CITY OF REDMOND

FIRE FUNCTIONAL PLAN

The Redmond Fire Department Functional Plan serves as a strategic roadmap to ensure our mission of compassionately, proactively, and professionally protecting life, property, and the environment. Rooted in our core values of integrity, inclusion, and teamwork, this plan reflects our commitment to exceeding the expectations of the communities we serve. By aligning with Growth Management Act requirements and Redmond's vision for the future, the plan advances our preparedness, response, recovery, and prevention efforts, ensuring resilient, sustainable, and equitable fire services through 2050.

Redmond Fire Department Functional Plan 2025–2050

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The City of Redmond would like to acknowledge and thank the community members who participated in the strategic planning surveys, questionnaires, focus groups, and community meetings. Your feedback was instrumental in the development of this plan.

Message from the Mayor and Chief

Dear Redmond Community,

We are proud to present our new Fire Department Functional Plan. This strategic blueprint is our shared commitment to protecting our vibrant community – your lives, homes, businesses, and cherished natural environment – today and in the future.

As Redmond grows, we embrace new opportunities while navigating complexities like population increases, climate risks, and evolving emergency response technology. This plan is the result of a comprehensive, data-driven review of our Fire Department's capabilities. It is designed to integrate seamlessly with Redmond 2050, the City's comprehensive plan update, and positions us to become national leaders in equitable and sustainable emergency response.

We are modernizing our foundation by assessing station locations, upgrading aging infrastructure, and integrating sustainable design, including renewable energy upgrades. Also, planned investments in cutting-edge tools and advanced life-support equipment ensure our firefighters can protect the safety of all community members.

This plan is truly a citywide effort. It was shaped by the invaluable insights of our firefighters, City of Redmond leadership, residents, and regional partners.

Your perspectives were essential in creating this ambitious, fiscally responsible plan that will help empower informed decisions on facility renovations, new construction, and resource allocation – all of which will maximize safety outcomes.

The 2025-2050 Fire Functional Plan is more than a document: it is our commitment to your safety, exceptional service, and constant adaptability. Together, we will ensure Redmond remains a safe, vibrant home for generations to come.

In partnership,

Adrian Sheppard
Fire Chief
Redmond Fire Department

Angela Birney
Mayor
City of Redmond

Executive Summary

The Redmond Fire Department Functional Plan provides a forward-looking, policy-aligned framework to guide fire and emergency services investments through 2050. Anchored in Redmond's commitment to community resilience, equity, and operational excellence, the plan ensures fire system infrastructure evolves in step with the city's growth, development patterns, and service expectations.

Redmond's fire system has matured alongside the City, adapting to growth through thoughtful management and steady investment. However, as Redmond moves into its next phase of urban development - with denser neighborhoods, vertical growth centers, and emerging risks - existing facilities, apparatus, and deployment models must be modernized to maintain reliable service levels.

Through a comprehensive assessment using both state-required Facility Condition Index (FCI) scores and Redmond's Fire Station Effectiveness Grading System, the plan identifies where system upgrades are needed to support seismic resilience, workforce wellness, energy efficiency, and operational capacity. These findings represent a natural next step in the city's long-range capital evolution.

Key capital priorities identified in the plan include completing Fire Station 17, modernizing Station 11, establishing a centralized logistics and support facility, and relocating Fire Station 12 into city limits. The plan also highlights the opportunity to expand community resilience functions, such as supply staging and public access features, within fire station modernization projects, aligning with regional best practices.

This is Redmond's first fire capital plan fully integrated with Washington State Growth Management Act impact fee eligibility, positioning the City to recover a portion of development costs. A diversified fiscal strategy combining impact fees, levies, grants, EMS revenues, and public-private partnerships ensures investments can move forward responsibly.

The Functional Plan is designed as an adaptive, living document that is flexible enough to respond to emerging risks, funding shifts, and evolving community needs. It emphasizes cross-departmental collaboration, fiscal stewardship, and equity-driven service delivery. By aligning with Redmond 2050 and the city's Capital Investment Strategy, the plan supports Redmond's continued leadership as a safe, resilient, and future-ready community.


FIRE DEPARTMENT
REDMOND

01 Introduction

The Redmond Fire Department Functional Plan serves as a strategic blueprint to ensure that fire protection, emergency medical services, and specialized rescue capabilities evolve in step with the city's growth, infrastructure investments, and community priorities. More than just a facilities plan, this document is a policy-aligned tool that guides long-term decisions about capital investments, fleet modernization, staffing readiness, and service equity across both Redmond and its contracted service areas.

This plan is one component of a broader ecosystem of city planning. It works in concert with Redmond's Capital Facilities Program (CFP), the Redmond 2050 Comprehensive Plan, and the Capital Investment Strategy (CIS), aligning financial tools with public safety outcomes. Together, these efforts form the city's infrastructure and emergency readiness foundation, designed not only to accommodate projected growth but to ensure that Redmond remains resilient, equitable, and responsive in the face of both anticipated and emerging risks.

While later chapters focus on technical details such as infrastructure conditions, financing strategies, and implementation timelines, this chapter introduces the purpose and planning approach behind the Fire Functional Plan. It clarifies how the plan fits within Redmond's policy framework and public engagement strategy, and sets the stage for deeper analysis to come.

1.1 Capital Planning and Functional Plans

Effectively planning for major public safety infrastructure requires more than just reacting to immediate needs. It requires discipline, foresight, and a planning process that integrates policy goals, growth forecasts, and community expectations. The City of Redmond meets this challenge through its use of functional plans, which guide infrastructure development in critical service areas such as fire, transportation, parks, and utilities.

Functional plans translate citywide goals into actionable strategies for capital investment. They evaluate long-term needs, establish service standards, and identify funding priorities that align with the city's General Government Facilities Plan (GGFP) and Comprehensive Plan. Each functional plan supports both the Capital Investment Strategy (CIS) - which sets prioritization criteria - and Redmond's long-range financial planning, ensuring projects are feasible and sustainable over time.

The Fire Functional Plan builds on this framework by focusing specifically on the facilities, apparatus, and operational infrastructure needed to deliver modern, responsive, and equitable fire services through 2050. It evaluates capital needs based on service benchmarks, identifies gaps created by growth or aging infrastructure, and offers phased investment strategies to close those gaps.

While financial strategy is addressed in later chapters, this plan is rooted in the understanding that capital planning is not a technical exercise. It is a policy choice. How the City chooses to invest in its fire services reflects community values, resilience goals, and the shared responsibility to provide timely, inclusive emergency response.

1.2 Integration with Citywide Planning

The Fire Functional Plan is not a standalone document. The plan operates within an interdependent system of citywide plans and investment strategies. Together, these frameworks guide how Redmond grows, how it prioritizes resources, and how it delivers critical services like fire and emergency response.

At the highest level, the **Redmond 2050 Comprehensive Plan** sets the long-term vision for land use, housing, transportation, and public infrastructure. It outlines where and how the city is expected to grow and sets the policy direction that functional plans must support. For fire services, this means ensuring that fire station locations, apparatus capabilities, and service models are aligned with projected development patterns and population shifts.

The Capital Investment Strategy (CIS) serves as Redmond's consolidated Capital Facilities Plan (CFP), capturing capital needs from all functional areas, including fire facilities, into one coordinated framework. It identifies the types of projects, such as station upgrades and logistics facility expansions, that will be needed over the near-, mid-, and long-term to support community growth and resilience. The CIS informs but is distinct from the Capital Improvement Program (CIP), which functions as the City's six-year budgeting tool.

The Capital Investment Strategy (CIS) organizes projects into near-, mid-, and long-term timeframes using a shared set of criteria across departments - including equity, sustainability, financial readiness, and alignment with growth areas. While the CIS does not produce a detailed, ranked priority list, it ensures that Redmond Fire Department investments are considered within a broader, coordinated strategy that maximizes public value. The Capital Improvement Program (CIP) draws from the CIS—particularly near-term projects—and applies a more detailed prioritization process to determine which projects move forward within the six-year budget.

This functional plan also incorporates insights from related strategic and operational efforts across the City, such as transportation planning, sustainability initiatives, and facilities modernization. While Chapter 2 offers a deeper look at these relationships and the policies that govern them, this chapter frames the importance of cross-departmental alignment as a prerequisite for achieving a high-functioning, future-ready emergency system.

1.3 Equity, Sustainability, and Resilience Commitments

The Fire Functional Plan reflects Redmond's commitment to future-ready infrastructure, designed to serve not only today's community but also the one we're becoming. It centers on a vision of public safety that is inclusive, environmentally responsible, fiscally sound, and fundamentally resilient.

Redmond understands that resilience is not just about surviving crises—it's about building systems that can withstand disruption, adapt to change, and continue serving the people who depend on them. That kind of resilience requires us to embed equity, sustainability, and economic responsibility into every facility we construct, every apparatus we purchase, and every capital decision we make.

Inclusive Facility Design

Fire stations must serve a modern and diverse workforce. This plan prioritizes facility updates that include gender-neutral restrooms, private locker rooms, and ergonomic workspaces that meet the needs of all body types and abilities. Apparatus and equipment purchases also prioritize usability and safety across a wide range of physical profiles.

Community Service Equity

A resilient city serves all its neighborhoods consistently and equitably. This plan evaluates response time disparities, access to services, and geographic coverage to ensure that capital investments close service gaps and reach historically underserved communities.

Sustainable Infrastructure

Environmental sustainability is a resilience strategy. Upgraded facilities will incorporate high-efficiency systems, green building practices, and the gradual transition away from fossil fuels. Planning for electric fire apparatus and clean energy infrastructure helps ensure operational continuity in the face of environmental and supply chain shocks.

Redmond's approach to capital planning is people-focused, climate-aware, and economically grounded. These principles are not just best practices; they are the foundation for building a resilient community that can endure, evolve, and thrive in a rapidly changing world.

1.4 Public Outreach and Engagement

Effective public engagement is not just about visibility – it's about trust, accountability, and designing services that reflect the realities of the community. The Fire Functional Plan is shaped by years of strategic input from residents, local businesses, partner agencies, and fire personnel. This collective wisdom serves as the foundation for a capital planning approach that is responsive, inclusive, and future-focused.

Community-Driven Planning

In July 2021, the Redmond Fire Department initiated a comprehensive strategic planning process to understand community expectations and operational challenges. That outreach effort included:

- Facilitated stakeholder sessions with residents, business leaders, and regional partners such as King County Fire District 34 (KCFD34).
- Internal engagement with firefighters, command officers, and administrative staff.
- A full SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) to assess effectiveness and growth-readiness.

This effort directly informed the department's Strategic Goals and Standards of Cover, which define the operational benchmarks and deployment strategies underpinning this Fire Functional Plan.

Key Themes Identified by the Community:

1. Improving emergency response through modernized stations, better equipment, and data-informed deployment.

2. Addressing service demand increases driven by population growth, vertical development, and new risk areas like rail corridors and high-tech manufacturing.
3. Communicating fire's value through stronger engagement around public safety programs, risk reduction, and preparedness.

Integration with Citywide Planning and Public Input

Though the Fire Department did not conduct standalone open houses specifically for this functional plan, it regularly engages the public through broader city-led outreach effort, and plays an active role in interdepartmental planning initiatives. Key channels include:

- City open houses and forums, led by Planning and Public Works, address land use, mobility, and infrastructure – all of which impact fire response
- Public safety engagement events, such as Fire Prevention Week, the annual Safety Fair, and CPR/disaster preparedness training
- Citywide surveys and Strategic Plan input, particularly the 2023 revision of the Community Strategic Plan, which reaffirms public safety as a core city priority focused on equity, compassion, and responsiveness

Fire's Role in Planning and Regional Partnerships

As one of many departments supporting Redmond's safety and infrastructure systems, the Fire Department works collaboratively to ensure its operational needs are aligned with citywide planning priorities and community goals. Rather than operating in isolation, Fire serves as a contributing partner within the city's broader planning ecosystem, helping ensure that emergency response considerations are integrated alongside other key functions:

- **Planning and Development:** Fire partners with Planning, Economic Development, and Public Works to align infrastructure decisions with emergency response capacity.
- **Emergency Preparedness Programs:** The department contributes to business continuity planning and regional resilience strategies.
- **KCFD34 and Sound Transit:** Capital planning includes coordination with transit agencies, regional fire districts, and infrastructure partners to prepare for emerging risks tied to growth and system complexity.
- **OneRedmond and Business Outreach:** Regular engagement with developers and employers through venues like the OneRedmond Government Affairs Committee provides insights into how emergency services support economic development and growth.

Public Education as a Pillar of Engagement

Community-based fire education is a cornerstone of Redmond Fire's outreach mission. Key programs include:

- The Safety Fair – A high-impact event with hands-on safety demonstrations and preparedness resources.

- Fire Prevention Week – A citywide outreach campaign with school and business involvement.
- Life Safety Training Programs – A series of programs that includes CPR training, home fire safety inspections, and disaster preparedness workshops.

These efforts not only raise awareness but build a culture of resilience – an essential complement to physical infrastructure investments.

Ongoing Commitment

Public engagement is not episodic – it's continuous. As the City evolves, the Fire Department will:

- Expand its outreach toolkit to include new platforms and audiences
- Stay actively involved in city planning forums and strategic initiatives
- Continue using community feedback to guide decisions about station siting, fleet purchases, and resilience investments

By embedding the public's voice into the planning process, the Fire Functional Plan ensures that capital investments remain aligned with the people they're designed to serve.

1.5 Plan Structure Overview

This Fire Functional Plan is organized to guide the reader from context to action. Each chapter builds on the last, starting with foundational policies and ending with practical implementation tools. The structure reflects a deliberate flow: from understanding Redmond's fire service needs to making informed, strategic investment decisions that ensure resilience, equity, and operational effectiveness through 2050.

Chapter 2: Regulatory and Planning Framework
Outlines the laws, codes, and city policies that govern fire capital planning. Includes Growth Management Act mandates, building and safety standards (IBC, CBPS), NFPA and CPSE best practices, and city-adopted frameworks for equity, sustainability, and resilience. Also includes a summary matrix that crosswalks this plan with related studies and planning documents.

Chapter 3: Current System Overview
Provides a snapshot of the Redmond Fire Department's existing system, including station locations, staffing levels, deployment model, apparatus, and capital equipment. Includes high-level facility condition grades, but reserves deeper diagnostic analysis for Chapter 5.

Chapter 4 – Level of Service and Growth Impacts
Evaluates current performance against response benchmarks and documents where system strain is already emerging. Uses data on turnout times, call volume, and unit availability to show that existing facilities and staffing are nearing capacity. Highlights emerging pressure points like Stations 11, 12, and 17 and introduces the concept of "early facility strain," setting the stage for more detailed diagnostics in Chapter 5.

Chapter 5 – System Needs Assessment
Serves as the diagnostic core of the plan. It builds a comprehensive picture of facility, deployment, and workforce needs across eight performance domains. It identifies specific capital and

operational gaps, including seismic and energy code upgrades, internal layout challenges, and fleet capacity. The chapter also elevates overlooked but critical infrastructure needs, such as logistics, warehousing, administrative support, and potential community resilience hub functions, to strengthen citywide readiness. It culminates in a system-wide gap summary and bridges to the investment strategy outlined in Chapter 6.

Chapter 6 – Capital Investment Recommendations
Presents a phased roadmap of capital projects aligned with Redmond's service needs and growth projections. Projects are grouped into five time horizons:

- 2025–2030 (current CIP)
- 2027–2032
- 2033–2040
- 2041–2050
- Beyond 2050

Each project is tied directly to needs identified in Chapter 5, categorized by type (e.g., stations, fleet, specialty systems), and prioritized based on facility condition, service coverage, growth impacts, and alignment with citywide planning goals.

Chapter 7 – Fiscal Strategy and Funding Tools
Outlines the financial framework supporting implementation. Connects investment priorities to Redmond's available financing tools, including impact fees, grants, bonds, levies, apparatus funds, and public-private partnerships. Introduces a fiscal strategy for the 2027–2032 planning horizon and offers recommendations for maintaining long-term fiscal sustainability while ensuring service continuity.

Chapter 8 – Implementation and Monitoring
Provides the delivery plan. Introduces an adaptive phasing framework (Near-Term, Mid-Term, Long-Term) to organize capital deployment by readiness and urgency rather than fixed calendar years. Defines governance roles, emphasizes Fire leadership's participation in citywide CIP decision-making bodies, and introduces a model for ongoing performance monitoring. The plan is structured to remain flexible as conditions and priorities evolve.


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02 Regulatory and Planning Framework

Redmond's fire infrastructure must meet not only the operational needs of the community but also the legal, policy, and design standards that govern public capital projects. This chapter defines the regulatory environment that shapes facility investments, fire station design, and eligibility for funding tools such as impact fees.

Fire infrastructure planning does not occur in isolation. It is governed by state statutes, national safety standards, regional resilience targets, and adopted city policies, including Redmond 2050. Together, these frameworks establish both the minimum requirements and the strategic expectations that the Fire Functional Plan must meet. These mandates ensure that Redmond's fire facilities are not just code-compliant but also climate-resilient, equitable, and financially sound.

This chapter summarizes:

- Core legal mandates under the Growth Management Act (GMA), Revised Code of Washington (RCW), International Building Code (IBC), and Firefighter Safety Standards (WAC 296-305)
- National fire service performance standards, including NFPA 1710 and CPSE accreditation model criteria
- Redmond's internal policy frameworks: sustainability, equity, and resilience
- Functional planning standards for essential public facilities, including continuity, energy, and safety systems

Together, these policies define the rules of the road and help ensure that fire capital projects deliver lasting public value.

2.1 State and Legal Mandates

Fire departments operate under a web of legal requirements that establish both minimum obligations and capital planning expectations. These mandates shape everything from where and how stations are built to how fire departments prepare for population growth and climate resilience. This section outlines the statutory and regulatory drivers that Redmond must follow to remain compliant and future-ready.

Growth Management Act (GMA) – RCW 36.70A.070 – Capital Facility Planning Requirements

The Washington State Growth Management Act requires all jurisdictions planning under GMA to develop a Capital Facilities Plan (CFP) or General Government Facilities Plan as part of their Comprehensive Plan. The CFP must demonstrate that essential public services, including fire protection, can be delivered in a way that supports projected growth without sacrificing service quality.

Key GMA requirements impacting this plan include:

- **Facilities Inventory** – Cities must maintain a current inventory of fire stations, apparatus, and equipment – and assess their existing capacity.
- **Forecasting** – Demand must be projected through the planning horizon (2050), including population growth, zoning changes, and service area adjustments.
- **Six-Year Capital Improvement Program (CIP)** – A financially constrained CIP must be included to identify how priority projects will be funded.
- **Land Use Consistency** – All fire capital planning must align with Redmond's adopted land use and zoning strategy, ensuring adequate coverage for future development.

Washington State Development Impact Fees – RCW 82.02.050–100

To ensure new development pays its fair share, Washington law allows cities to collect impact fees for essential public services, including fire protection. However, impact fees are subject to strict rules.

Allowable uses for fire impact fees include:

- Construction of new stations or expansion of existing ones to serve growth
- Capital purchases of apparatus (e.g., engines, ladder trucks) required for growing service demand
- Specialized equipment to meet emerging building types and risks (e.g., high-rise firefighting tools)

Restrictions:

- **Deficiency Correction Prohibited** – Impact fees cannot be used to address existing service shortfalls
- **Ten-Year Expenditure Rule** – Collected funds must be spent within 10 years to remain valid

Washington State Clean Buildings Performance Standards (CBPS) – RCW 19.27A.210

The Washington State Clean Buildings Performance Standards (CBPS) mandate energy efficiency improvements in commercial buildings, including fire stations, as part of the state's greenhouse gas reduction goals.

Compliance tiers:

- **Tier 1 (≥50,000 sq. ft.)** – Compliance required by June 1, 2026
- **Tier 2 (20,000–49,999 sq. ft.)** – Compliance required by July 1, 2027; benchmarking begins in 2025
- **Tier 3 (<20,000 sq. ft.)** – Not currently regulated, but encouraged to follow best practices

Capital planning implications:

- Fire stations must begin tracking and reporting energy use to meet compliance requirements.
- HVAC upgrades, LED retrofits, and envelope improvements may be necessary for Tier 1 and Tier 2 buildings.
- Redmond's decarbonization strategy will influence capital decisions, including conversion from natural gas to electric heating and cooling.
- New and renovated stations must be designed with solar readiness, EV charging capacity, and high-efficiency systems

International Building Code (IBC) – Essential Facility Requirements

Fire stations are classified under the IBC and Washington State Building Code (RCW 19.27) as *Risk Category IV* essential facilities. This means they are held to stricter structural and operational requirements than typical public buildings to ensure they remain functional during and after disasters.

Requirements for essential facilities include:

- **Seismic Design Standards** – Stations must meet elevated structural codes for earthquake resilience.
- **Backup Power Systems** – Stations must include permanent generators to support uninterrupted emergency operations.
- **Critical Life Safety Systems** – Stations must meet enhanced fire suppression, ventilation, and compartmentalization standards.
- **Durability and Survivability** – Materials and designs must be able to withstand extreme weather to allow for the continuity of operations.

