- 1) If communities wish to experience the range of benefits that public-owned trees provide in parks and street landscapes, some level of risk will always be present.
- 2) Trees that are identified as extreme risk are most likely to have a tree part fail within a specified time frame, strike a target, and cause severe harm or damage. The greatest reduction in observable risk occurs when resources are expended on identifying these trees and mitigating the issue in a timely fashion. Very few trees in the population have a risk rating of extreme.

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- 3) Trees that are identified as low risk have a low likelihood of a tree part failing within a specified time frame, striking a target, and causing severe harm or damage. Most trees in the population have a risk rating of low. These trees are managed by implementing reasonable urban forestry practices over time.
 - 4) Zero risk is impossible to achieve and a large allocation of resources (i.e. funding, staffing, etc.) to address a perceived risk in the low risk category often results in no quantifiable reduction in risk and/or may be grossly disproportionate to the actual risk.
 - 5) Tree risk is mostly managed over time. ALARP is achieved by weighing the risk against the benefits and costs of managing.

For California communities, the importance of the Framework cannot be overstated. The first implication is that to gain control over the tree-risk dialogue, a community must analyze their tree resource, claims history, target potentials, budget, staffing and community objectives to place their resource in this risk context.

Management and operational approaches to managing the whole system of trees will vary depending on the risk rating assigned. Identifying trees in the extreme category is informed by inspection intervals, staff competency and mitigation response policies. Managing trees for risk in the low categories is informed by appropriate inspection intervals, cyclic maintenance and staff competency. Trees in moderate to high risk are managed by policies specific to the municipality where risk and benefits are considered. An important element of the Framework is that while an individual tree may be assessed and placed somewhere within the framework, mitigation responses at the system level are policy decisions. Finally, there is no singular approach to managing tree risk. Policies will vary between municipalities based on the issues identified, resources available and community context.

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