All new stations and major renovations must meet these codes. As part of this plan, facilities that cannot be cost-effectively retrofitted will be prioritized for replacement.

Firefighter Safety Standards – WAC 296-305

Washington Administrative Code 296-305 establishes occupational safety and health standards for firefighters, shaping how stations are designed and how apparatus are configured.

Impacts on fire facilities:

- Stations must incorporate decontamination zones, turnout gear separation, and provisions for firefighter health and wellness.
- Gender-inclusive locker rooms and private sleeping quarters are increasingly necessary to support workforce diversity and health equity.
- Expanded training infrastructure is required to ensure compliance with safety protocols and ongoing firefighter education.

Impacts on apparatus:

- Apparatus must meet design and safety standards for mounting, lighting, crew protection, and access.

- Compliance requirements affect vehicle procurement timelines, specifications, and total lifecycle costs.

Together, these legal mandates establish a floor for safety, sustainability, and service equity. They guide how the Fire Functional Plan translates community needs into action-ready capital investments.

2.2 National Performance Standards

While legal mandates define minimum obligations, national fire service standards shape what excellence looks like. These standards guide how departments like Redmond's plan for service delivery, measure performance, and justify capital investments. This section introduces the most widely accepted national benchmarks used in fire department assessments and explains how they influence the planning that follows in this document.

NFPA 1710 – Response Times, Staffing, and Deployment

The National Fire Protection Association (NFPA) 1710 standard outlines expectations for the organization and deployment of fire suppression, EMS, and special operations by career fire departments. Although not legally binding, it is widely used as the de facto benchmark for Level of Service (LOS) in urban fire systems.

Key NFPA 1710 performance goals:

- First Unit Response Time: Four minutes (travel) + 80 seconds (turnout) for fire suppression or EMS
- Effective Response Force (ERF): Full complement of personnel on scene within eight minutes
- Staffing: Minimum of four firefighters per engine company, with higher counts for ladder truck and specialty units

Capital planning implications:

- Station Siting: Drive-time coverage maps must align with four-minute response goals for the highest-risk areas.
- Apparatus Investment: Deployment of new ladder trucks or engines must be coordinated with coverage needs.
- Turnout Time Technology: Station alerting and dispatch systems must support reduced notification and response times.

These standards are used to measure current system strain and are foundational to Chapter 4, where Redmond's actual performance is evaluated against these targets.

Washington Surveying and Rating Bureau (WSRB) – Insurance Ratings and Public Protection

The WSRB evaluates fire protection capabilities for cities and fire districts across Washington. It issues a Public Protection Classification (PPC) score that influences local property insurance rates. While not a planning standard per se, WSRB scoring is used by many departments as a proxy for system strength.

WSRB considers:

- Station locations and distribution
- Staffing and apparatus availability
- Water supply systems (hydrants, flow, testing frequency)
- Fire prevention and inspection programs
- Training and communications systems

Capital planning implications:

- Fire station location and response times directly affect PPC ratings
- Investments in water systems and hydrants influence infrastructure priorities
- Coordination with the Public Works *Water System Plan* is essential, particularly where recommended water distribution upgrades aim to improve fire flow and system reliability in neighborhoods with aging infrastructure
- Training facilities and programs support WSRB scoring and overall preparedness

Improving or maintaining WSRB scores supports both resident safety and economic development, especially for commercial districts where insurance premiums can significantly impact business costs.

Center for Public Safety Excellence (CPSE) – Accreditation and Strategic Planning

The CPSE accreditation framework promotes continuous improvement through a cycle of community-driven planning and system assessment. CPSE recommends integrating data from Standards of Cover (SOC) studies and Community Risk Assessments (CRA) to guide infrastructure and resource decisions.

Redmond's 2022–2027 SOC document provides the foundation for this plan, offering:

- Risk-based station coverage models
- Incident frequency heatmaps
- Hazard-specific deployment recommendations

CPSE-aligned tools help departments connect capital planning with outcomes, improving transparency and public accountability.

From 'Should' to Strategy: The Role of National Standards

These national benchmarks provide the logic and language to justify capital investments and system improvements. While they are not legally mandated, they are widely recognized by:

- Peer agencies
- Accreditation bodies
- Granting authorities
- Insurers and rating bureaus

Redmond's Fire Functional Plan uses these best practices not only to evaluate its current system but to define what future-readiness looks like in a growing, diverse, and increasingly vertical city.

2.3 Interlocal Agreements

The Redmond Fire Department plays a critical role in ensuring the safety and well-being of both Redmond residents and neighboring communities. Its responsibilities extend beyond city boundaries, reflecting a unique service model that includes partnerships with King County Fire Protection District 34 (KCFD34) and leadership of the Northeast King County Medic One program.

King County Fire Protection District 34

Redmond's partnership with KCFD34 dates back to 1969 when the City formed its own fire department, reflecting a long-standing, integrated fire service model. Today, KCFD34 spans approximately 28 square miles of unincorporated King County and serves a population of roughly 24,700 residents. Fire protection and emergency medical services are provided through a formal interlocal agreement, with daily operations managed by RFD under contract.

Stations and Ownership

KCFD34 includes **Stations 13, 14, and 18**, all of which are staffed by RFD personnel and owned by the City with limitations on capital responsibilities. These stations serve rural and suburban areas east and north of Redmond's city limits.

The 2023–2027 Emergency Services Operating Agreement outlines capital responsibilities and cost-sharing structures:

- **Major capital improvements and facility renovations** are led and funded by KCFD34.
- The **City of Redmond** is responsible for routine maintenance, managed through either Parks or Fire Department staff.
- **Apparatus replacement** for KCFD34 stations is funded by the district through an apportioned cost model and aligned with Redmond Fire's joint capital planning process.

Functional Plan Boundary Clarification

While FD34 stations are operationally integrated with the city's system, they are not included in Redmond's city-led capital investment recommendations or fire impact fee planning. Any future upgrades to those facilities will require separate planning and funding through KCFD34's governance.

Northeast King County Medic One

The City of Redmond Fire Department also serves as the lead agency for Northeast King County Medic One, providing Advanced Life Support (ALS) services across a 266-square-mile area with a population of over 333,000. The Medic One program is funded through the King County ALS levy and serves multiple jurisdictions, including the cities of Redmond, Kirkland, Duvall, Woodinville, and surrounding unincorporated areas. Basic Life Support (BLS) services are provided jointly to the City of Redmond Fire and Fire District 34, ensuring seamless integration of emergency medical response.

The Interlocal Agreement (ILA) for Medic One Services directly impacts facility and capital equipment planning, as the Fire Functional Plan must incorporate ALS operational needs, including paramedic response capabilities, station locations, and specialized equipment.

Facility Planning Considerations

As the lead agency, Redmond's fire stations must support paramedic deployment, training, and ALS equipment storage. Key facility needs include:

- Strategic siting of ALS units to maintain county response time standards.
- Dedicated medic bays, expanded living quarters, and garage space for reserve units at designated ALS deployment sites.
- Training space and decontamination zones to support both internal readiness and partner agency coordination.

Equipment and Apparatus Impacts

ALS service delivery requires capital planning for:

- Specialized medic units and backup vehicles.
- Advanced life-saving equipment such as cardiac monitors, ventilators, and secure medication storage.
- Sustainability upgrades, including evaluation of electric-powered ALS vehicles as part of future fleet transitions.

Cost-Sharing and Funding Alignment

The interlocal agreement includes mechanisms for shared funding in the event of capital shortfalls. Redmond coordinates equipment planning and levy alignment with King County EMS to ensure ALS capital cycles are supported and sustained.

2.4 Alignment with Redmond 2050: Policies on Capital Facilities, Sustainability, and Equity

The Fire Functional Plan aligns directly with the Capital Facilities Element (CFE) of the Redmond 2050 Comprehensive Plan, the Environmental Sustainability Action Plan, and the city's Equity in Infrastructure Framework. Together, these policy frameworks establish the expectations for how infrastructure must support safety, growth, resilience, and inclusion over the long term. This plan fulfills those expectations by translating citywide values into operational fire service investments.

Capital Facilities Element: Policy Alignment

The CFE mandates that functional plans like this one be developed and maintained to guide infrastructure and equipment decisions. These requirements are outlined in CF-1 and CF-2, which call for:

- Regular updates to assess fire service needs and system performance
- An inventory of existing stations and apparatus
- Identification of current or projected gaps

- A forecast of system needs through 2050 that considers zoning, population growth, and increasing service demand
- Integration of equity, sustainability, and emergency preparedness principles

The city's commitment to maintaining Level of Service (LOS) standards is reinforced in CF-6, which defines response time benchmarks and facility standards that directly inform Chapter 4. These policy anchors also provide the planning basis for new stations or station relocations in response to changing growth patterns or response times.

Capital Investment Strategy and Fiscal Policies

The Capital Investment Strategy (CIS), codified in policies CF-7 through CF-13, ensures that fire system investments are fiscally sustainable and responsive to community needs. These policies require:

- Long-range capital planning for facilities and equipment (CF-7)
- Coordination of capital investments with available revenues (CF-8)
- Adjustments to growth assumptions or LOS standards if financial imbalances are identified (CF-9)
- Biennial review of the city's funding capacity to deliver capital improvements (CF-10)
- Alignment of capital recommendations with the City's Six-Year Capital Improvement Program (CIP) (CF-11)
- Use of long-term financial forecasting to support high-quality fire and EMS services (CF-12)
- Ensuring that growth contributes its fair share toward fire protection infrastructure through the use of impact fees (CF-13)

This framework is foundational to Chapter 7, where these policies shape the funding roadmap for Redmond's evolving fire system.

Environmental Sustainability and Equity Commitments

The Fire Functional Plan is also aligned with Redmond's **Environmental Sustainability Action Plan**, which outlines energy efficiency, fleet electrification, and green infrastructure goals. Chapter 5 of this document integrates these goals by assessing facility readiness for electrification, clean energy transitions, and CBPS compliance.

Similarly, the city's **Equity in Infrastructure** guidelines influence how fire service investments are prioritized, particularly in areas of historical underinvestment or where demographic data indicates higher vulnerability. These principles are operationalized in Chapter 4 and throughout the recommendations in Chapter 6.

2.5 Plan Alignment Matrix: Integrating Citywide Plans with Fire Infrastructure Strategy

Fire service planning in Redmond operates within a broader civic ecosystem of infrastructure plans, policy frameworks, operational standards, and financial strategies. The Fire Functional Plan must align with these interconnected documents to remain effective, fundable, and consistent with the city's long-term goals.

Many of these plans serve multiple functions. Some set long-range policy direction, others define operational performance standards, and several determine financial feasibility, phasing, and investment priorities. To reflect these overlapping roles, this plan uses a single integrated matrix that shows how each document informs fire infrastructure decisions.

This matrix increases transparency around how fire capital planning connects to land use, sustainability, fiscal strategy, and emergency service delivery. It supports cross-department coordination and strengthens the Fire Department's ability to advocate for investments that advance public safety, climate goals, and community resilience.

For example, while the Fire Department does not direct water infrastructure projects, the Fire Functional Plan helps quantify and communicate fire flow needs to Public Works, strengthening cross-departmental coordination. The Fire Functional Plan's Implementation and Monitoring framework also recognizes the need for ongoing engagement with related citywide plans, including water, transportation, and land use. Changes in one plan may trigger the re-evaluation of assumptions or needs in another, and staff are actively working to build strong planning alignment across departments.

Plan Roles Defined

- **Planning and Policy:** Documents that establish long-range goals, values, and frameworks for how fire infrastructure should support the City's growth and priorities.
- **Service Impacting:** Documents that directly inform service levels, response performance, or operational requirements.
- **Capital Planning/Financial:** Documents that define financial feasibility, phasing, prioritization, and investment decisions.

A Note on Plan Integration

The Fire Functional Plan does not restate the detailed requirements embedded in other city plans, such as green building standards, equity frameworks, or sustainability targets. Instead, it assumes compliance with adopted policies and focuses on how those standards influence fire infrastructure needs and investment decisions.

TABLE 1 - PLAN ALIGNMENT MATRIX – FUNCTIONAL ROLES OF RELATED PLANS

Plan/Document	Purpose	Relevance to Fire Functional Plan	Department Responsible
General Government Facilities Plan (GGFP)	The City's formal six-year plan, which is required under the Washington Growth Management Act (RCW 36.70A.070). It documents the financing plan for general government facilities — including fire stations — and ensures consistency with the	**Capital Planning / Financial** – Documents funded and planned capital projects within the six-year horizon. **Planning and Policy** – Integrates fire facility needs with land-use and growth strategies.	Parks

	Redmond 2050 Comprehensive Plan.		
Blueprint 2050 – Capital Investment Strategy (CIS)	Defines Redmond's consolidated Capital Facilities Plan, aligned with the Comprehensive Plan, guiding infrastructure timing and funding through 2050.	**Capital Planning / Financial** – Establishes the long-term capital framework and funding strategy. **Planning and Policy** – Provides growth projections and infrastructure policies that guide investment decisions.	Planning
Environmental Sustainability Action Plan (ESAP)	Sets sustainability goals for city operations and infrastructure, including emissions reduction and energy efficiency targets.	**Planning and Policy** – Establishes sustainability standards for facilities and fleet. **Capital Planning / Financial** – Influences facility design and investment requirements for compliance with sustainability goals.	Executive
Facilities Conditions Assessment	Assesses the physical condition of city-owned buildings, including fire stations, to inform maintenance, renovation, or replacement needs.	**Capital Planning / Financial** – Informs repair, replacement, and upgrade decisions based on condition. **Service Impacting** – Identifies risks that may affect operational readiness or safety.	Parks
Fire Department Master Plan	Provides a comprehensive roadmap for fire operations, staffing, facility needs, and service delivery strategies.	**Planning and Policy** – Sets long-range goals for operations and facilities. **Capital Planning / Financial** – Drives infrastructure recommendations tied to service needs. **Service Impacting** – Guides operational service models that affect deployment.	Fire
Fire Department Standards of Cover (SOC)	Defines response time goals, deployment models, and service level standards for fire and emergency services.	**Service Impacting** – Defines benchmarks for service levels, station siting, and deployment. **Capital Planning / Financial** – Directly informs the need and justification for new stations, apparatus, and staffing tied to response models.	Fire
Fire Department Strategic Plan	Sets medium-term goals for operations, staffing, and resource allocation over a 3–5 year horizon.	**Planning and Policy** – Provides operational direction and priorities. **Capital Planning / Financial** – Connects staffing, apparatus, and facility needs to short-term investment priorities.	Fire
Fleet Assessment	Evaluates the condition and lifecycle of city vehicles, including fire apparatus, to support replacement planning.	**Capital Planning / Financial** – Supports funding cycles for fleet replacement. **Service Impacting** – Affects operational readiness based on	Public Works

		apparatus availability and reliability.	
Long-Range Financial Strategy	Provides a six-year framework for fiscal sustainability, resource allocation, and alignment with city goals and priorities.	**Capital Planning / Financial** – Ensures that fire investments fit within long-range financial capacity. **Planning and Policy** – Aligns financial decisions with broader city priorities and service expectations.	Finance
Office of Emergency Management Program Charter	Defines the City's emergency management structure, including roles, coordination mechanisms, and resource allocation during disasters.	**Service Impacting** – Defines operational roles in emergencies. **Planning and Policy** – Provides preparedness goals that influence resource allocation and facilities needs.	Fire / Executive
Redmond 2050 Comprehensive Plan	Guides long-term land use, growth management, and infrastructure development for the City of Redmond.	**Planning and Policy** – Establishes the policy foundation for fire service growth and station siting. **Capital Planning / Financial** – Influences long-term infrastructure investment priorities tied to land use and growth.	Planning
Safety, Health, and Environmental Services Assessment	Assesses fire facilities for compliance risks, occupational safety hazards, and environmental health concerns.	**Capital Planning / Financial** – Informs investments needed to address deficiencies. **Service Impacting** – Impacts safe and reliable facility operations that support readiness.	Parks
Transportation Master Plan (TMP)	Provides long-range strategies for transportation infrastructure, mobility, and emergency response access.	**Service Impacting** – Ensures transportation supports fire response reliability. **Planning and Policy** – Aligns mobility plans with emergency services needs and growth areas.	Planning
Water System Plan	Provides long-term planning for water infrastructure, including fire suppression, system reliability, and regulatory compliance.	**Service Impacting** – Supports hydrant coverage, water flow, and suppression needs. **Capital Planning / Financial** – Drives investments in water infrastructure that support fire operations.	Public Works

2.6 Summary

Redmond's fire capital planning is grounded in a complex and evolving regulatory environment that spans across federal, state, and local mandates. Chapter 2 establishes the legal and strategic foundations that guide the Fire Functional Plan, ensuring it aligns with growth management requirements, essential facility standards, and nationally recognized fire service best practices.

State law, including the Growth Management Act (GMA), RCWs related to impact fees, and the Clean Buildings Performance Standards (CBPS), all provide mandatory requirements for capital planning,

energy benchmarking, and financial accountability. These “musts” create the backbone of facility development and modernization.

In parallel, nationally recognized consensus standards such as NFPA 1710, CPSE principles, and WSRB criteria help guide performance standards, staffing models, and apparatus readiness. While not legally binding, these frameworks are critical for maintaining accreditation, insurance ratings, and service excellence.

Redmond’s interlocal agreements with Fire District 34 and King County Medic One introduce additional complexity, requiring close coordination with external agencies on shared facilities, equipment, and ALS deployment. These partnerships directly affect capital planning priorities and clarify the geographic boundaries of this plan’s recommendations.

The Fire Functional Plan is also shaped by the policy and financial architecture of the Redmond 2050 Comprehensive Plan, particularly the Capital Facilities Element. Key policies define how level-of-service (LOS) standards are established, how growth projections inform infrastructure investment, and how the City maintains financial balance through impact fees, long-range forecasting, and biennial reviews.

Finally, a matrix clarifies how various citywide documents influence fire infrastructure decisions, whether by altering service levels, guiding planning assumptions, or providing the financial framework for implementation. This alignment ensures that the Fire Functional Plan supports a cohesive, efficient, and forward-looking capital investment strategy while avoiding redundancy with other adopted plans.


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03 Current System Overview

Redmond's fire system is made up of people, buildings, vehicles, and equipment – all working together every day to deliver life safety, emergency response, and community care. This chapter outlines the current state of that system. It documents what exists today: the number and location of fire stations, how those stations are staffed and equipped, the capital inventory that supports operations, and the recurring costs required to keep the system functional.

This is not an evaluation chapter. It doesn't assign grades or make recommendations. Those are addressed in the chapters that follow. Instead, this section establishes the factual baseline so that future decisions about capital investments, growth response, and system modernization are grounded in a shared understanding of what we're already working with.

Because this system has been built over time through decades of population growth, annexation, and evolving service demands, its structure reflects past priorities and opportunities. Some parts of it are aging. Some are new. Some are ready for what's next, and others will require changes. But all of it functions today as the backbone of Redmond's emergency response network.

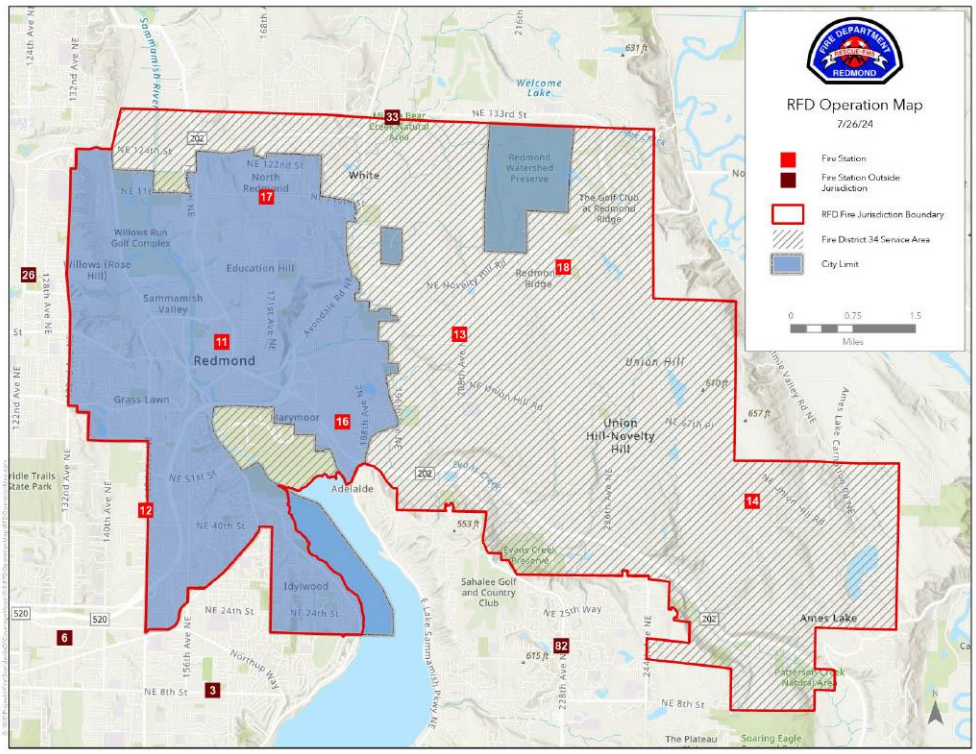
The chapters that follow will explore how well this current system aligns with where the city is going. But first, we begin with what we currently have.

3.1 Fire Facilities Inventory

The Redmond Fire Department operates seven fire stations, an apparatus-maintenance facility, and one satellite office annex to serve the City of Redmond and its contract partner, King County Fire Protection District 34. These facilities are distributed across the City and surrounding district to provide overlapping coverage, support timely response, and ensure operational continuity during high-demand events.

The system includes both city-owned and district-owned properties. While this plan focuses on city assets, the full deployment footprint is included here to reflect the reality of current operations.

FIGURE 1: REDMOND FIRE DEPARTMENT OPERATIONAL MAP



City of Redmond Facilities

Fire Station 11

8450 161st Avenue NE, Redmond, WA

Description of Use	Built in 1981. Provides service to the Downtown area and the neighborhoods of Willows, Education Hill, and Sammamish Valley. Also serves as the Fire Administration Headquarters.
Apparatus Space	Four drive-through bays

Fire Station 12

4211 148 Avenue NE, Bellevue, WA

Description of Use	Built in 1980. Located on the southern end of the City, provides service to the Overlake, Viewpoint, Grass lawn, and Rose Hill neighborhoods in the City. Located in Overlake (within Bellevue city limits), this station serves the Overlake and Idylwood neighborhoods and is a key responder to mid-rise commercial and residential developments.

Apparatus Space	Three bays, two are drive-through bays

Fire Station 16

6502 185th Avenue NE

Description of Use	Built in 1996. Provides service to Southeast Redmond, including the light industrial section of the City. It is part of the complex that houses the fleet-maintenance building. Serves a mix of light industrial zones and expanding residential areas.
Apparatus Space	Three drive-through bays

Fire Station 17

16917 NE 116th Street

Description of Use	Built in 2012. Located in the northern section of the City. Serves North Redmond, including Education Hill and growing residential developments. Also houses the department's Medical Services Officer (MSO).
Apparatus Space	Three drive-through bays

Accessory Operations Buildings

Apparatus Maintenance Shop – Located next to Station 16. This city-owned facility is used by the Fire Department's internal fleet maintenance team for apparatus inspections, testing, repairs, and compliance checks.

Fire Station 11 Annex – Built in 1985. Located adjacent to Station 11. Provides office space and vehicle storage for the Mobile Integrated Health (MIH) and Community Care programs.

King County Fire District 34 Facilities

(Not included in capital planning scope, but listed here for operational context.)

Fire Station 13 (8701 208th Avenue NE) – Built in 1973. Serves the Avondale corridor and parts of Education Hill.

Fire Station 14 (5201 264th Avenue NE) – Built in 1991. Located near Ames Lake. Serves the eastern rural portions of the district.

Fire Station 18 (22710 NE Alder Crest Drive) – Built in 2002. Located in Redmond Ridge. Serves both Redmond Ridge and Trilogy residential areas.

These seven stations are the core physical infrastructure of the current fire system. They vary in age, size, and readiness for future growth – but together they form a single operational network supporting both city and district service areas.

3.2 Current Staffing Levels and Deployment Model

Redmond Fire Department operates under a 48/96 shift schedule, with three platoons (A, B, and C) providing continuous 24-hour coverage. Daily staffing includes engine and ladder companies, cross-staffed aid units, and a battalion chief – all distributed across the seven active stations. While the department serves both the City of Redmond and Fire District 34, staffing and apparatus are deployed as a unified system to maximize coverage and response efficiency.

Each engine or ladder company is typically staffed with three firefighters, while aid and medic units are staffed with two. Cross-staffing is a deployment model where a single crew is assigned to multiple apparatus and selects the appropriate vehicle based on the nature of the call. This approach provides operational flexibility but also has implications for response reliability and system readiness, which will be explored in later chapters.

The table below outlines current daily staffing levels at each station, as well as apparatus assignments.

TABLE 2 - DAILY STAFFING, STATION

Station	Primary Apparatus	Cross-Staffed Units	Daily Staffing
Station 11	Engine 111, Aid 111, Medic 119		7
Station 12	Engine 112, Aid 112		5
Station 13	Engine 113	Aid 113 (cross-staffed)	3
Station 14	Engine 114	Aid 114 (cross-staffed)	3
Station 16	Ladder 116	Rescue 116 (cross-staffed)	3
Station 17	Engine 117	Aid 117 (cross-staffed), Medical Service Officer	4
Station 18	Engine 118	Aid 118 (cross-staffed)	3
Battalion Chief	Battalion 111	-	1

Note: Redmond personnel also provide staffing for Medic 123 and Medic 135, located at Kirkland and Woodinville stations, as part of the regional Northeast King County Medic One system.

In total, 31 personnel are on duty per shift, not including administrative, prevention, or logistics staff. These resources are strategically positioned to meet incident demand, ensure NFPA 1710

alignment for critical tasking, and support back-to-back or concurrent incidents across the service area.

3.3 Apparatus and Fleet Profile

Redmond's fire apparatus and support vehicle fleet is designed to meet a wide range of operational needs, from fire suppression and advanced-life-support transport to technical rescue, wildland response, and incident command. The department's fleet includes both frontline and reserve units, as well as planned future replacements.

Primary Apparatus Types

Engines (Fire Suppression Units):
Engines are the department's frontline response vehicles for both fire and medical emergencies. Each engine carries 500 gallons of water for initial attack and can deliver up to 1,500 gallons per minute when connected to a hydrant. Engines are equipped with fire suppression gear, EMS supplies, and basic rescue tools.

Ladder Trucks and Tractor-Drawn Aerials (TDAs):
Ladder trucks are essential for reaching upper floors in Redmond's growing inventory of mid-rise and high-rise buildings. These units include 100-foot aerial ladders capable of accessing both above- and below-grade areas. Unlike engines, ladder trucks carry minimal water and rely on engine support to perform suppression operations. Redmond currently operates one ladder truck, with additional units in the replacement pipeline.

Aid Cars (BLS Units):
These ambulances are equipped to provide Basic Life Support (BLS) care and patient transport. They are deployed throughout the City in both dedicated and cross-staffed configurations.

Medic Units (ALS Units):
Medic units are staffed with firefighter-paramedics and provide Advanced Life Support (ALS) services as part of the regional Northeast King County Medic One system. Redmond units are stationed within the City and at strategic locations in Woodinville and Kirkland.

Brush and Wildland Engines:
These smaller, agile vehicles are designed for wildland-urban interface (WUI) response. They are equipped with pumps, hand tools, and water tanks tailored to off-road access and fast suppression of vegetation fires.

Specialty Rescue Vehicles:
Technical rescue and hazmat capabilities are supported by cross-staffed specialty units located at Stations 13 and 16. These units include water rescue gear, extrication tools, and urban search and rescue (USAR) equipment. Redmond's HazMat unit provides limited hazardous materials response capacity, with mutual aid support from regional partners for large-scale incidents.

Support and Specialty Vehicles

The department also maintains a diverse set of support vehicles, including:

- **Command Staff Vehicles** – Assigned to Battalion Chiefs, the Fire Chief, Operations Chief, and Training Officers.
- **Prevention and Logistics Vehicles** – Multiple units support fire inspection, investigation, logistics transport, and emergency management functions. Vehicles are assigned to both the motor pool and individual staff.
- **Training Equipment Trailers and Vans** – Includes smoke machines and other mobile training assets.
- **Public Education and Emergency Management Vehicle** – Used for outreach, volunteer coordination, and preparedness education.

Fleet Planning and Replacement

Fleet replacement and expansion are planned through a multi-decade capital strategy that aligns vehicle life cycles with response demands, workload projections, and anticipated service-area changes. Upcoming purchases prioritize both operational capacity and environmental performance, including electrification readiness and apparatus compatibility with EV charging infrastructure at city facilities.

The department maintains a detailed vehicle-by-vehicle inventory, including projected timelines and costs, which is available in Appendix C.

3.4 Capital Equipment Inventory

Redmond Fire Department's capital equipment systems support a modern, all-hazards emergency response model. From protective gear and lifesaving EMS technology to technical rescue tools and facility infrastructure, this equipment forms the operational backbone that enables firefighters to perform their work safely and effectively. These assets are funded through a combination of dedicated equipment replacement programs and general capital planning, with cyclical investments tied to service life, safety standards, and evolving community risks.

This section outlines the major categories of capital equipment currently in service.

Self-Contained Breathing Apparatus (SCBA) Systems

SCBA systems allow firefighters to operate safely in smoke-filled or toxic environments and are essential to every structure fire, confined space entry, and hazardous materials response. Each set includes an air bottle, regulator, facepiece, and integrated communication equipment. Redmond maintains SCBA compressor systems at key stations and deploys SCBAs across all frontline units. Bottle replacements and system-wide upgrades are timed according to NFPA standards and manufacturer life cycles.

Personal Protective Equipment (PPE)

All firefighters are issued structural firefighting gear, including turnouts (coat and pants), helmets, hoods, gloves, and boots. This gear is replaced on a rotating schedule based on exposure, wear, and a 10-year NFPA expiration timeline. Redmond also maintains reserve PPE and specialty protective

gear, such as ballistic vests, wildland packs, and water rescue suits. PPE procurement includes fit testing, inspections, and decontamination practices to support firefighter health and safety.

Fire Suppression Tools

The department maintains a full inventory of suppression equipment, including nozzles, hand tools, irons, hooks, forcible entry gear, and thermal imaging cameras. High-rise firefighting tools, such as standpipe packs, hose bundles, and pressure-reducing valves, are strategically assigned to stations that serve vertical developments, including Stations 11 and 12. Large-diameter hoses (LDH) for water supply operations are stocked on engines and ladder units for extended lays.

Emergency Medical Equipment

Aid and medic units are equipped with advanced patient care systems, including:

- **Stryker power cots** and **autoloaders** for safe transport and lifting.
- **Lifepak cardiac monitors/defibrillators** for ALS-level cardiac care.
- Oxygen delivery systems, suction units, IV supplies, and trauma gear equipment are rotated based on lease schedules, service life, and reinspection protocols. Redmond maintains redundancy across key EMS tools to ensure readiness during high-call-volume periods or equipment failure.

Technical Rescue Equipment

Technical rescue gear is primarily housed on Rescue 16 and includes confined space kits, rope systems, extrication tools (e.g., hydraulic cutters/spreaders), and specialized stabilization equipment. These assets support motor vehicle entrapments, trench collapses, high-angle rescues, and urban search and rescue operations. Equipment is maintained under manufacturer inspection guidelines, with specialized training required for use.

Hazardous Materials Equipment

Redmond's HazMat unit includes detection monitors, decontamination kits, and PPE specific to hazmat operations. While Redmond provides a limited-scope hazmat response, large-scale or Tier I incidents are managed through mutual aid with regional partners such as Bellevue Fire. Equipment is stored centrally for fast deployment and integrated with the Redmond Fire's regional response protocols.

Wildland and WUI Response Gear

Wildland response tools such as chainsaws, hose packs, hand tools, and fire shelters are stored on designated Type 6 engines and at stations near the wildland-urban interface (WUI). While most wildland gear is not capitalized, it is essential for initial attack and containment of fast-moving vegetation fires within city limits and in neighboring unincorporated areas.

Fire Station Systems and Infrastructure

Key facility-based equipment includes:

- **Backup power systems** (generators and battery storage) to support emergency operations during utility outages and ensure uninterrupted dispatch, lighting, and apparatus bay functions.

- **Exhaust removal systems and decontamination showers** to reduce exposure to diesel particulates and other carcinogens from firefighting operations.
- **Extractors (specialized washing machines)** designed to remove toxins from turnout gear following exposure to smoke and hazardous materials. Extractors are located at designated stations to support NFPA-compliant cleaning protocols and help prevent long-term health risks.
- **Fire station alerting systems** that provide zoned audio and visual notifications to improve crew response times and reduce night-time sleep disruption for non-involved personnel.
- **Security infrastructure** such as badge-controlled access, perimeter alarms, and surveillance systems to protect personnel, equipment, and city assets.
- **Sustainable infrastructure,** including EV charging stations, solar prewiring, and stormwater recovery systems, consistent with Redmond's citywide green building standards and long-term environmental goals.

3.5 Support Infrastructure and Functions

Redmond Fire Department relies on a range of physical support systems beyond frontline stations and apparatus to sustain operations, maintain readiness, and meet essential safety and regulatory standards. These assets form the operational backbone of the department and directly influence reliability, staff safety, and capital lifecycle performance.

Apparatus Maintenance Facility

The City maintains an in-house apparatus maintenance facility equipped to handle the complex demands of a growing and modernized fire fleet. Capital assets at this facility include:

- Post-mounted and portable vehicle lifts – Certified lifting systems that provide safe, stable elevation of heavy fire apparatus and aid cars. These tools are critical for technician safety and are regularly load-tested and maintained in accordance with OSHA and manufacturer standards.
- Diagnostic tools for engine performance, electronic system calibration, and emissions testing.
- Fluid management systems, vehicle exhaust ventilation, and emergency power systems that support safe and continuous shop operation.
- Apparatus testing tools, such as pump testing equipment and alignment systems, to ensure vehicles meet operational performance standards.

This facility plays a vital role in minimizing fleet downtime, reducing reliance on third-party vendors, and supporting the long-term capital replacement plan.

FS11 Annex – Community Health and Outreach Hub

Located adjacent to Station 11, the FS11 Annex serves as the operational base for the department's Mobile Integrated Health (MIH) and Community Care outreach programs. Though not a traditional response station, it houses durable assets that support non-emergency deployment and community-based intervention.

- **Office and meeting space** for MIH and outreach coordination.
- **Medical and field equipment** for patient assessments, home safety checks, and follow-up care.
- **Dedicated city vehicles** (non-code) used for transportation to homes, shelters, and care sites.
- **Supply storage** for PPE, educational materials, and client support items.

The FS11 Annex represents a growing capital category for alternative response models that reduce 911 volume and improve outcomes through upstream care.

Training Support and Equipment

Although Redmond does not currently operate a dedicated fire training center, the department maintains decentralized training assets and mobile props to support ongoing skill development.

- Training trailers and mobile storage for drill materials and simulation gear.
- Forcible entry props, rescue mannequins, and smoke machines for in-station evolutions.
- AV systems for classroom instruction.
- PPE and turnout gear designated for training use and to preserve operational inventory.

Emergency Management Equipment

The Office of Emergency Management (OEM) maintains equipment to support citywide preparedness, continuity, and response coordination. These assets are staged for rapid deployment and managed by OEM staff at Fire Headquarters.

- AM radio equipment.
- Digital whiteboards and visual coordination tools used during Emergency Operations Center (EOC) activations.
- Public preparedness stockpiles, including cots, blankets, water jugs, shelter signage, and hygiene kits.
- Portable fire extinguisher training sets and community education materials.

This infrastructure enhances Redmond's capacity to manage multi-day events and support resident safety during large-scale disruptions.

Health and Wellness Equipment

All Redmond fire stations include dedicated fitness areas designed to promote firefighter wellness and reduce occupational injuries.

- **Treadmills, rowing machines, bikes**, and **free weights** are used for daily training and injury prevention.
- **Station-based rehab tools**, including foam rollers, massage guns, and stretching equipment.
- **Integrated gym space,** planned as part of station remodels and future facilities to support 24-hour operations and sustained performance.

Logistics and Readiness Support

Redmond Fire currently operates without a dedicated logistics facility. Instead, the critical functions of inventory management, procurement coordination, and supply readiness are distributed informally across the department. This decentralized model relies on repurposed spaces in active fire station spaces that were never designed for long-term storage or logistical workflows.

Each station plays a part:

- Station 11 serves as the primary logistics coordination point. The Logistics Officer is based here, managing shipping, receiving, and deliveries for the department. A mezzanine above the apparatus bay is used for overflow storage of uniforms, supplies, and other operational materials.
- Station 12 serves as logistics for the PF (physical fitness equipment)
- Station 13 houses hazardous materials response equipment, including detection and monitoring tools for the region's HAZMAT program.
- Station 14 supports PPE and SCBA logistics, including spare gear and bottle rotation.
- Station 16 stores technical rescue tools, including rope systems, confined space kits, ground ladders, and stabilization gear.
- Station 17 holds EMS and ALS medical supplies for restocking and shift readiness.
- Station 18 manages and stores hoses, other essential small tools, and core suppression equipment such as spare nozzles, Halligan bars, fittings, and ladders – often in shelving built into vehicle bays.

There is currently no climate-controlled facility, dedicated racking system, or structured intake or distribution space to support logistics operations. Storage is accommodated through improvised use of apparatus bays, mechanical rooms, and mezzanine areas – spaces not designed for inventory management or scalable logistics functions.

Despite these limitations, the department's logistics/administrative staff ensure:

- Timely issuance, laundering, and rotation of turnout gear and SCBA equipment.
- Ongoing inventory and restocking of EMS and ALS medical supplies across shifts.

These activities are essential to maintaining operational continuity and crew readiness. However, the current model, while functional, is not sustainable. As the Fire Department continues to expand its personnel, apparatus, and programmatic responsibilities, the absence of a dedicated logistics facility represents an increasing constraint on efficiency, readiness, and resilience.

3.6 Green Infrastructure and Fleet Transition

Redmond Fire Department has begun incorporating green infrastructure and fleet transition strategies into its core operations, aligning with the City's broader climate and sustainability commitments. These early efforts reflect a practical, phased approach to decarbonization that prioritizes operational continuity while reducing environmental impact.

Current initiatives include:

- **Deployment of Washington state's first electric fire engine** at Station 12, representing a major milestone in clean fleet integration for emergency response vehicles.
- **Transition of light-duty operational vehicles** to electric and hybrid platforms, including those assigned to the Prevention Division, Deputy Chief of Operations, and Battalion Chief (Training).
- **Installation of electric vehicle (EV) charging infrastructure** at Station 12, with additional capacity being added at Station 11 through support from Puget Sound Energy's fleet-electrification grant program.

While these efforts are still in the early stages, they represent a clear pivot toward sustainable public safety infrastructure. Future capital planning will need to account for the facility, electrical, and equipment upgrades required to support continued expansion of the department's low-emission fleet.

3.7 Operating and Maintenance Costs

The City of Redmond's fire system incurs ongoing operating and maintenance (OandM) costs to ensure safe, functional, and mission-ready facilities and fleet. These costs are distinct from personnel, capital construction, and program expansion, and instead reflect the baseline investment required to operate the current system reliably.

Facility Operations and Upkeep

Facilities maintenance is funded through both the Fire Department and the Parks and Recreation Department, which is responsible for the maintenance of city buildings and grounds. In 2025:

- The **Fire Department** budget includes $37,800 for maintenance and consumables at Stations 11, 12, 16, and 17.
- The **Parks Department** contributes an additional $328,000 to support janitorial services, landscaping, minor building repairs, and utilities at those same stations.

For Fire District 34 (FD34) stations – specifically Stations 13, 14, and 18 – operating costs are shared under an interlocal agreement:

- **Fire Department costs** for FD34 are projected at $243,000 in 2025, reimbursed through the contract with the district.
- Non-reimbursable General Fund support for these facilities adds $13,200.
- The **Parks Department** allocates another $112,000 for exterior maintenance, cleaning, and utility support.

These investments maintain essential infrastructure that enables 24/7 service delivery, including climate control systems, lighting, water, sewer, and basic preventive maintenance.

Fleet and Equipment Maintenance

The Fire Department maintains a diverse fleet of emergency response and support vehicles through a combination of in-house staff and contracted services. In 2025, fleet maintenance costs — excluding labor — are projected at approximately **$340,000**. This includes:

- Routine maintenance and inspections
- Major component repairs
- Pump and ladder certification
- Specialized servicing (electrical, hydraulic, braking systems)
- Fuel and fluids

As the City transitions to electric vehicles, additional costs may emerge for diagnostic tools, battery maintenance, and technician training.

The department's operational fleet includes:

- 2 Ladder Trucks
- 9 Engines
- 9 Aid Cars
- 6 Medic Units
- 5 Specialty Vehicles (hazmat, rescue, wildland, Polaris, etc.)
- 2 Command Vehicles (Battalion Chiefs)
- 4 Training Officer Vehicles
- 27 Support Staff Vehicles (Chiefs, MSOs, MIH, Prevention, and others)

A complete fleet inventory and condition assessment is provided in Appendix C.

3.8 Summary

Redmond's current fire system consists of seven staffed fire stations, a diversified fleet of response and support vehicles, specialized equipment for a range of incident types, and distributed logistics and storage arrangements. Together, these assets form the backbone of the City's fire and emergency services system.

Operations are supported through a combination of city-managed and interlocal facilities, with maintenance and readiness responsibilities coordinated across departments. The system includes both traditional emergency response units and community-focused programs such as Mobile Integrated Health and public preparedness outreach. In addition, early investments in electric apparatus and infrastructure signal an ongoing shift toward sustainable fleet modernization.

Over $1 million annually in operating and maintenance costs are distributed across Fire, Parks, and contract partners. These costs reflect the resources required to maintain the current level of service across facilities and fleet. This includes facility upkeep, vehicle maintenance, logistics functions, and specialized program support.

The following chapter will examine how this system performs in relation to current demand and forecasted development. It will also explore how community growth, urban density, and service expectations are shaping the City's emergency response system over time.

04 Level of Service and Growth Impacts

Fire and emergency services are foundational to a safe and resilient city — but delivering those services requires more than trained personnel and reliable equipment. It requires a system that is designed, staffed, and resourced to meet the demands of a growing and evolving community. That's where Level of Service (LOS) comes in.

LOS is the planning framework used by Redmond to evaluate whether its emergency response capabilities are keeping pace with community needs. It provides a set of performance benchmarks that help the City measure access to emergency services, identify system weaknesses, and make informed capital investment decisions. These benchmarks are not just internal management tools – they are codified in Redmond's long-range planning goals.

In this plan, LOS standards serve as both a performance yardstick and a planning compass. They guide the structure of the department's needs assessment, help determine capital project priorities, and provide a measurable connection between the City's growth trajectory and the fire system's future readiness.

4.1 Level of Service Standards and Performance Benchmarks

The Redmond Fire Department uses a multifaceted Level of Service (LOS) framework to evaluate the department's ability to meet current and future emergency response expectations. At its core, LOS refers to a set of performance targets that guide both day-to-day operations and long-range capital planning.

The City's adopted response time target is as follows:

> Travel time of six minutes or less for 90% of emergency fire and medical calls in the City.[1]

This benchmark, at the time it was adopted, was grounded in national best practices, including NFPA 1710, and reflects Redmond's policy commitment to timely, professional service across all neighborhoods. It is supported by GIS travel time modeling, referenced in the Redmond 2050 Comprehensive Plan, and reinforced through annual system performance monitoring.

However, travel time alone is not a sufficient indicator of system readiness. This plan uses a broader set of LOS benchmarks to capture the realities of modern response, growth-driven complexity, and system strain. These indicators are described below.

Travel Time Coverage
GIS modeling is used to assess how much of the city can be reached by a responding unit within four or six minutes of drive time. This geographic coverage model is the foundation of station siting and planning decisions. However, while this measure is technically consistent with Redmond's LOS policy, it does not reflect real-time dynamics like access delays, call concurrency, or unit availability.

Unit Reliability and Call Concurrency
Unit reliability refers to the percentage of time the unit assigned to the zone is able to handle the

[1] Redmond 2050 Comprehensive Plan policy CF-6

call for service. This factor is usually impacted by call concurrency, or the measure of time that a call for service comes in at the same time the first due unit is already committed to a prior incident. As population and call volume have increased, concurrent calls are becoming more frequent. When a station's units are already committed, the next closest unit must be dispatched, often from outside the intended service zone. This leads to:

- Longer total response times
- Longer unit commitment times/unit hour utilization
- Geographic coverage gaps
- Fatigue from more frequent unit redeployments

While cross-staffing is a reasonable staffing model for agencies with relatively low call volumes in certain areas like Redmond, the model in Redmond impacts this issue as demand increases or surges. If a single crew is responsible for both an aid car and an engine, a response with one automatically removes the other from service even if demand remains.

Turnout Time and Access Delays
Travel time LOS begins when the unit begins moving. It does not capture:

- Dispatch processing time
- Crew mobilization ("turnout time")
- Time spent navigating to the incident location within a large or complex structure

In many modern buildings, particularly in Overlake and Downtown, crews may lose 1–7 minutes after arrival due to locked stairwells, elevator delays, or internal travel distance. These "invisible minutes" are not captured in traditional LOS metrics, but they directly impact outcomes.

Effective Response Force (ERF) Availability
For higher-risk incidents, such as structure fires or technical rescues, Redmond relies on the timely arrival of multiple units to assemble an Effective Response Force (ERF) – the minimum number of firefighters necessary to accomplish all the critical tasks for a given incident. Current ERF response is limited by a lack of a ladder company in the appropriate location, the geographic dispersion of units, and staffing limitations at undersized stations. Even when travel time goals are met, assembling a full ERF within the required timeframe can be compromised.

Apparatus and Equipment Readiness
Fleet availability and configuration also affect LOS. Although frontline units have been modernized, reserve units are aging, and the department lacks:

- Tools for EV fires and battery containment
- Specialized equipment for light rail platforms
- Station-based electrical infrastructure for large-scale EV adoption

Several stations also lack the square footage to house our current and future fleet, further limiting unit deployment flexibility. Housing the fleet has two limiting factors. One, there is insufficient room to house all our current emergency response vehicles. Some reserve units must be stored outside the fire shop, exposed to the elements, which reduces their lifespans. Two, due to city growth and density, the agency needs to employ new fire apparatus types (tractor-drawn aerial ladder truck) that have a tighter turning radius and maneuverability, but very few stations can

accommodate the length of this new type of fire apparatus. In these cases, LOS isn't just about geography or staffing; it's about whether the right tool is ready for the job.

Mutual Aid/Automatic Aid

A key factor that must be added to a LOS analysis is the availability of mutual aid from other fire agencies in the region, and especially those adjacent to the City. Mutual aid in the fire service is a formal agreement between two or more agencies to provide assistance during emergencies when one agency's resources are insufficient. It operates on a "request-and-approval basis" – meaning the agency in need must request help, and the assisting agency must affirmatively agree to respond each time. Mutual aid is commonly used during large-scale incidents, multiple-alarm fires, or overlapping calls that exceed an agency's local capacity.

By contrast, "automatic aid" is a form of mutual aid that is pre-arranged through formal agreements, allowing resources to be automatically dispatched across jurisdictional lines without a separate request each time. This is commonly used in urban or metro areas where closest-unit response is prioritized over jurisdictional boundaries. The benefits of mutual and automatic aid include increased surge capacity, enhanced regional coordination, and cost savings from shared resources. However, there are drawbacks. In Washington State, mutual aid must be provided without compensation (per RCW 43.43.960), which can lead to inequities if one agency regularly relies on others for routine service delivery. While mutual aid is a critical tool for handling large or unusual events, it should not be used to compensate for chronically under-resourced agencies. Automatic aid agreements, when properly structured, can help ensure equitable and predictable service levels between partners.

Overall, Redmond Fire Department is a net contributor to the region, providing for 461 more calls for service than it received in 2024. This is partially due to the location of Fire Station 12. Approximately 23% of the calls for service answered by units assigned to Station 12 (Aid 112 and E112) have been outside the City of Redmond and primarily in Bellevue. The City of Kirkland provides for 332 more calls than they receive, primarily to Redmond, due to the lack of coverage along the northeastern boundaries of Redmond.

FIGURE 2 – CONCENTRATION OF CALLS FOR SERVICE ANSWERED BY A112 AND E112 - 2024

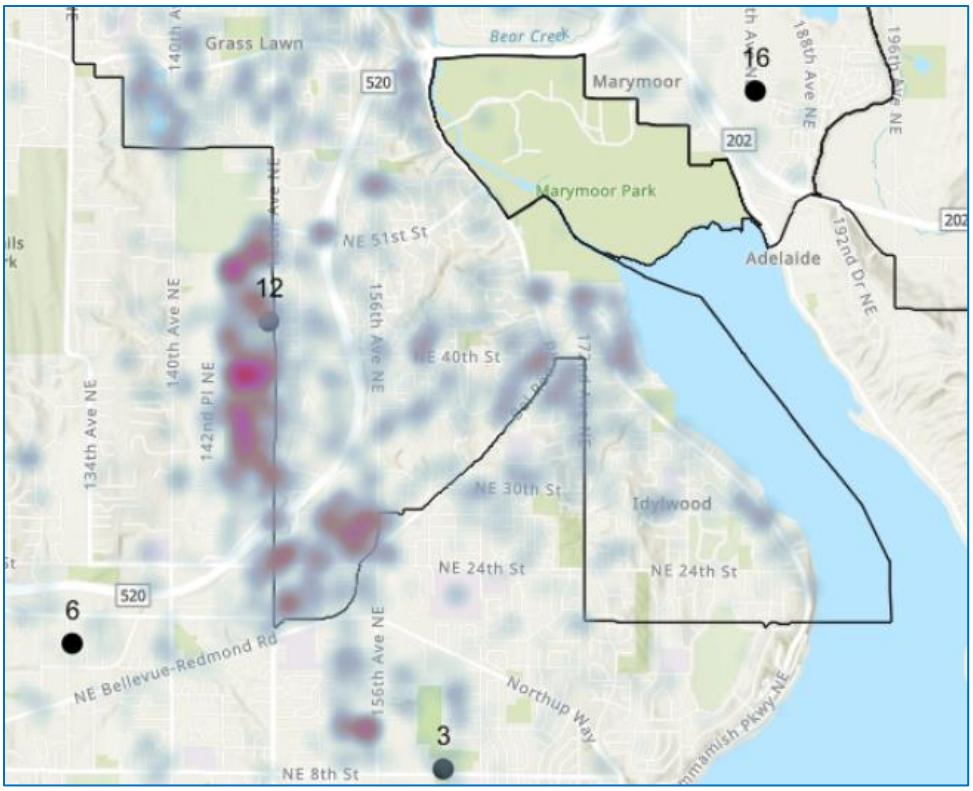


TABLE 3 - MUTUAL/AUTOMATIC AID COMPARISON - 2024

Agency	Redmond Providing Service to…	Redmond Receiving Service from…	Net
Bellevue	1220	683	537
Eastside Fire and Rescue	517	398	119
Kirkland	143	475	-332
Others*	153	16	137
Total Net Calls for Service			**461**

*Others: Other agencies in the region or statewide mobilization.

4.2 Analysis of Growth Drivers and Future Service Demand

Redmond is entering a new era of urban development, marked by rapid population growth, land-use intensification, and the increasing complexity of emergency service delivery. According to the Redmond 2050 Comprehensive Plan, the City is projected to grow from a population of approximately 80,000 in 2024 to 114,000 residents by 2050, and to add 24,800 new housing units and 30,000 new jobs. This job growth will further expand Redmond's daytime population — already over 147,000 as of 2024 — exerting additional pressure on emergency services, especially during business hours when call volume tends to spike.

This transformation is not just about numbers — it reshapes how and where the fire department must operate. Demand for emergency medical and fire response correlates strongly with population density and activity levels, meaning more people, more structures, and more jobs directly translate into more calls for service. The City's growth trajectory is not spread evenly, either. Instead, it is spatially concentrated in a few key geographic zones, requiring targeted infrastructure and deployment adaptations.

Three Regional Growth Centers Will Absorb 75% of Development

The Redmond 2050 Comprehensive Plan designates **Downtown**, **Overlake**, and **Marymoor Village** as the City's three growth centers. Together, these areas represent less than 10% of Redmond's land area, yet they are expected to absorb more than 75% of all new residential and commercial development.

Each growth center presents unique operational demands for emergency services:

- **Downtown Redmond** is evolving into a civic and cultural hub with vertical housing, mid- to high-rise buildings, pedestrianized corridors, and constrained access for apparatus. Fire response in this environment increasingly involves limited street access, high occupant loads, and vertical egress scenarios.
- **Overlake** is becoming a mixed-use tech and residential district with mid- to high-rise buildings, international business presence, and a highly multilingual population. These attributes increase the complexity of incident management, access control, and public communication.
- **Marymoor Village** combines urban residential density with proximity to industrial zones, regional trails, and the wildland-urban interface (WUI), creating a hybrid risk profile that requires both structure fire and wildland readiness.

As these three growth centers densify, they will generate the City's most concentrated service demand and pose the greatest operational complexity. To ensure service levels can keep pace, significant changes will be required to Redmond's current fire infrastructure and deployment model.

Infill Growth Across Established Neighborhoods

In parallel with regional center development, Redmond's established residential neighborhoods, including Education Hill, Grass Lawn, and Southeast Redmond, are seeing steady infill, middle housing development, and demographic shifts. This growth may appear incremental on the surface, but it adds cumulative pressure to the system without the benefit of large-scale infrastructure upgrades.

Infill often leads to:

- Narrower roads and reduced apparatus access
- Increased population density in areas not originally designed for it

A growing number of seniors and other residents with higher emergency service needs, such as those with mobility limitations, medical dependencies, or communication barriers.Without targeted investments in response capacity and station upgrades, infill development can silently erode LOS, even in areas that appear "built out" on the map.

Light Rail and Transit-Oriented Risk

The extension of Sound Transit through Redmond introduces a new class of response demand. Four new stations located in or adjacent to the growth centers will serve as high-volume pedestrian hubs with elevated risks for:

- Medical incidents on crowded or elevated platforms
- Security access delays for responders
- Overlapping event-based calls (e.g., concerts, sporting events, festivals)
- Multi-agency coordination in constrained public spaces

Transit infrastructure also increases reliance on vertical mobility and limits direct apparatus access, placing more pressure on station siting and turnout efficiency.

Why Spatial Compression Matters

The City's growth strategy relies on spatial compression, which is placing more people, jobs, and activity within walkable, transit-rich neighborhoods. While this is consistent with climate goals and sustainability values, it also raises the stakes for every fire response.

In a more compressed city:

- Fires and medical incidents occur in more complex environments.
- Patient/fire area-of-origin access times increase even if GIS travel time doesn't change.
- Staffing and apparatus must scale to meet overlapping calls within minutes, not miles.
- The potential impact of a fire grows significantly with building size and occupancy. While a fire in a single-family home may affect one to four people, a fire in a high-rise building can endanger hundreds of residents at once.
- Station location, layout, and logistics readiness become mission-critical.

Summary

Redmond's fire and emergency response system was originally designed for a lower-density city with fewer vertical structures and simpler access patterns. As the city grows in population and physical complexity, demand for service is expected to increase in both volume and operational complexity.

Decades of proactive code development and enforcement, along with Community Risk Reduction (CRR) efforts, have helped maintain low fire loss rates compared to similar jurisdictions. These programs have been instrumental in improving building safety and reducing incident frequency. Continued investment in prevention remains important, but must be paired with operational readiness to meet the demands of evolving land use and increased density.

In 2024, approximately 60% of calls were medical, with EMS representing the most frequent type of response. However, the remaining 40%, primarily non-medical incidents, required a significant share of department time and staffing. These calls often involve longer durations and more personnel, especially for fire suppression, technical rescue, and hazardous conditions. Maintaining balance between medical and non-medical response capabilities is essential to sustaining system performance.

This plan presents a forward-looking roadmap to support that balance. Recommendations for facility updates, fleet modernization, and staffing alignment are based on projected service demand and capacity analysis. These investments are intended to ensure the department remains well-positioned to serve the community as Redmond continues to grow and change.

4.3 Apparatus Needs and Fleet Condition Context

Apparatus availability, condition, and alignment with current risk are essential to maintaining Redmond's Level of Service (LOS) commitments. While facility location and staffing determine system coverage, the department's fleet delivers service on the ground. As Redmond becomes denser and more complex, the demands on its apparatus fleet — and the facilities that house and maintain it — are intensifying.

This section outlines the current state of the department's fleet, identifies operational and infrastructure constraints, and highlights how apparatus condition directly affects emergency response performance.

Current Fleet Overview and Lifecycle Pressures

The Redmond Fire Department maintains a multi-functional fleet of frontline engines, ladder trucks, aid cars, wildland units, and support apparatus. The department adheres to industry-standard lifecycle expectations, generally aligned with the American Public Works Association (APWA) replacement guide and NFPA 1901 guidance. These standards distinguish between *frontline* and *reserve* service life:

- **Heavy apparatus** (fire engines, ladder trucks):
    - 9 to 10 years in frontline service
    - An additional 9 to 10 years in reserve status
- **Medium-duty vehicles** (ambulances, command units):
    - 3 to 5 years in frontline service
    - An additional 3 to 5 years in reserve status

- **Specialty apparatus** is evaluated based on usage patterns, mission profile, and maintenance condition rather than a fixed timeline.

Note: These timelines reflect the operational distinction between high-utilization frontline service — where reliability and performance are paramount — and reserve use, where vehicles remain available but are expected to perform under lower demand. The combined service life is typically **double** the frontline estimate. For example, a command vehicle may serve up to 10 years total when transitioned to reserve status after its initial 3–5 years of intensive use.

While recent investments have stabilized the frontline fleet, aging reserve units and emerging risk factors present clear vulnerabilities.

Appendix C provides a full inventory of current apparatus, including purchase dates, assigned stations, frontline/reserve status, and estimated replacement timelines. The table also identifies which units are approaching or have exceeded recommended service life thresholds.

Key observations from the data include:

- Several **reserve engines and aid cars** exceed service life expectations, creating reliability risks when frontline units are down for maintenance. These older units are also the **highest consumers of repair funds,** with some incurring annual maintenance costs greater than ten years' worth of lease payments on a new fire engine.
- **Wildland response capacity** is limited to two aging brush units, despite escalating wildland-urban interface (WUI) risks in Southeast Redmond, Marymoor, and Bear Creek zones.
- **Specialty and surge capacity vehicles**, critical for large-scale events, severe weather, or technical rescue incidents, are lacking, limiting the department's adaptability to high-impact or multi-day incidents.

Apparatus and LOS Interdependence

Apparatus condition is not a technical detail. It is a core driver of Redmond's LOS performance. The following operational risks are directly linked to the current fleet condition:

- **Unit reliability**: Aging or unreliable units increase downtime and reduce the availability of the closest appropriate vehicle. From 2022 through early 2024, Redmond had to borrow fire engines from other adjacent agencies due to increases in apparatus downtime and a lack of sufficient reserve units.
- **ERF assembly**: Fire suppression incidents require multiple apparatus within tight windows. Gaps in apparatus availability delay the Effective Response Force.
- **Response scalability**: Growth in incident volume and density will require additional units. Without replacement and expansion planning, LOS will erode even with full staffing.

Apparatus readiness must be understood as both a performance enabler and a capital planning priority.

Apparatus Gaps and Infrastructure Compatibility

The department currently lacks a ladder truck assigned to Downtown or Overlake despite clear growth in vertical development and mid-rise housing. This limits operational readiness in areas where building height and occupant load require immediate access to elevated rescue tools and tactics. This also hinders improving the City of Redmond's public protection class rating score through the Washington Surveying and Rating Bureau, adversely impacting fire insurance premiums for large portions of Downtown.

Additionally, many stations were not designed to accommodate longer or more modern apparatus, including:

- Tandem-axle or tiller ladder trucks
- Units with an expanded tool complement or EMS storage
- Electric vehicles with charging infrastructure needs

The department's first electric engine, a state-leading milestone, has introduced new energy demands that exceed the electrical capacity of most stations. These constraints, if unaddressed, will compromise future EV deployment and the ability to meet clean energy goals without degrading operational performance.

Emerging Risk and Apparatus-Associated Equipment Gaps

The department's fleet also lacks equipment tailored to the City's evolving risk profile. Several gaps exist in:

- Lithium-ion containment and EV fire suppression
- Portable power and lighting systems
- Air quality mitigation tools for wildfire smoke events
- Urban flood and stormwater access equipment

In addition, the department currently lacks any apparatus specifically configured to support elevated transit platform rescues, mass-casualty patient movement, or crowd evacuations at Redmond's four Sound Transit stations. These locations are positioned in the City's most densely developed neighborhoods and require rapid-access vehicles, platform-specific rescue tools, and scalable EMS support, none of which are included in the existing fleet profile.

These emerging risks reflect broader urbanization and climate-related trends and require both targeted equipment planning and integration with future facility design.

Apparatus Maintenance and Shop Capacity: The Hidden Side of Readiness

Apparatus readiness depends not only on purchasing new vehicles but on having the maintenance capacity to keep them in service. Currently, the department faces mounting strain on its fleet maintenance infrastructure, with impacts that directly affect system performance:

- Too few mechanics to support a growing and increasingly complex fleet (a new mechanic position was added in 2025).
- Limited space to accommodate growth or provide secured parking for apparatus.
- Aging reserve units that require more frequent and intensive service.

While recent staffing improvements have helped reduce a long-standing maintenance backlog, preventive maintenance continues to be delayed by shop congestion and limited technician availability. This increases the risk of frontline apparatus being out of service, especially during concurrent calls or major incidents.

Fire and EMS vehicles require specialized maintenance knowledge that extends beyond typical automotive or public works fleet repairs. Technicians must be trained in emergency lighting systems, onboard electronics, high-capacity braking, pump operations, hydraulic ladder systems, and, in some cases, the maintenance of life-saving EMS equipment stored in aid cars. Certification through the Emergency Vehicle Technician (EVT) program, along with Automotive Service Excellence (ASE) credentials, is often required or preferred to ensure that work meets national safety standards.

Apparatus support is a critical operational component that directly influences the department's ability to maintain consistent Levels of Service. As Redmond's fleet continues to evolve in size and complexity, support systems must scale accordingly. Ensuring long-term service reliability will require a forward-looking apparatus support strategy – one that proactively addresses facility capacity, technical specialization, and the unique maintenance needs of modern fire and EMS vehicles.

4.4 Additional Constraints on Level of Service

While Redmond's fire system remains functional and staffed by a highly capable workforce, its ability to deliver consistent, equitable, and timely emergency response is already under measurable strain. Level of Service (LOS) benchmarks, including travel time, unit availability, response reliability, and equipment readiness, are being increasingly challenged by operational, environmental, and infrastructure pressures. These are not future risks. The data confirms that degradation is already occurring.

Like all public systems, fire and EMS delivery is shaped by the risks a community is willing to accept. In Redmond, performance metrics embedded in the budget process and adopted plans, including a six-minute travel time goal, reflect the City's implicit risk posture. However, as demand grows and resources remain fixed, the gap between expectations and capability widens. This section outlines the most critical constraints threatening Redmond's emergency response capacity and invites deeper policy dialogue about how risk should be measured, mitigated, and managed going forward.

Cross-Staffing Vulnerabilities

Redmond Fire relies heavily on cross-staffing at many stations, meaning that a single crew is assigned to operate more than one apparatus. While this approach helps conserve personnel, it creates structural vulnerabilities: If the crew responds to a medical call in the Aid Car, the fire engine sits unstaffed for the duration of the call, and vice versa. This constrains system flexibility and contributes to cascading delays during moderate- or high-volume periods. Cross-staffing also takes up extra time during the turnout phase of response, as the crews need to move 40 lbs. of protective equipment between either vehicle, depending on the call type.

Average Turnout Time Comparison

- Cross-Staffed Units: 3 minutes and 22 seconds
- Non-Cross-staffed Units: 2 minutes and 7 seconds

Facility and Site Limitations on Scaling Response

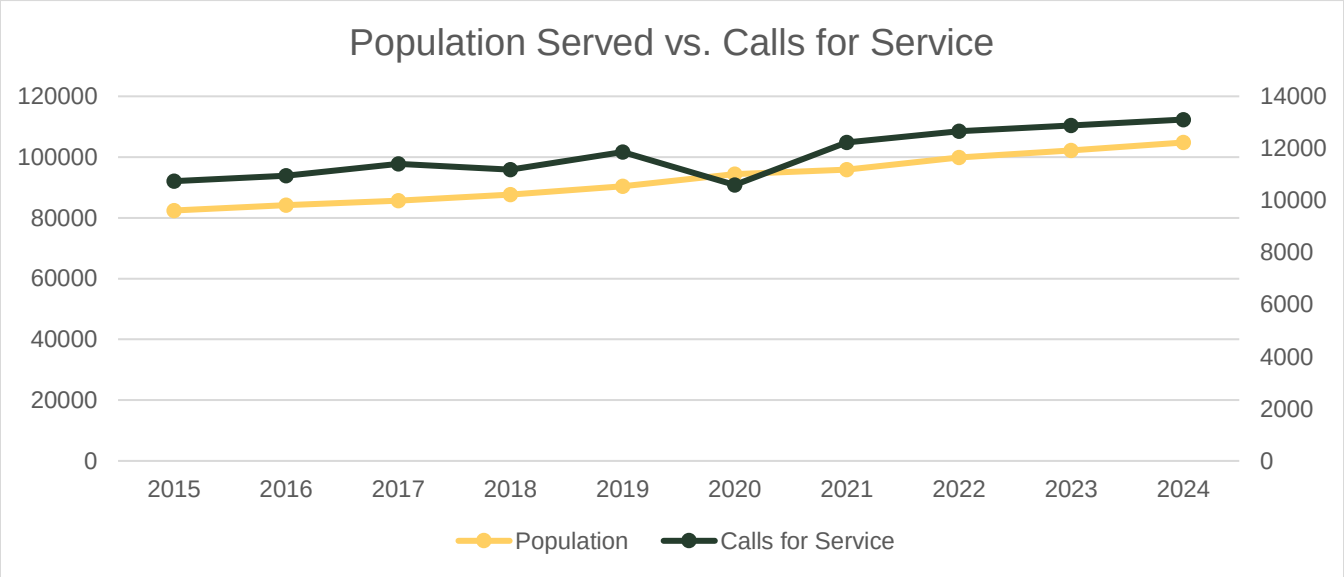
Several stations, including Station 11, Station 12, and Station 17, lack the physical capacity to support expanded staffing or apparatus deployment. In some cases, there is no additional dormitory space, gear storage, or apparatus bay room to add the personnel or equipment needed to sustain response performance.

These constraints aren't abstract. They've had a real impact. Until 2025, Station 17 operated with only two personnel, limiting it to aid car service. This left Northeast Redmond, including portions of Fire District 34, without dedicated engine coverage, often requiring out-of-area units to respond to structure fires and rescue calls. In 2025, four new FTEs were approved, the first increase in suppression staffing since 2007, allowing the station to begin full engine operations. That change alone alleviated a major LOS gap, but other stations remain capacity-limited.

Staffing Capacity, Deployment Standards, and LOS Pressure

Population and development growth in Redmond have led to sustained increases in emergency call volume, particularly for EMS and service-related incidents. These trends, combined with increased response complexity, directly drive the need for additional staffing to maintain Level of Service (LOS). Suppression staffing levels have remained largely unchanged for nearly two decades – not because the need was unrecognized but because the Fire Department historically lacked a capital planning instrument to link those needs to growth-based investment strategies.

FIGURE 3 – POPULATION SERVED VS. CALLS TO SERVICE – 2015-2024



In 2022, the Redmond Fire Department completed a **Community Risk Assessment and Standards of Cover** report. That analysis documented current response gaps and recommended additional staffing and apparatus to maintain LOS as the city urbanized. However, while the Standards of Cover met internal and operational planning goals, it did not fulfill the statutory or policy requirements to serve as a capital planning document under Washington State's Growth Management Act (GMA) or Redmond's municipal code. As a result, those recommendations, though valid, did not trigger impact fee eligibility or formal resource alignment with the City's broader capital improvement program (CIP).

This Fire Functional Plan is the corrective step. It is Redmond's first strategic framework that meets the capital planning criteria necessary to formally link staffing and apparatus needs to population growth and land use changes. Once adopted, it becomes the enabling document that allows the City to collect and use fire impact fees for eligible, growth-related projects and investments, including facilities, vehicles, and the staffing required to operate them.

To maintain safe 24/7 operations, Redmond Fire operates on a 48/96-hour shift schedule, with three rotating platoons (A, B, and C). Each daily staffed position requires 4.43 full-time equivalents (FTEs) to account for coverage across leave time, injury, training, and FLSA compliance.

This deployment model is consistent with regional practices and has been optimized for staffing efficiency under current labor agreements. While ongoing discussions periodically explore potential adjustments, any significant changes would require collective bargaining and, in many cases, could increase overall staffing costs. For example, aligning with shorter shift models used in nearby cities such as Bellevue or Kirkland could increase the required FTEs from 4.43 to 4.5 or higher.

Based on the current model:

- A new engine company with a three-person crew requires approximately 13.3 FTEs.
- A new aid car staffed with two personnel requires approximately 8.9 FTEs.

Without corresponding investments in authorized staffing, system reliability erodes even when facilities and equipment are physically available. Units may be purchased but cannot be deployed; stations may be built but remain underutilized. This Functional Plan affirms that staffing is not an operational afterthought but is a capital necessity and a core enabler of Level of Service.

Capital Equipment Impacts of Growth-Driven Staffing

As staffing increases to meet LOS targets, capital equipment also needs to scale. Each new firefighter requires:

- Structural PPE
- SCBA (self-contained breathing apparatus)
- Radio and other communication gear
- Station gear and personal tools

Equipment costs per firefighter range from $15,000 to $25,000, depending on each firefighter's assignment. These costs rise further for HAZMAT, wildland, or technical rescue personnel. The cost of equipping a full crew must be included in capital planning for every new apparatus.

These items meet state capital cost thresholds and may be eligible for fire impact fee funding when tied to LOS-driven growth.

Deployment Benchmarks and Redmond's LOS Standards

While the City of Redmond has historically relied on a six-minute travel time as a general planning guideline, the Fire Department's 2022 Community Risk Assessment and Standards of Cover recommended adopting a four-minute travel time benchmark for first-due unit arrival in the areas with the highest density and risk. This aligns with NFPA 1710 and is more appropriate for a city transitioning to a vertically oriented, mixed-use urban environment.

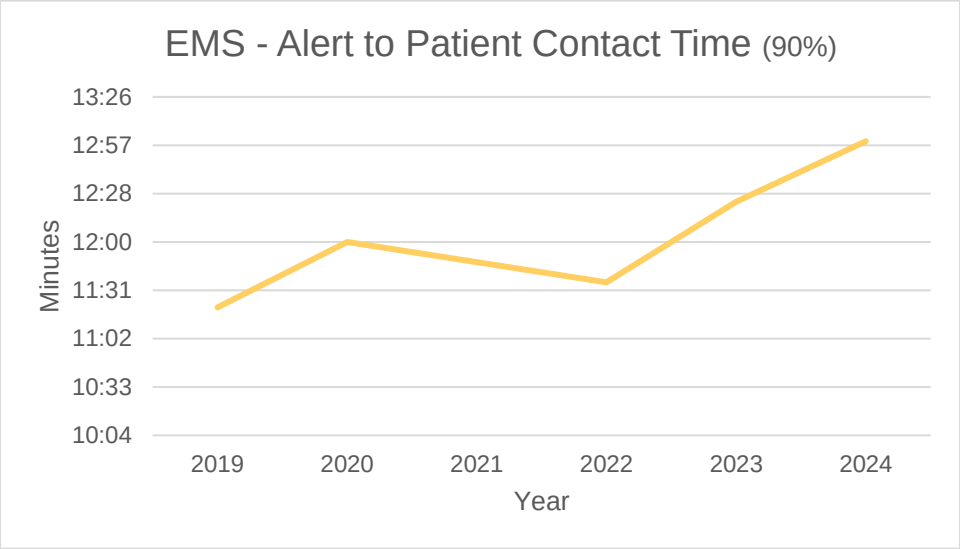
The four-minute standard reflects a practical trade-off: as buildings grow taller and patient or fire access becomes more time-consuming, the travel distance must shrink to preserve total response effectiveness. While advances in building codes and life safety systems, highlighted in Section 4.2, have reduced certain structural risks, they do not offset the operational delays caused by vertical access, high occupancy, or concurrent call volume.

These national benchmarks are increasingly difficult to meet under current conditions, particularly given Redmond's rising call volume, aging reserve fleet, facility constraints, and suppression staffing lag. The longer these capital and operational gaps persist, the further Redmond Fire's performance will drift from industry standards and from the expectations of the community it serves.

As illustrated in the figure below, Redmond's EMS "alert-to-patient contact" time at the 90th percentile has increased by over a minute and a half over the past five years. This reflects growing

operational strain caused by concurrent calls, vertical access delays, and unit unavailability during peak periods. LOS erosion is no longer a future risk; it is already occurring.

FIGURE 4 – EMS ALERT TO PATIENT CONTACT TIME – 2019-2024



Equity-Based Response Gaps in Rapidly Changing Neighborhoods

While citywide LOS maps show broad six-minute coverage, internal performance reviews and field reports confirm that certain neighborhoods consistently experience slower service, particularly in Northeast and Southeast Redmond. These areas are home to higher proportions of:

- Renters
- Residents with limited English proficiency
- Seniors and individuals with disabilities

Delays of even one to two minutes can have disproportionate impacts on these communities, especially when paired with other risk factors like limited personal transportation, health vulnerabilities, or reduced access to private services.

These disparities are already appearing in data and will become more pronounced if LOS thresholds are not enforced through capital, staffing, and siting decisions that center both equity and readiness.

4.5 Strain Cases: Signs of System Stress

While most capital facility analysis focuses on long-term planning, several of Redmond's fire stations are already contributing to Level of Service (LOS) degradation today. These are not

theoretical vulnerabilities. They are real limitations affecting how quickly, efficiently, and reliably the department can respond.

This section highlights three active stations where current facility constraints are directly impacting operations and contributing to growing LOS stress across the system.

Station 11: Aging Core, Insufficient Capacity

Station 11 is one of the oldest stations in the Redmond system and serves as the anchor point for Downtown response. It also houses the Fire Department's administrative functions, placing even greater operational demands on a facility originally built for a smaller, less complex service model.

Key LOS-related limitations include:

- No capacity for a tractor-drawn aerial truck, despite vertical growth in Downtown
- Limited dorm and storage space to support added staffing or specialty teams
- Outdated internal layout that challenges modern turnout flow and decontamination practices
- Delays in response due to constrained site access and internal congestion

As service demand rises in the Downtown core, Station 11's physical constraints are increasingly limiting deployment flexibility and crew readiness. While personnel and apparatus may be available, the facility's configuration and capacity reduce their operational effectiveness.

Station 12: Undersized, Mislocated, Overstretched

Station 12 currently serves the Overlake Growth Center, one of the City's fastest-developing neighborhoods. The station was originally sited to serve a different demand pattern and is now poorly aligned with current service needs. Though located just outside Redmond city limits, the issue is not its jurisdictional boundary but its geographic placement relative to where the majority of call volume and development are now concentrated.

Current LOS impacts include:

- Undersized bays and dorms, limiting the ability to add apparatus or personnel
- No zoning between apparatus and crew spaces, increasing exposure risks
- Delayed turnout due to congested layout and inadequate flow
- Insufficient space for surge staffing or specialty units
- More than half of its effective response coverage area is outside the City of Redmond

With Overlake poised for substantial residential and commercial infill, and the addition of light rail infrastructure, the current station footprint cannot sustain the operational load required to meet modern LOS expectations.

Station 17: Operational Gains, Facility Constraints Remain

Station 17 has seen significant progress. In 2025, the City authorized four new FTEs to staff a dedicated engine company at this site for the first time, a major operational milestone that improved unit availability in North Redmond. However, the station was never fully completed during its initial construction and still lacks key facilities needed to support a fully staffed unit.

Ongoing challenges include:

- Inadequate sleeping quarters for the additional personnel, requiring temporary workarounds
- No flex space for training, surge staffing, or incident staging
- Continued reliance on regional partners like Kirkland and Woodinville to cover parts of Redmond Ridge and northern Redmond, areas previously underserved due to unit unavailability

While the recent staffing enhancement improved response capacity, the station's unfinished buildout and lack of support space constrain its ability to serve as a base to a fully functional engine company over the long term.

Why These Cases Matter

These stations illustrate a central truth of this plan: LOS is not just about miles or minutes. It is about infrastructure readiness. Even with skilled personnel and functional apparatus, the station itself can be a rate-limiter if it isn't aligned with the demands of the service environment.

The following chapter presents a comprehensive, station-by-station assessment of infrastructure condition, essential facility compliance, and capacity to support growth through 2050.

4.6 Summary and Transition to Needs Assessment

Redmond's fire and emergency medical services are entering a period of sustained pressure. The effects of population growth, land use transformation, and increased call complexity are no longer future scenarios – they are current realities that the department is already navigating. While the system remains functional and crews continue to meet critical needs, performance indicators show a clear trend: the margin for reliability is getting thinner.

This is not a crisis. It is a slow, measurable erosion of the conditions that have traditionally enabled Redmond Fire to meet its Level of Service goals. The department now experiences more overlapping calls, longer time spent on scene, and increasing demands on a workforce that has not grown proportionally with the community it serves. The result is a system that is still performing, but it is performing under pressure.

That pressure shows up not just in data, but in daily experience:

- **Concurrent calls** that leave zones uncovered
- **Turnout delays** due to fatigue, station design, or cross-staffing limitations

- **Increased reliance on aging reserve units** due to past shortfalls in frontline fleet investment and staffing gaps in vehicle maintenance
- **Gaps in aerial, wildland, and EV suppression** capability
- **Crew sizes stretched to meet growing demand** with outdated facilities and limited gear

These are not reflections of mismanagement, but of a system doing more than it was originally built or resourced to sustain. Redmond Fire has historically operated as a fixed-asset system, scaled to a prior era of lower-density, single-story neighborhoods and slower growth cycles. That model is no longer sufficient. The City's built environment is evolving rapidly, with vertical development, transit expansion, and infill housing introducing new response patterns, increased call complexity, and physical access constraints.

The Fire Functional Plan serves as an intentional course correction, realigning fire service investments with the scale, complexity, and pace of modern urban growth. It marks a shift from reactive adaptation to proactive readiness, ensuring capital decisions are driven by operational reality and not historical precedent.

While Redmond is not experiencing a fire service crisis, the data points to a narrowing margin of reliability and a need for sustained reinvestment. Level of Service is not a static benchmark; it reflects the department's ability to meet community expectations as conditions evolve. This chapter provides the performance assessment.

Previous planning efforts, such as the 2022 Standards of Cover, identified many of these emerging challenges, but lacked the capital planning structure required by Washington State law and Redmond's fiscal governance. This Functional Plan fills that gap by linking population growth, risk exposure, and service demand to the infrastructure and funding decisions needed to support them. It establishes a durable framework for impact fee eligibility, long-term resource alignment, and measurable system improvements.

The next chapter presents the capital response to this reality: a sequenced investment roadmap to restore, maintain, and future-proof the fire system through 2050, ensuring the department is positioned not just to respond, but to succeed.


GOWDY

05 System Needs Assessment

The Redmond Fire Department is more than a service provider. It is a core component of the City's physical, social, and operational resilience. To maintain that role into the future, the City must continually evaluate whether its fire infrastructure is keeping pace not just with building codes or minimum standards, but with the real demands of a growing, diversifying, and increasingly risk-exposed community.

This chapter serves as a systems-level scan of facility readiness across Redmond's fire station network. Rather than evaluating buildings on aesthetics or age, this assessment asks a more consequential question:

> ***Do these facilities enable safe, reliable, and equitable emergency service under both normal conditions and disruptive events?***

To answer this question, the City employed a dual-method evaluation:

- The **Citywide Facility Condition Assessment (MENG 2024)** provided a structural and system-level evaluation of fire stations, using the Facility Condition Index (FCI) and capital forecasting to determine baseline building integrity.
- The internally developed **Fire Station Effectiveness Grading System** translated operational expectations into performance scores across five critical dimensions: essential facility standards, workforce wellness, Level of Service (LOS) support, internal layout, and environmental sustainability. Unlike conventional facility ratings, this method reflects a systems thinking approach, designed to evaluate how well each station supports the Fire Department's current and future mission. See Appendix B.

Together, these tools offer a more complete picture of fire infrastructure readiness – pairing objective condition ratings with operational performance factors.

To organize this diagnostic, this chapter is structured around five interdependent performance dimensions, each representing a core element of a modern emergency service facility. Within each subsection, we identify existing gaps, cite supporting standards or field data, and outline how these deficiencies affect system performance, staff safety, and public trust. These dimensions are:

Essential Facility Performance:
Can our fire stations survive and operate during major events? Are they seismically sound, code-compliant, and energy-resilient?

Healthy Building and Workforce Wellness:
Do our facilities protect the health of the people who work and live in them 24/7? Are they designed for diverse, inclusive, and cancer-conscious shift work?

Level of Service and Staffing Capacity:
Can our infrastructure support the staffing and apparatus needed to meet the Level of Service benchmarks in high-demand areas?

Community Resilience Infrastructure:
Are facilities configured to support Redmond's decentralized resilience goals, climate adaptation needs, and equitable access to emergency services?

These categories were selected not only to assess compliance with codes and standards but to evaluate how well Redmond's fire facilities are positioned to support the broader goals of Redmond 2050, including sustainability, equity, and neighborhood-level resilience goals.

Each section of this chapter presents a scored assessment, followed by a narrative analysis of what's working, what's at risk, and what changes will be required to sustain and evolve the system. The final section summarizes these findings and sets the stage for capital investment recommendations in Chapter 6.

For a full breakdown of individual station scores and grading criteria used in this chapter, see Appendix B.

While this chapter focuses on facility-specific diagnostics, apparatus and growth-related equipment needs are addressed narratively in Chapter 6, where they are directly connected to service demand, unit reliability, and response system strain. Because apparatus performance is tightly coupled with Level of Service but not tied to facility condition, those needs are not scored here, but will be reflected in the capital investment priorities outlined in Chapter 7.

5.1 Essential Facility Performance

Redmond's fire stations are designated Essential Facilities, meaning they are expected to remain operational during and after disasters to support life safety, emergency response, and continuity of city operations. To meet this expectation, stations must satisfy key resilience criteria – including seismic performance, backup power capacity, accessibility, and energy efficiency – that are defined by national and state standards.

Guiding Standards

Essential Facility expectations are grounded in the following frameworks:

- **FEMA P-58 and ASCE 41-23** outline seismic performance tiers for essential buildings, including the "Operational" performance level required for full post-event functionality.
- **International Building Code (IBC) §1604.5** classifies fire stations as Risk Category IV, requiring enhanced seismic design to ensure life safety and continuity of service.
- **NFPA 110** governs emergency and standby power systems for essential services, and **RCW 19.27A.210** sets energy performance thresholds under Washington's Clean Buildings Performance Standard (CBPS).
- **Redmond's own Fire Station Effectiveness Grading System** translates these standards into a scored evaluation framework, allowing stations to be compared across functional readiness domains.

This section evaluates each of the four City-owned fire stations (FS11, FS12, FS16, FS17) in four scored domains. Structural integrity was not independently scored, as it was already captured in the 2024 MENG Facility Condition Assessment.

1. Seismic Performance

Seismic resilience is foundational for essential facilities. Under FEMA and ASCE guidance, three levels of seismic performance are defined:

TABLE 4 – SEISMIC PERFORMANCE LEVELS SCORING

Performance Tier	Definition	Score in Redmond Grading System
Life Safety	Building won't collapse, but may be unusable	-10
Immediate Occupancy	Safe to re-enter, limited systems functionality	+5
Operational	Fully functional post-event, with systems active	+10

All four City stations scored "Poor" in this category, meaning they are either only code-compliant or have not been evaluated for modern operational performance. None of the stations meet the "Operational" standard, and seismic deficiencies were a noted concern in the MENG assessment for FS11, FS13, and FS17.

2. Backup Power and Redundancy

Per NFPA 110, essential facilities must have backup systems that can support critical operations – such as lighting, HVAC, bay doors, communications, and apparatus maintenance – for extended durations during utility outages. Redmond's stations all have fixed diesel generators, but most are aging and undersized.

The failure of FS12's generator during the November 2024 bomb cyclone, despite passing regular tests, illustrated the system's vulnerability. Crews remained in the station to serve the hard-hit neighborhoods with limited heat and no kitchen access. No station currently has transfer switches or external plug-in ports to connect a portable generator in the event of primary failure, limiting operational resilience.

As part of the City's strategic capital planning, all stations require:

- Replacement of aging fixed generators
- Installation of manual transfer switches
- Plug-and-play infrastructure for portable units

These upgrades are essential to maintain continuity during increasingly frequent and longer outages, especially as fire apparatus electrification increases total power demand.

Scoring Criteria: No back up = -10, back up less than 200kW = 0, back up more than 200kW = +10.

3. Americans with Disabilities Act (ADA) Accessibility

Accessibility is both a legal requirement and an operational necessity. During disasters or staff surges, facilities may be accessed by a wider range of personnel, including reserve responders, city volunteers, or mutual aid partners. During normal operations, access must be provided for employees and visitors. Inaccessible stations introduce operational friction and potential liability.

Each city station was evaluated for basic ADA compliance – specifically in restrooms, lockers, internal travel paths, and storage access. All four stations scored "Poor" in this category. Common deficiencies include:

- Mezzanine access via stairs only
- Non-compliant restrooms and showers
- Narrow internal corridors or thresholds

Upgrades in this area are foundational, not optional, to ensure readiness and equity.

4. Clean Buildings Performance Standard (CBPS) Compliance

Under Washington's Clean Buildings Act, public facilities over 50,000 square feet are covered under Tier 1 mandates, while smaller buildings are encouraged to meet Tier 2 targets.

Station 11, as a Tier 1 covered facility, is currently non-compliant and must be upgraded to avoid future penalties.

While not mandated for compliance, Stations 12, 16, and 17 also fail to meet Tier 2 energy targets, reducing operational efficiency and increasing grid dependency.

Energy performance is a resilience factor. Efficient buildings:

- Require less backup power during outages
- Provide better indoor environmental quality (IEQ) during smoke and heat events
- Align with Redmond's climate action goals

Scoring Criteria: Meets Tier 2 Energy Use Intensity target (EUIt). -10 if non-compliant and mandatory, 0 if not compliant, +5 if compliant but not mandated, +10 if compliant and mandated.

Conclusion: Widespread Essential Facility Gaps

None of Redmond's City-operated fire stations meet the full performance standard expected of essential public safety facilities. In every domain – seismic readiness, backup power, accessibility, and energy resilience – the current infrastructure fails to deliver the reliability needed to sustain operations during major disruptions.

Essential Facility Standards – Summary Matrix

Scored domains: Seismic Performance, Backup Power, ADA Accessibility, CBPS Compliance
Score range per domain: -10 (Fail) to +10 (Fully Compliant).

TABLE 5 – ESSENTIAL FACILITY STANDARDS SCORING

Station	Seismic	Backup Power	ADA Accessible	CBPS Compliant	Total Score (Max: 40)	Readiness Rating
FS11	-10	0	0	0	-10	High Risk
FS12	-10	0	0	0	-10	High Risk
FS16	-10	0	0	0	-10	High Risk
FS17	-10	0	0	0	-10	High Risk

These are not minor deficiencies. They represent systemic risks to continuity of operations, responder safety, and public trust. Addressing these needs will require coordinated capital investment.

5.2 Healthy Building and Workforce Wellness

Fire stations serve not only as emergency response hubs but as long-duration living and working spaces for firefighters, many of whom spend a third of their careers in these environments. Because of this, the condition and design of station interiors directly impact firefighter health, performance, and psychological recovery. Modern fire facilities must support physical wellness, reduce occupational exposure risks, accommodate a diverse and inclusive workforce, and provide the infrastructure needed for rest and recuperation between calls.

This section evaluates four core wellness categories drawn directly from Redmond's Fire Station Grading System:

1. **Contamination Control and Cancer Risk Reduction**
2. **Shift-Based Livability**
3. **Fitness and Recovery Support**
4. **Gender Inclusivity and Equity in Design**

Each element is scored according to NFPA standards, firefighter health research, and Washington state law, including RCW 51.32.185, which defines certain cancers, PTSD, and infectious diseases as presumptive occupational illnesses for firefighters. This legal recognition underscores the need for municipalities to reduce workplace health hazards through proper facility design and maintenance.

1. Contamination Control and Cancer Risk Reduction

Firefighter cancer risk is well-documented, with toxic exposures occurring not only during fireground operations but also through contaminated gear stored or cleaned improperly inside stations. NFPA 1581 and national "Healthy In, Healthy Out" practices recommend:

- Zoned decontamination corridors
- Isolated gear extractors and laundry
- Exhaust removal systems and PPE separation from living quarters

Station Scoring Summary:

- **FS17**: Scored **+8** for its decontamination layout and **+10** for exhaust/PPE infrastructure, the only station to meet modern best practices.
- **FS11, FS12, FS16**: Scored **0** or below for lacking either zoning separation, dual-system decontamination areas, or full exhaust/PPE containment.

Only FS17 currently reduces contamination risks to a meaningful degree. Other stations maintain partial protections but are not aligned with national cancer mitigation standards.

2. Shift-Based Livability

Firefighters operate on 24-hour shifts. Station livability, which includes bedrooms, restrooms, kitchens, and dining areas, is essential to mental and physical wellness during both routine operations and high-tempo periods like wildfires, storm events, or surges in EMS demand.

Grading Categories and Results:

- **Bedrooms and Bathrooms** (Max 10 points): FS16 and FS17 scored **10**, FS11 = 8, FS12 = 6.
- **Kitchen Facilities** (All = 10): Each station supports shift-wide food prep and storage.
- **Gender-Inclusive Facilities**: FS16 and FS17 scored **10**; FS11 and FS12 scored **0** due to outdated restroom and locker room design.

Only FS16 and FS17 provide adequate sleeping and inclusive rest/bathing accommodations. FS11 and FS12 continue to reflect legacy staffing assumptions that restrict workforce diversity and limit operational flexibility.

3. Fitness and Recovery Support

Firefighting is physically demanding and requires regular access to strength, conditioning, and recovery spaces to prevent musculoskeletal injury and support long-term cardiovascular and joint health. Access to appropriate fitness space is also directly tied to injury prevention and is considered a best practice by the International Association of Fire Fighters (IAFF) and national wellness programs.

All Redmond fire stations receive standardized fitness equipment to ensure equity in tools and resources across the department. However, the physical environments in which crews use this equipment vary significantly. Some stations have dedicated, purpose-built workout rooms, while others must place equipment in multi-use spaces that may limit usability and privacy.

Station Scores:

- **FS17**: Scored **10** – full-size, dedicated fitness space
- **FS16**: Scored **8** – functional but smaller or shared-use space

- **FS11**: Scored **6** – equipment available but limited space or ventilation
- **FS12**: Scored **1** – minimal space or functional access despite having equipment

While fitness equipment is provided equitably, significant disparities in functional access remain. FS12 in particular lacks the spatial design to support meaningful fitness use, and FS11 requires layout improvements to optimize existing infrastructure and to minimize cross-contamination from the apparatus bay.

Summary Matrix: Healthy Buildings and Workforce Wellness

Wellness criteria included: decontamination, livability, fitness, and gender-inclusive design.

TABLE 4 – HEALTHY BUILDINGS AND WORKFORCE WELLNESS SCORING

Station	Total Wellness Score (Max: 60)	Readiness Rating
FS11	24	Inadequate
FS12	16	Inadequate
FS16	38	Partial
FS17	58	Strong

Note: A full breakdown of all station wellness scores by category – including decontamination, kitchen, sleep quarters, fitness access, and inclusivity – can be found in Appendix X: Facility Scorecards and Evaluation Criteria.

Final Observations

Only FS17 achieves a high-performance rating in wellness, but it is constrained by a small staffing capacity. FS16 shows strong potential but requires targeted improvements in contamination control and air quality. FS11 and FS12 fall significantly below modern expectations across all categories, posing elevated health risks, restricting staffing flexibility, and failing to support 24-hour operational sustainability.

These conditions not only undermine resilience, they place the City at risk of preventable occupational harm, legal exposure, and rising medical leave costs. Modernizing stations for wellness and inclusion is no longer a discretionary improvement; it is a basic operational responsibility aligned with both law and science.

5.3 Level of Service and Staffing Capacity

A fire department's ability to meet Level of Service (LOS) goals is shaped not only by apparatus and personnel, but by whether its facilities and the sites they sit on are physically capable of supporting efficient deployment, scalable staffing, and round-the-clock readiness. As detailed in Chapter 5, Redmond's system is already showing signs of strain: increased response times, delayed staffing expansion despite rising call volume, and station configurations that limit operational flexibility.

This section evaluates how each station performs across three critical LOS enablers:

- **Turnout Time Configuration and Deployment Flow**
- **Staffing Capacity and Growth Readiness**
- **Response Area Efficiency and Siting**

These domains directly impact Redmond's ability to meet NFPA 1710 and CPSE-aligned response standards, particularly the emergency response time benchmarks. Together, they reflect whether the fire system's physical footprint can keep pace with the scale and complexity of the community it serves.

1. Turnout Time Configuration

Turnout time begins when a unit is dispatched and ends when the wheels start moving. Poor station layout – long hallways, stairwell transitions, multiple interior doors – can delay this critical interval, even when crews are ready and responsive. Redmond's Station Grading System evaluates travel path distance from living quarters to apparatus bays, including penalties for excessive doors or physical barriers. Redmond's Station Grading Scoring Criteria is:

- Travel path more than 150 feet from living spaces = -10
- More than 125 feet = -5
- More than 100 feet = 0
- Less than 100 feet = +1
- Less than 80 feet = +5
- Less than 60 feet = +10 (minus 3 points for every door past 2 in the travel path)

Turnout Path Scores:

FS11: -3 – long travel path with multiple barriers

FS12: -5 – extended route with obstructive layout

FS16: +1 – relatively efficient layout

FS17: -5 – surprisingly poor given newer build; long internal distance

Only FS16 scores positively. FS17's poor performance reflects a design mismatch between physical infrastructure and operational speed, demonstrating a missed opportunity for a newer facility.

2. Staffing Capacity and Growth Readiness

As Redmond's population and service demands increase, stations must be able to support additional personnel and apparatus. This includes both the interior configuration of the facility and the capacity of the physical site to accommodate future growth.

TABLE 7 – STAFFING CAPACITY AND GROWTH READINESS OBSERVATIONS

Station	Observations
FS11	Can support up to 10 staff today, but is at maximum capacity. Critically, the apparatus bay cannot house a larger ladder truck – an urgent need for vertical coverage in the downtown core. The site is landlocked and cannot support expansion.
FS12	Limited to 5 staff. Small footprint and tight site prevent any expansion of staffing or units, despite serving a growth area (Overlake and Southeast Redmond). No viable path to scale operations from this facility.

FS16	Currently supports 9 staff and has a sound internal layout. No near-term expansion is needed; however, it will require a planned remodel within the next 5–10 years to prevent degradation and preserve performance. The site offers limited options for modest upgrades.
FS17	Intended to support up to 5 staff, but only 3 sleeping quarters were built out. Apparatus bay is fully functional, and the site has additional capacity. With modest investment, the facility can be brought up to its original design potential and used to absorb additional demand.

Note: FS11 and FS12 are structurally and spatially capped, unable to scale alongside growth or complexity. FS16 is currently aligned with needs, but it will need lifecycle investments. FS17 is physically expandable but underbuilt, presenting a strategic opportunity for targeted investment.

3. Response Area Efficiency and Siting

Geographic positioning remains essential for ensuring a timely response across a growing city. GIS-based analysis assessed each station's ability to reach risk-weighted structures within national standards: 4 minutes for urban response and 8 minutes for suburban/rural zones.

TABLE 8 – RESPONSE AREA EFFICIENCY AND SITING OBSERVATIONS

Station	Score	Observations
FS11	7.9/10	Centrally located; covers core areas of Downtown but relies heavily on mutual aid from Kirkland for areas west of 148th Ave NE and north of NE 95th Street. Due to the proliferation of mixed-use, mid- and high-rise structures in Downtown, this station will not be able to maintain its LoS over time, as evidenced by degrading patient contact times.
FS12	4.4/10	Located in Bellevue and outside Redmond's central jurisdiction. Only 50 percent of its effective response coverage overlays Redmond, at the expense of adequate coverage for areas of Idylwood and west of 172nd Ave. NE.
FS16	6.7/10	Adequately positioned for Southeast Redmond and aligned with projected residential and employment growth, but currently houses only a ladder truck, which means no fire engine/water suppression capabilities at this location.
FS17	7.4/10	Excellent siting for North Redmond, but, at the time of scoring and prior to recent changes, underleveraged due to low staffing and turnout limitations.

Note: FS16 and FS17 are well-positioned to meet the City's future risk geography. FS11 remains viable but increasingly congested. FS12's location poses long-term challenges for coverage and infrastructure planning.

TABLE 9 - LOS SUPPORT AND STAFFING READINESS SUMMARY MATRIX

Station	Turnout Score	Growth Capacity	Coverage Score	Overall LOS Readiness
FS11	-3	Maxed out; bay cannot fit future ladder truck	7.9/10	Moderate
FS12	-5	Small footprint; no room for staff or units	4.4/10	Inadequate
FS16	+1	Currently sufficient; remodel needed within a decade	6.7/10	Moderate

FS17	-5	Expandable site; underbuilt but structurally capable	7.4/10	Adequate (latent potential)

Summary

Redmond's fire system is currently maintaining its Level of Service commitments through operational efficiency and overlapping coverage zones, but this model is showing signs of stress. Three of the four City-operated stations have internal or site-based limitations that restrict their ability to scale staffing, house additional apparatus, or meet emerging service demands from vertical growth and increasing call volume.

Stations 11 and 12 are of particular concern. Both are physically constrained and unable to accommodate the units or personnel needed to serve expanding urban neighborhoods. FS12 is especially misaligned with Redmond's long-term coverage needs due to its location outside city limits and its lack of expansion options. FS16 is appropriately scaled today but will require reinvestment within the next decade to maintain performance. FS17 stands out as Redmond's most adaptable station with strong siting, structural flexibility, and underbuilt capacity that could be activated through targeted capital upgrades.

The findings in this section reinforce that Level of Service is not just a staffing or apparatus issue; it is a facilities issue. Redmond cannot sustain or improve service delivery without strategic investment in the footprint, functionality, and future-readiness of its fire stations.

5.4 Community Resilience Infrastructure, Climate Risk, and Access Equity

Redmond 2050 defines resilience as the community's ability to "prepare for and recover from adverse events in ways that maintain and improve individual and collective well-being." This holistic approach emphasizes physical infrastructure, environmental sustainability, social equity, and access to essential services during disruption. For Redmond Fire, this expanded definition of resilience reveals a critical set of infrastructure and service vulnerabilities, spanning climate risk, access equity, and operational adaptability.

Redmond Fire's Standards of Cover identifies a wide range of operational hazards, including mass casualty incidents, technical rescue events, and large-scale medical or fire surge scenarios. While those threats are addressed through deployment models, response protocols, and operational training, this Functional Plan highlights a narrower subset of hazards, specifically those that have a direct impact on fire facilities and their ability to remain operational during disruption. These include environmental risks to station continuity, infrastructure gaps related to equity and accessibility, and systemic vulnerabilities in power, fuel, and water readiness.

Environmental Risk and Infrastructure Vulnerability

Redmond's fire system faces growing environmental pressures from prolonged heat events, stormwater surges, smoke and air quality degradation, and wildfire-adjacent zones. These evolving risks are already testing the reliability of the department's facilities and operational systems.

Fire stations are increasingly strained by:

- **Aging roof and drainage systems** that are prone to leaks or flooding during heavy storms
- **Outdated HVAC** unable to regulate indoor air quality during heat or smoke events
- **Backup generators** that are aging, undersized, and often noncompliant with the Clean Buildings Performance Standard (CBPS)

The failure of the backup generator at Station 12 demonstrated the real-world vulnerability of essential facilities when resilience systems are outdated or lacking redundancy.

Additionally, the electrical infrastructure across stations is insufficient to support the transition to electric apparatus. Redmond's deployment of a fully electric fire engine marks a progressive step, but the current electrical capacity at most stations cannot support regular charging or scalable EV integration. This creates a service risk during power outages, as backup generators are not capable of recharging electric apparatus at the speed or scale needed to sustain operations.

As Redmond transitions toward electric apparatus in support of citywide climate goals, the Fire Department fully supports the need to reduce the environmental impact of emergency response. Electrification is a critical step toward long-term sustainability. At the same time, it introduces new operational considerations, particularly during prolonged power outages when recharging infrastructure may be unavailable or insufficient to meet demand.

While diesel fuel remains a viable short-term fallback, ensuring long-duration energy resilience will require continued planning and integration across city departments. The ability to sustain emergency response during grid failures depends not only on vehicle technology but on coordinated infrastructure, backup systems, and fueling strategies that align with both climate adaptation and operational continuity. As the City moves toward decarbonization, these dual priorities – resilience and sustainability – must be advanced together.

Water Access and Conservation Needs

Water availability is another emerging dimension of fire system resilience. The department currently lacks infrastructure and protocols for water conservation during training and non-emergency equipment testing. This creates unnecessary draw on the City’s potable water supply and may increase long-term operational costs or sustainability impacts.

In addition, alternative water sourcing is not currently integrated into fire system planning. There are outdated plans for access to drafting sites or supplemental water sources in the event of system failures, dry hydrants, or critical infrastructure damage. As climate stress and regional growth increase strain on municipal water systems, the ability to access and mobilize water resources during emergencies will become a more significant operational concern.

Neighborhood-Level Disparities in Response and Access

While GIS analysis shows broad fire coverage across Redmond, internal performance data and operational field experience indicate that actual service access varies depending on call volume,

overlapping incidents, and street network constraints. These delays, often measured in minutes, can have outsized impacts in areas with higher demographic vulnerability.

According to the Redmond 2050 Comprehensive Plan, the City's population is becoming increasingly diverse, with over 44% of residents born outside the U.S. and nearly 30% speaking a language other than English at home. The plan also highlights the importance of supporting seniors, renters, individuals with disabilities, and residents without access to personal vehicles, all of whom may rely more heavily on public emergency services.

While the plan does not identify specific neighborhoods by name, it underscores a citywide need to "expand access to services across all neighborhoods, particularly for underrepresented and historically marginalized populations." As infill and redevelopment continue, especially in areas like Overlake, Southeast Redmond, and portions of Downtown, small disparities in response time and system redundancy will become more consequential, particularly for those with limited capacity to navigate alternate systems or delayed emergency response.

Redmond's equity commitments must be reflected in how fire and emergency infrastructure are sited, scaled, and maintained so that response capacity grows alongside the community, not behind it.

Gaps in Distributed Resilience Infrastructure

Currently, none of Redmond's fire stations include built-in infrastructure to support decentralized community resilience. There are no secured supply caches, backup communication hubs, or externally accessible support zones to partner with neighborhood preparedness groups like Community Emergency Response Teams (CERT). The absence of these elements limits the City's ability to implement its distributed resilience vision and creates overreliance on centralized resources during major incidents. To meet Redmond 2050 resilience goals, fire facilities must be upgraded not only as emergency response hubs but as decentralized platforms for public health, preparedness, and neighborhood continuity. Neighboring jurisdictions like Bellevue are implementing similar strategies in their new fire facilities, while communities such as Issaquah are promoting community resilience hubs in private as well as public facilities.

Redmond's THRIVE Program and the FS11 Annex: A Community-Facing Resilience Asset

In addition to its fire stations, Redmond Fire's FS11 Annex is a facility that, while not part of the emergency response deployment model, plays a critical role in citywide resilience. The Annex houses the Fire Department's Mobile Integrated Health (MIH) and Community Care teams under the THRIVE: Community Health Program. These teams work proactively to reduce system strain by serving frequent 911 callers, individuals in crisis, and residents with complex social and medical needs. Their work improves public health outcomes, reduces emergency call volume, and enhances equity by delivering services directly into homes and communities. In many cases, these teams are the first point of contact for vulnerable residents long before a 911 call is made. These programs provide upstream intervention, reaching residents before emergencies escalate, making them an essential pillar of Redmond's community risk reduction strategy.

The FS11 Annex facility, however, is in poor condition and structurally inadequate for its current function. It was rated one of the lowest-performing city facilities in the 2024 Facility Condition Assessment (FCI: 0.21) and lacks seismic integrity, energy resilience, and ADA compliance. Despite its foundational role in the City's distributed care model, the Annex is not currently supported by an infrastructure strategy that reflects its community-facing mission. As Redmond continues to expand its decentralized resilience model, the FS11 Annex should be prioritized alongside fire stations for capital investment.

Summary

Redmond's current fire system does not yet reflect the integrated resilience goals established in Redmond 2050. Gaps in infrastructure, energy readiness, water access, and neighborhood equity create vulnerabilities that affect both emergency performance and community trust. These needs are not isolated. They are structurally connected, and their resolution will require intentional design and investment in the capital priorities outlined in the next section.

5.5 Administrative, Logistics, and Training Gaps

The operational strength of Redmond Fire and Rescue depends not only on frontline response but also on the effectiveness of its administrative, training, and logistical support systems. These functions, though often invisible to the public, are essential to maintaining consistent service delivery, equipment readiness, and workforce coordination. At present, the department lacks adequate infrastructure to support these needs.

Administrative operations are primarily housed at Station 11, which was not originally designed to accommodate professional office functions. The headquarters were added to the original station in 2000. As the department's administrative responsibilities have expanded, including staffing management, budgeting, data systems, interdepartmental coordination, logistics, and operations management, available workspace has become insufficient, crowded, and poorly configured to meet current needs.

Logistics and supply management are similarly constrained. The department does not have a centralized, climate-controlled facility for storing and managing equipment such as PPE, EMS supplies, specialty tools, and critical backup resources. Instead, materials and equipment programs are dispersed across multiple fire stations, resulting in fragmentation of both physical assets and the administrative processes used to manage them. The fragmentation of storage and supply systems impedes not just operational efficiency but real-time readiness during large-scale incidents or logistical surges.

These challenges extend to vehicle storage. The City currently lacks sufficient secure, indoor space for housing reserve apparatus, which are instead stored outdoors. This practice exposes vehicles to weather-related degradation, including mold and mildew growth inside cabs, as well as increased risk of theft or vandalism. Over time, these conditions erode vehicle reliability and inflate maintenance costs, undermining the reserve fleet's role as a safety net for sustained operations.

This fragmentation also affects staffing. Equipment programs are often overseen by field personnel, such as station captains, whose shift-based schedules frequently misalign with the department's

business operations and the working hours of external vendors or City purchasing systems. As a result, procurement tasks, vendor coordination, inventory tracking, and compliance documentation are often delayed, inconsistently managed, or dependent on informal workarounds. These gaps increase risk, especially as the department scales and becomes more reliant on standardized systems and coordinated logistics.

Training capacity is also constrained. The department currently lacks a dedicated, department-controlled facility suitable for in-service instruction, large-scale drills, or multi-agency exercises. Most hands-on training occurs in field environments or temporary spaces, which limits flexibility and accessibility.

In addition, the department relies on a partnership with the City of Bellevue to access a shared training facility for firefighter academies. While this arrangement offers exposure to an urban training environment, it is limited in capacity and availability. There is also a long travel time associated with crews leaving their respective zone and commuting to the Bellevue training center. The department is currently restricted to one full entry level academy per year, which constrains hiring timelines and limits the number of new personnel that can be onboarded. If a recruit separates during the academy, the line position they were slated to fill may remain vacant until the next annual cycle, exacerbating staffing shortages and overtime. A smaller fall academy is occasionally held for lateral hires, but it is capped at eight participants and subject to reduced facility access due to Bellevue's internal training needs.

Summary

Without dedicated infrastructure to support the department's administrative, logistics, and training functions, Redmond Fire cannot scale or sustain the systems needed to meet future demands. These support systems must be elevated as core capital priorities, not afterthoughts, because they directly affect everything from firefighter safety and hiring timelines to procurement accountability and operational resilience.

5.6 Summary of System Needs and Transition to Investment Strategy

The diagnostic findings in this chapter reveal a fire system under mounting structural strain. While Redmond Fire continues to deliver a high level of service across the city, its physical infrastructure is no longer aligned with the scale, complexity, or equity expectations of a growing and diversifying community.

Across five performance domains—Essential Facility Standards, Healthy Buildings and Workforce Wellness, LOS Support and Staffing Readiness, Community Resilience Infrastructure, and Administrative and Support Operations—clear patterns have emerged:

- **All four City-owned fire stations failed to meet the minimum criteria for essential facility performance**, with systemwide gaps in seismic readiness, backup power, ADA compliance, and clean energy infrastructure. These deficiencies place the department at risk of failure during major disruptions and compromise responder safety.

- **Only one station (FS17) approaches full wellness functionality**, and it is currently underbuilt. FS11 and FS12 lack inclusive facilities, contamination controls, and functional fitness spaces, falling short of modern occupational health standards.
- **Level of Service performance is being maintained only through overlap and system strain.** FS11 and FS12 are physically incapable of accommodating additional units or staff. FS17 has untapped capacity, and FS16 is well-positioned today but will require a mid-term capital investment to avoid functional decline.
- **Redmond's facilities are not yet configured to support the City's resilience and equity goals.** Energy and water system vulnerabilities remain unaddressed. No fire stations currently support decentralized response functions like community supply caches or CERT access. The FS11 Annex, home to the THRIVE community care team, is a critical public health asset operating out of a severely degraded building. Many stations also lack gender-appropriate facilities, which undermines workforce inclusion and limits the City's ability to support a diverse, modern fire service.
- **Administrative, logistics, and training infrastructure is absent or makeshift.** These core systems, vital to recruiting, equipping, and coordinating the workforce, are currently dispersed, overextended, and reliant on informal workarounds. Without capital investment, these operational gaps will intensify as the system grows.

The Central Finding:

The current facility footprint was not built for the demands of today's city, much less the one anticipated in Redmond 2050. Infrastructure that once worked efficiently now constrains service delivery, readiness, equity, and resilience.

The next chapter outlines the capital investment strategy that responds to these findings. It prioritizes the most urgent infrastructure needs, identifies where systemwide investment will unlock readiness and capacity, and sets the foundation for a modernized, community-centered fire system that is equipped to protect Redmond today and into the future.


8450
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06 Capital Investment Recommendations

The Redmond Fire Department is entering a defining decade. The assessments in the previous chapters have revealed a system that, while staffed by a dedicated and highly capable workforce, is being strained by outdated infrastructure, limited physical capacity, and a growing mismatch between the city's fire system and the realities of urban growth.

From seismic deficiencies and inaccessible facilities to aging apparatus and missing surge capacity, Redmond's fire infrastructure is becoming misaligned with the service expectations, equity goals, and risk environment of the city Redmond is becoming. Level of Service (LOS) is not just a performance metric. It's a warning system. Every delayed response, constrained station footprint, or out-of-service unit is a signal that the system needs reinvestment.

This chapter translates diagnosis into action.

Rather than relying on a single score or formula, the City has evaluated each capital project through a practical, multi-dimensional lens, drawing from field data, community growth patterns, and direct operational impacts. Projects were prioritized based on five core considerations:

- **Facility condition and safety risks**
- **Operational performance and scalability**
- **Growth pressure and future service demand**
- **Equity of access and service delivery**
- **Continuity of operations and resilience readiness**

Together, these considerations reflect what it takes to maintain a modern fire system, not just today, but through 2050. While project prioritization in this plan is guided by five dimensions of evaluation criteria, it is important to recognize that many of the identified facility issues also present increasing risk exposure. Delaying investment not only undermines operational readiness, but it can also result in significant legal and financial consequences. Inaction may lead to civil liability if known deficiencies contribute to injury or harm, ultimately costing the City more through both legal settlements and the eventual need to make overdue improvements.

This chapter outlines near- and long-term investment priorities for the fire department. Each project has been sequenced based on urgency, impact, and alignment with Redmond's broader planning goals.

Importantly, this is also Redmond's first impact-fee-eligible fire capital plan designed to meet the requirements for impact fee eligibility under the Washington State Growth Management Act. By clearly linking population growth and service demand to infrastructure needs, this plan enables the City to recover a portion of capital costs from new development, ensuring that future growth helps fund the emergency services it relies on.

The investments recommended here are not just about buildings or vehicles. They are about protecting people: residents, responders, and the City itself. They are the foundation of a fire system that will be ready not just to respond, but to lead in a more complex, risk-exposed future.

6.1 Alignment with the 2011 Vision Blueprint: Capital Investment Strategy (2013-2030)

The *2011 Vision Blueprint: Capital Investment Strategy 2013–2030* identified a phased investment plan totaling approximately $36.5 million for Redmond Fire facilities over an 18-year horizon. These investments were grouped by the City's capital planning timelines: Near-Term (2013–2018), Mid-Term (2019–2024), and Long-Term (2025–2030). The priorities were based on projected growth, station condition, and the need to meet the City's adopted service standard of six-minute travel time for 90% of emergency calls.

Near-Term (2013–2018)

- **Fire Station 17 Construction — $8 million**
  Identified as a top priority to serve the rapidly growing Southeast Redmond area. A substantial portion of Station 17 was completed within this timeframe, providing Basic Life Support (BLS) capabilities. However, the station was not fully built out to accommodate a full engine company, leaving a service gap in the eastern portion of the city.

Mid-Term (2019–2024)

- **Station 11 Replacement or Major Renovation — $15 million**
  Intended to modernize Downtown's primary response hub and headquarters, which remains spatially constrained and operationally outdated. No significant progress has been made to date.

Long-Term (2025–2030)

- **Station 12 Renovation — $4.5 million**
- **Apparatus Bay Expansion or Modernization at Station 13 or 14 — $9 million**
  These improvements were planned to extend the life and functionality of existing assets as citywide demand increased. As of this writing, these projects have not been initiated.

Implementation Gap and Strategic Reprioritization

With the exception of the partial completion of Station 17, none of the fire-related capital investments identified in the Vision Blueprint were executed as planned. A key contributing factor has been the absence of an up-to-date Fire Department Functional Plan, which would have provided the necessary operational justification, prioritization framework, and policy alignment to move projects forward through the City's Budgeting by Priorities (BP) process.

This updated Functional Plan now fills that gap, re-establishing the long-range capital strategy for fire services and aligning it with current land use, population growth, and essential facility resilience standards. Future capital planning should re-evaluate and re-sequence the remaining

projects originally outlined in the *Vision Blueprint* to ensure readiness for inclusion in the City's 6-year Capital Improvement Program (CIP) and long-term strategic funding discussions.

Source: City of Redmond, Vision Blueprint: Capital Investment Strategy 2013–2030. Approved December 13, 2011.

6.2 Capital Investment Framework

Redmond's capital strategy for fire infrastructure is no longer organized around facility age or individual project costs. It is instead structured around operational impact — what each investment enables in terms of service reliability, response equity, and system resilience in a city that is rapidly growing more dense, diverse, and complex.

To translate system needs into action, this section organizes capital investments into four phased categories:

- **Current Investments (2025–2030)**: Active or programmed projects from the 2025–2030 Capital Facilities Plan (CFP).
- **Blueprint 2050 (2027–2032)**: Strategic investments aligned with known growth pressures, logistics needs, and Level of Service (LOS) risks.
- **Growth Response (2033–2040)**: Major facility and apparatus projects tied to population expansion and system modernization.
- **Sustainment and Long-Term Expansion (2041–2050 and Beyond)**: Lifecycle renovations, specialty systems, and new facilities to support system continuity and scalable readiness.

Projects were not prioritized by a single formula. Each was evaluated using five interdependent criteria:

1. **Facility condition and safety risks**: Structural, seismic, accessibility, and compliance risks based on assessments and facility lifecycle data.
2. **Operational performance and scalability**: Ability to support current staffing, apparatus, and deployment models; adaptability to projected growth.
3. **Growth pressure and demand**: Alignment with population and development projections, particularly within Regional Growth Centers.
4. **Equity of service access**: Potential to improve response in underserved areas or areas with complex access issues.
5. **Continuity of operations and resilience readiness**: Infrastructure readiness for prolonged outages, climate disruptions, and concurrent emergencies.

This functional plan not only realigns Redmond's capital strategy to better match operational needs, but also enables the City's first use of fire impact fees under the Growth Management Act. By directly tying capital investments to new growth, Redmond can recover a portion of its infrastructure costs while ensuring future development contributes to the system it depends on.

6.3 Investment Categories

Redmond's fire system needs are complex, but they are not abstract. Each facility, apparatus, and support function plays a concrete role in enabling emergency response. To structure its capital investment strategy, the City has grouped its fire infrastructure priorities into four actionable categories:

- **Fire Station Renovations, Relocations, and New Construction**
- **Support Facilities for Logistics, Training, and Administrative Capacity**
- **Apparatus and Specialty Equipment**
- **Facility Systems Modernization and Planning Studies**

Together, these categories address the full spectrum of operational demands — from housing personnel and apparatus to sustaining system functions and preparing for long-term service evolution. The following subsections detail the individual projects within each category, sequenced by phase and aligned with the capital investment timeline introduced in Section 6.2. The methodology used for determining project costs is detailed in Chapter 7.

A full summary of capital investments, including location, cost, funding sources, impact fee eligibility, and alignment with Redmond 2050 themes, is provided in the Capital Investment Sequencing Table (see Appendix E). Projects are organized across the four strategic phases introduced above, enabling clear alignment between operational priorities and capital planning timelines.

Fire Station Renovations, Relocations, and New Construction

Fire stations are the operational core of Redmond's emergency response system. Each one anchors a segment of the City's geographic coverage, housing the personnel, apparatus, and systems required to meet Level of Service (LOS) standards and maintain continuity during emergencies. As the city grows denser and more complex, several existing stations have become outdated, undersized, or poorly aligned with current and future service needs. Others lack the flexibility to scale alongside new development patterns and risk conditions.

This category includes targeted renovations to address deficiencies, strategic relocations to improve coverage and jurisdictional alignment, and new construction to meet demand in underserved or rapidly growing areas. Projects are sequenced based on operational urgency, interdependencies, and their role in supporting Redmond's long-range growth and resilience goals.

Station 11: Repairs, Remodel, and Phase 2 Rebuild

Phases:

- Repairs (2025–2030): $4,985,722
- Partial Remodel (2027–2032): $1,600,000
- Phase 2 Rebuild/Renovation (2027-2032): $15,000,000
- Full Relocation (Beyond 2050): $35,000,000 (if pursued)

Impact Fee Eligible: Partial

Station 11 is Redmond's highest-priority facility. It is seismically vulnerable, lacks sufficient bay clearance for the City's new TDA ladder truck, and is increasingly constrained by Downtown growth and staff demands.

- **Short-term repairs** are already funded and underway.
- **A partial remodel by 2032** will enable immediate deployment of the ladder truck, improve the apparatus bay to meet modern design and operational standards, and address safety hazards.
- **A major renovation or rebuild on its current site by 2032** will modernize the facility, expand capacity, and extend its operational capabilities for another 15-20 years.
- **A full relocation beyond 2050** is under consideration if co-located planning with Station 19 proceeds.

Station 12: Relocation and Construction

Phases:
- Land Acquisition (2033–2040): $10,000,000
- New Station Construction (2033–2040): $30,000,000

Impact Fee Eligible: Yes (partial)

Station 12 currently operates from a facility in Bellevue. Its location, size, and condition limit response effectiveness in the Overlake and Idylwood growth areas.

- A new site within Redmond will be acquired and developed as a 4-bay station with staffing capacity for a full engine company and aid unit.
- This investment provides a 7% improvement in LOS coverage to key multifamily zones and resolves long-standing jurisdictional challenges.

Station 17: Interior Buildout and Admin. Relief

Phase: 2025–2030
Cost: $390,000
Impact Fee Eligible: No

This project completes the interior buildout at Station 17 to support the full engine company staffing added in 2025. It also includes converting second-floor space into administrative offices, improving livability and relieving crowding at Station 11.

- Generator plug-in infrastructure and future diesel exhaust replacement are planned to support long-term resilience.
- This is a low-cost, high-impact investment included in the adopted 2025–2030 Capital Facilities Plan.

Station 16: Lifecycle Renovation

Phase: 2041–2050
Cost: $12,000,000
Impact Fee Eligible: No

Station 16 remains functional but will require a full lifecycle renovation in a future capital planning cycle to preserve facility condition, support flexible staffing, and align with long-term deployment shifts.

- Diesel exhaust and generator upgrades may be completed earlier through interim system modernization investments (see Facility Systems category).
- The full renovation is scheduled for 2041–2050 as the station's role evolves alongside growth and facility realignments citywide.

Station 19: New Construction

Phase: Beyond 2050
Cost: $35,000,000
Impact Fee Eligible: Yes

A new fire station will be required in northeast Downtown to maintain Level of Service (LOS) as vertical development and population density increase in the Downtown area. . Current modeling shows that without this additional station, even fully staffing and upgrading existing facilities will not be sufficient to meet future demand.

However, constructing Station 19 is not just a coverage expansion, it is a critical enabler for a potential relocation of Station 11. While Station 11's current site supports short-term ladder truck deployment, it cannot support long-term performance, resilience, or optimized coverage. The addition of Station 19 would allow Station 11 to be moved to a more strategic location (such as the Willows corridor), relieving redundancy, improving unit distribution, and maximizing coverage citywide.

Together, the addition of Station 19 and a relocated Station 11 would close existing LOS gaps, reduce overlap, and position Redmond to absorb sustained growth across all three Regional Growth Centers. The capital timeline reflects that land acquisition and planning must occur in advance, even though construction is scheduled for after 2050.

Support Facilities: Logistics, Training, and Administrative Capacity

While fire stations form the public face of the emergency response system, the effectiveness of that system depends just as much on what happens behind the scenes. Logistics operations, administrative management, and training capacity are essential to maintaining readiness, sustaining staffing, and coordinating multi-unit responses across the City. Redmond's current facilities for these functions are fragmented, outdated, or entirely absent. Without targeted

investment, these gaps will continue to limit the department's ability to grow, adapt, and respond effectively in a more complex service environment.

Centralized Logistics Warehouse: Lease and Tenant Improvements

Phase: 2027–2032
Cost: $600,000
Impact Fee Eligible: No

Redmond Fire currently lacks a centralized, climate-controlled facility for storing and staging equipment, PPE, reserve apparatus, and specialized supplies. These assets are currently dispersed across stations, stored in non-purpose-built areas, and managed by field personnel with limited capacity. This creates delays in replenishment, complicates deployment during emergencies, and occupies valuable space in frontline facilities.

This project will fund tenant improvements at a leased 10,000-square-foot warehouse to support:

- Storage of reserve vehicles and high-use specialty tools
- PPE management and EMS inventory control
- Basic administrative workspace for logistics staff
- Surge support and cache storage for the Office of Emergency Management

By consolidating storage and logistics into a single location, the City will increase deployment efficiency, reduce equipment degradation, and reclaim space in fire stations for operational use. This investment is considered foundational to systemwide performance and resilience and is prioritized in Phase 1. There is currently no plan for a permanent logistics facility; the leased model is expected to meet operational needs for the foreseeable future.

Apparatus Shop Expansion and Logistics Facility Modernization

Phase: 2027–2032
Cost: $5,000,000
Impact Fee Eligible: TBD

In addition to the leased warehouse for immediate logistics needs, the City will earmark funding and initiate exploration of options to address long-term logistics capacity. This assessment will consider factors such as facility siting, cost, operational impact, and alignment with Redmond's broader capital planning goals.

The renovation will include:

- Structural expansion to house reserve vehicles and specialized equipment in a secure, climate-controlled environment
- Dedicated zones for PPE storage, SCBA maintenance, and EMS supply inventory
- Improved utility access, lighting, and ventilation to support staff health and safety
- Workspace and infrastructure for logistics coordination, including future adaptation for EV apparatus needs

While the leased warehouse addresses immediate capacity issues, this strategic planning effort aims to establish a City-owned logistics hub capable of supporting operational continuity, emergency surge readiness, and future system growth. By reserving resources and leaving options open, the City ensures that its long-term logistics investments remain adaptable, efficient, and aligned with resilience strategies outlined in the Fire Department Functional Plan.

Administrative Relief: Station 17 Second Floor Conversion

Phase: 2025–2030 (bundled with FS17 Expansion)
Cost: Included in FS17 expansion
Impact Fee Eligible: No

Station 11's administrative wing is overcrowded and no longer supports the department's growing planning and operational staff. As part of the Station 17 buildout, underutilized second-floor space will be converted into administrative offices. This will:

- Relocate staff out of Station 11 to reduce space pressure and operational interference
- Improve working conditions and meeting space availability
- Separate strategic planning and emergency operations to minimize disruption

This project is a cost-effective way to increase functionality and system flexibility, and is already programmed for delivery as part of the 2025–2030 Capital Facilities Plan.

Training Facility Planning: Long-Term Need, Not Currently Programmed

Phase: Beyond 2050 (Unfunded Priority)
Cost: Not yet programmed
Impact Fee Eligible: TBD

The Fire Department has identified the need for a dedicated training facility to support firefighter recruit academies, specialty instruction, and coordinated training exercises. While regional partnerships currently provide some access, these arrangements present challenges in scheduling, scale, and long-term sustainability. A local training space would improve readiness, accelerate onboarding and reduce overtime due to unfilled vacancies, and support specialized needs, including rail, high-rise, and wildland response.

At this time, a training facility is not included in the current capital planning cycle. The decision reflects broader infrastructure priorities and an emphasis on maximizing near-term return on investment. However, this functional plan recognizes the operational value of a future facility and notes that the most likely path forward will involve long-range planning beyond 2050 or collaboration with regional partners.

In the meantime, the department will continue to leverage shared training resources and explore creative adaptations of existing spaces for instructional use.

Apparatus and Specialty Equipment

Redmond's fire apparatus fleet is both the frontline delivery system for emergency response and one of the City's most visible public assets. While recent investments have stabilized frontline units, significant gaps remain in reserve capacity, specialty tools, and vehicle readiness for emerging risks, such as electric vehicle fires, vertical rescue, and crowd-based incidents. Apparatus planning must be closely linked to facility readiness, staffing models, and regional hazards.

New Engine Company at Station 16

Phase: 2027–2032
Cost:

- Apparatus: $1,200,000
- Additional PPE/Onboarding: $168,000

Impact Fee Eligible: Yes

Station 16 currently operates without an engine company, leaving a gap in suppression capability for Southeast Redmond. This investment includes:

- Procurement of a new fire engine
- Personal protective equipment and onboarding supplies for new staff
- Future cross-staffing of the engine and aid car, with flexibility to expand staffing as demand grows

The station's existing footprint can support the new unit without major renovation, making this a high-return, near-term investment to improve call concurrency and area coverage.

Tractor-Drawn Aerial (TDA) Ladder Truck for Station 11

Phases:

- Primary Unit: 2025–2030
- Reserve Unit: 2033–2040

Total Cost:

- Primary: $2,810,000
- Reserve: $3,346,000

Impact Fee Eligible: Yes (both)

Redmond's increasingly dense built environment, particularly in the Downtown and Overlake growth centers, necessitates the deployment of specialized ladder truck capability. A tractor-drawn aerial (TDA) apparatus provides critical vertical access, complex rescue functionality, and compliance with Effective Response Force (ERF) standards for multi-story structures.

- The first TDA ladder truck has already been ordered and is scheduled to enter service by 2028–2029. However, Station 11's apparatus bay cannot currently house the vehicle due to height and clearance limitations. A partial remodel of Station 11, previously identified in this plan as a near-term facility investment, is essential to enable this deployment. This early action ensures that the apparatus is strategically located to serve Redmond's highest-density zones and improves response readiness in the Downtown core.

- A second ladder truck, planned as a reserve unit, will be procured in 2034 and delivered by 2038. This truck will provide deployment redundancy during maintenance or concurrent incidents and ensure uninterrupted coverage as vertical development expands throughout the City. It will also serve as a system-level asset during surge events or major structure fires, particularly if the network evolves to include a relocated Station 11 and a new Station 19.

New Engine Company and Aid Unit at Station 19

Phase: Beyond 2050 (tied to FS19 construction)
Cost: Included in station deployment costs
Impact Fee Eligible: Yes

When Station 19 is constructed, it will require a fully staffed engine company and aid unit to support service delivery in northeast Downtown and surrounding high-growth zones.

- Apparatus and staffing costs will be incorporated into the capital program for Station 19.
- Deployment will enable systemwide redistribution and improve response-time reliability in the city core.

Specialty Equipment Packages (High-Rise, Power Storage Systems, Rail, Wildland)
Phase: 2041–2050
Cost: $1,000,000
Impact Fee Eligible: Partial

As Redmond's infrastructure continues to evolve, the department will need to maintain and expand its inventory of specialty equipment to address high-risk and high-complexity incident types. These tools support both frontline response and surge capacity, especially in areas where vertical growth, transit systems, or the wildland-urban interface introduce unique operational demands.

This investment will support ongoing procurement and replacement of:

- **High-rise firefighting tools** (e.g., hose bundles, standpipe kits, stair chairs)
- **Lithium-ion battery suppression gear** (e.g., containment blankets, fire caps)
- **Technical rescue equipment** for rail platforms and industrial sites
- **Mass casualty kits** (portable stretchers, triage tarps, portable lighting)
- **Wildland response packages**, including updated brush units, PPE, hose packs, and water tanks

These equipment packages are matched directly to known and growing hazards within Redmond’s built and natural environment.

In 2023, the City received a one-time capital contribution of approximately $500,000 from Sound Transit to support the initial outfitting of tools needed for East Link light rail-related emergencies. That funding allowed the Fire Department to purchase vertical access gear, transit rescue tools, and other equipment. However, those funds did not include replacement costs.

As this equipment reaches the end of its useful life during the 2040s, the City will need to sustain readiness through locally funded replacement. This future investment ensures Redmond continues to meet public expectations, training standards, and risk-specific response capability across all hazard types.

Facility Modernization and Planning Studies

Not all fire system improvements involve new buildings or apparatus. Some of the most critical investments focus on sustaining operational continuity through targeted system upgrades and planning studies. These projects address essential air quality, backup power, and future-readiness needs across the department's core facilities.

Diesel Exhaust System Upgrades
Phase: 2027–2032
Cost: $500,000
Impact Fee Eligible: No

Most of the Redmond fire stations still rely on aging diesel exhaust removal systems that were not designed for current staffing and usage levels. These systems are nearing end-of-life and becoming increasingly costly to maintain, posing both operational and health risks over time.

This project will:

- Replace outdated diesel exhaust capture systems in key facilities not slated for full rebuild
- Improve indoor air quality and reduce exposure risk for personnel
- Support long-term firefighter health and occupational safety
- Evaluate newer system options, including vehicle-mounted exhaust capture technologies, which may offer equivalent or superior performance with lower installation and replacement costs compared to traditional apparatus bay systems

Generator Upgrades and Redundancy
Phase: 2027–2032
Cost: $500,000
Impact Fee Eligible: No

Reliable backup power is a core requirement for essential public safety facilities. During the November 2024 "bomb cyclone," the generator at Station 12 failed and remained out of service for the entire duration of the event due to an unavailable replacement part. With the surrounding area experiencing the worst of the storm's impact, Station 12 operated under partial power, limited heat, and without functional cooking equipment, all while remaining staffed to serve the community.

This failure exposed a critical vulnerability in Redmond's emergency response system. Several fire stations still rely on aging generators, many of which are at or near the end of their life. All stations lack the infrastructure to connect portable generators when fixed systems go down. These gaps undermine the department's ability to fulfill its mission during high-risk, high-demand events.

This project will:

- Replace aging generators at priority fire stations
- Install external manual transfer switches and plug-in infrastructure to support portable generator deployment
- Ensure fire stations meet essential facility performance standards under FEMA guidance and the International Building Code
- Strengthen continuity of operations during extreme weather and grid disruptions
- Advance the City's Zero Carbon Strategy by modernizing backup power systems for cleaner, more reliable performance

Station 11 Phase 2 Study – Not a Capital Project
Phase: 2025-2030
Cost: $350,000
Impact Fee Eligible: NA

To prepare for long-term facility decisions, this study will evaluate options for rebuilding or reconfiguring the non-apparatus areas of Station 11. The study will consider:

- Expansion needs for administrative functions
- Long-term seismic and energy performance upgrades
- Opportunities for co-location or modular design with other city functions
- Site feasibility for expansion/remodel of Station 11 at its current location

6.4 LOS Modeling and Siting Scenarios

Validating the Systemwide Impact of Key Investments

While each project in the previous section was prioritized based on facility condition, operational limitations, and growth-related demand, the City also conducted a broader system modeling analysis to evaluate how these investments interact. This analysis was designed to answer a central question: **Do these capital projects measurably improve Redmond's ability to meet Level of Service (LOS) expectations under current and future conditions?**

Using GIS-based response modeling, the Fire Department and Planning staff evaluated a range of scenarios, including:

- Retaining all stations in their current configuration
- Relocating Station 12 into city limits
- Rebuilding Station 11 in its current location
- Constructing a new Station 11 in Southwest Downtown
- Constructing a new Station 19 in Northeast Downtown
- Combinations of the above

The analysis considered not just travel time coverage and vertical response intervals, but also concurrency strain, response redundancy, and the operational footprint required to meet projected call volume in the City's three growth centers: Downtown, Overlake, and Marymoor Village.

Key Findings

1. Station 12 Relocation Improves Jurisdictional Alignment and Reduces Access Barriers in Overlake

Relocating Station 12 into Redmond city limits improves LOS performance in the Overlake and Idylwood neighborhoods, particularly in the dense multifamily zones east of 148th Avenue NE. The shift reduces average response times by more than one minute and improves operational alignment with Redmond's growth areas and long-term deployment strategy.

Although mutual aid agreements ensure coordinated service across jurisdictions, Station 12 currently responds to 23% of its annual calls for service into areas outside the City of Redmond, primarily in Bellevue, due to its location, raising questions about long-term service alignment and cost accountability. Relocating the station enables Redmond to better match its staffing and capital investments with areas of highest demand within its own city, while preserving strong regional coordination with Bellevue and other partners.

2. Rebuild is Required to Support Ladder Truck

The addition of a tractor-drawn aerial (TDA) ladder truck to Redmond's fleet is a critical step toward addressing the vertical fire and rescue challenges emerging in Downtown. As mid-rise and high-rise development accelerates, a ladder truck provides the reach, flexibility, and functional capability that traditional engines cannot. It also offers superior maneuverability in Downtown's increasingly pedestrian-oriented and spatially constrained street network.

However, while the ladder truck is essential for structural firefighting and technical rescue in taller buildings, its deployment does not significantly improve Level of Service (LOS) performance as measured by a six-minute travel time standard. It also will not fully reverse the current degradation in total call response time, which is primarily driven by station location, unit availability, and concurrency. It will, however, improve coverage of the City's highest-risk areas and put downward pressure on fire insurance rates for larger portions of the City.

Rebuilding or modifying Station 11 is necessary to house the ladder truck and ensure proper Downtown placement. But without systemwide adjustments to station locations and deployment patterns, the ladder truck alone will not resolve the broader LOS pressures facing the City's core.

3. Station 11 Relocation to Expand Downtown Coverage

As noted earlier, deploying a ladder truck from Station 11's current location provides only partial vertical coverage for the growing number of mid-rise and high-rise buildings in Downtown. Enlarging the bay offers a short-term solution to accommodate the apparatus, but response modeling shows that relocating the station closer to the Willows Road corridor would significantly improve access and functionality.

A new site would enhance ladder truck response not only in Downtown, but also in Redmond's expanding western employment zones, where multistory commercial buildings, larger square footage, and high-value infrastructure increase the need for extended aerial reach and flexible roof access. Relocation would also reduce service area overlap with Station 16, improving unit distribution and delivering the most substantial LOS benefit among the scenarios analyzed. It should also reduce the reliance on the City of Kirkland for over 330 calls per year of mutual aid to areas not adequately covered by Redmond fire stations.

4. Construction of Station 19 Is the Best Path to Maintain Level of Service for Downtown

Adding Station 19 in the Northeast Downtown area will also continue to address growing deficiencies in LOS. GIS modeling shows that this station, in concert with a relocated Station 11, will enhance coverage of the highest risk areas by 12% using current buildout. This coverage percentage will grow over time as Downtown sees more infill and denser development. Without Station 19, even full staffing and apparatus upgrades at existing stations cannot close the service gap introduced by Redmond's projected growth.

4. Combined Scenario Delivers Systemwide Gains in Coverage, Redundancy, and Staffing Efficiency

The scenario that includes the Station 12 relocation, Station 11 rebuild/relocation, and construction of Station 19 produces the most resilient and efficient deployment pattern. Stations 11 and 19 combined will result in a 12% improvement in coverage for the majority of the core of Redmond, and the Station 12 relocation will result in a 7% improvement for much of the Overlake and Idylwood areas. This combination reduces service gaps, strengthens redundancy in high-call areas, and improves the geographic distribution of staffing, which is essential for meeting Effective Response Force (ERF) timelines during concurrent incidents.

Implications for Investment Strategy

This modeling confirms that Redmond's fire system cannot be sustained or modernized through isolated fixes. The interdependence of these facilities is critical: the ability to deploy a ladder truck in one location, relieve call load in another, and scale staffing across all three hinges on coordinated capital investment. The City's proposed sequencing of near-term action at Stations 11, 12, and 17, with planning for Station 19, represents not just a facilities improvement strategy, but a reconfiguration of the entire response system to meet the City's future state.

6.5 Summary: Capital Investment as a Readiness Strategy

The capital investments outlined in this chapter represent more than facility upgrades; they form the operational foundation for delivering consistent, responsive fire and emergency services as Redmond continues to grow. Each project, whether focused on station modernization, apparatus procurement, or system infrastructure, responds to a specific need identified through facility assessments, service modeling, or operational input.

These investments were evaluated using a common, disciplined framework that considered condition, capacity, demand, equity, and resilience. While individual projects vary in scope and timing, together they reflect a coordinated approach to system readiness, one that supports current service expectations while positioning the department to adapt to future challenges.

Further, the plan identifies capital needs, priorities, and sequencing for fire facilities. However, decisions regarding the disposition of existing facilities are addressed through the City's broader asset management program. These decisions are made through separate planning and budget processes as each project advances, ensuring alignment with citywide priorities and governance.

This chapter also establishes the framework for the City's use of fire impact fees under the Washington State Growth Management Act. By linking capital improvements to growth-driven

service demand, the plan supports cost recovery from new development and ensures that infrastructure planning keeps pace with land use and population trends.

The next chapter will build on this capital strategy to define the financial roadmap necessary to support implementation. This includes identifying funding sources, estimating long-term costs, and aligning with the broader Capital Improvement Strategy. Taken together, this capital and fiscal alignment provides a solid foundation for sustaining a modern, high-performing fire system through 2050 and beyond.

A capital plan is only as effective as its funding strategy. Redmond's long-range fire infrastructure goals, such as new stations, expanded fleet capacity, facility modernization, and enhanced EMS readiness, require a coordinated fiscal approach that is both responsible and adaptive. This chapter builds on the investment priorities outlined in the previous chapter by identifying how the City can align funding tools with system needs, project timelines, and community expectations.

While fire services represent just one component of the broader Capital Investment Strategy (CIS), they carry unique urgency due to their life-safety mission, 24/7 operational demands, and high cost of delay. Strategic capital investments must be phased to match available resources, withstand economic fluctuations, and position the system for both current reliability and future scalability. The Plan is designed to adapt to funding shifts while maintaining long-term delivery goals.

This chapter outlines the key funding sources available for fire capital projects, including general revenues, dedicated reserve funds, impact fees, grants, bonds, and emerging partnerships. It clarifies eligibility rules, explains how revenues can and cannot be used, and addresses fiscal planning considerations that will shape Redmond's ability to deliver on its fire service commitments through 2050.

7.1 Key Funding Sources for Fire Capital Projects

Effectively delivering reliable, modern fire service infrastructure requires more than technical planning. It demands a diversified and sustainable financial strategy. Redmond's fire capital investments are funded through a blend of traditional and innovative mechanisms, each aligned to specific project types and legal constraints. These sources include general fund allocations, dedicated reserve accounts, development impact fees, state and federal grants, voter-approved bonds and levies, contracts for service, and emerging alternative models such as public-private partnerships. Understanding both the eligibility and limitations of each tool is essential to sequencing investments strategically and effectively maintaining operational readiness through 2050. The following sections describe each funding source, its intended use, and how it fits into Redmond's long-range capital strategy.

General Fund, Capital Equipment Reserve Fund, and Fire Apparatus Fund

The General Fund is the City's primary flexible funding source for fire and EMS services. While its core use is for operational staffing, maintenance, and routine expenses, it also provides critical support for minor capital projects, emergency repairs, and building maintenance that do not qualify for bond or grant funding. The General Fund ensures continuity of services and helps bridge timing gaps when capital projects span multiple budget cycles.

To support major equipment and vehicle needs, Redmond maintains two dedicated sub-funds:

The **Capital Equipment Reserve Fund** provides long-range financial planning for non-apparatus equipment purchases, ensuring the replacement of aging assets, such as specialized tools, communications equipment, and durable goods used in daily fire and EMS operations.

The **Fire Apparatus** Fund is a purpose-specific account used to purchase and maintain the department's frontline engines, ladders, aid units, and support vehicles. The fund is sustained

through biennial transfers from the General Fund based on projected need and planned procurement timelines. It enables Redmond to maintain a consistent apparatus replacement cycle while ensuring the high reliability and readiness of its fleet. The fund also covers maintenance, repairs, and refurbishment of apparatus to extend their service life and reduce unscheduled downtime.

Additionally, the Interlocal Agreement (ILA) with King County Fire Protection District 34 (KCFD34) provides a shared funding model that contributes to overall system costs. KCFD34 reimburses Redmond for its proportional share of expenses, including labor, fuel, equipment wear, and capital depreciation, based on service area call volumes and asset usage. These payments strengthen the General Fund and reduce the burden on City-only resources.

Together, these three funds are the backbone of Redmond's ongoing operational and capital readiness. They support both immediate response capacity and long-term financial sustainability.

King County Fire Protection District 34 – Contract for Service

The Redmond Fire Department and King County Fire Protection District 34 (KCFD34) have been under an Emergency Services Agreement (contract for service) for more than 77 years. In 2025, KCFD34 will pay the City of Redmond $10,669,478 for fire protection services. A portion of the funds are spread into different budget categories in support of operational costs, capital costs, and risk premiums. Due to service demands within the City of Redmond outpacing the Department's response capacity, KCFD34 resources have been subsidizing the LOS within the city boundaries. In 2025, the City of Redmond credited KCFD34 $917,834 for services paid for in 2024 but provided back to the City of Redmond. The following table (Table 10) lists the base rates and credits back to KCFD34 since 2021.

TABLE 10 – CONTRACT FOR SERVICE CHARGES AND CREDITS TO KCFD34

Year	2021	2023	2024	2025
Credit for Calls into the City	$448,739	$530,525	$553,492	$917,834
Net Rate	$7,988,807	$9,817,965	$10,053,038	$10,669,478

EMS Transport Billing Revenues (Eligibility and Use)

Redmond Fire Department participates in a cost-recovery program for EMS transport services, billing patients or their insurers for Basic Life Support (BLS) ambulance transports. These revenues are designated for use in supporting the direct costs of EMS service delivery, particularly those tied to the operation, maintenance, and readiness of the City's aid units.

While EMS transport billing revenue is not eligible for general fund use, it can be applied to capital expenditures directly associated with BLS operations, including:

- Replacement or procurement of aid units and EMS apparatus
- Purchase of medical equipment and durable goods required for patient care
- Station modifications to accommodate EMS response units or personnel

- Technology upgrades supporting EMS documentation and compliance

Funds may also support limited facility investments that improve the delivery or efficiency of EMS services, such as expansion of dorms or office space to house a Medic One unit or improvements that reduce response time for EMS calls.

EMS transport revenues do not fully fund the EMS system and are not sufficient for large-scale capital projects. However, they provide a reliable, recurring funding stream that can offset eligible expenses and reduce the City's reliance on general fund or levy dollars for EMS-related capital needs. These funds are managed and tracked in accordance with state law and city financial policies to ensure compliance and transparency.

Development Impact Fees

Impact fees are a foundational tool for ensuring that the costs of growth are shared equitably by the development that drives it. In accordance with Washington State law (RCW 82.02.050–82.02.090), these fees are collected from new development to fund the capital infrastructure needed to accommodate increased demand for public services, such as fire protection, EMS response, and resilience capacity.

Impact fees must be directly linked to growth and cannot be used for operational expenses, maintenance, or replacement of existing assets. When deployed strategically, they provide a flexible, growth-responsive funding stream that reduces the fiscal burden on existing residents.

Eligible projects include:

- **New fire station construction** in underserved or high-growth areas
- **Station expansions or renovations** where increased population density and service demand exceed current capacity
- **Procurement of new fire apparatus** that are demonstrably required to maintain Level of Service in response to development, such as aid units, engines, or ladder trucks added to serve vertical growth areas

Impact fees must be carefully tracked, programmed, and spent within a defined time window. Their availability also strengthens the City's case for matching grant funds and justifies capital investments that would otherwise be cost-prohibitive.

State and Federal Grants

Grants offer critical supplemental funding for specific capital priorities, particularly those that support innovation, equity, or resilience goals aligning with state and federal policy. While often competitive and project-specific, these programs can offset major costs for facility improvements, fleet modernization, and public safety enhancements.

Notable programs include:

- **FEMA - Assistance to Firefighters Grant (AFG):** Supports purchases of firefighting apparatus, protective gear, EMS equipment, and related training.
- **FEMA - SAFER Grant (Staffing for Adequate Fire and Emergency Response):** Can help fund new personnel in conjunction with facility expansion or service-level enhancements.

- **FEMA - Building Resilient Infrastructure and Communities (BRIC):** A FEMA grant program focused on hazard mitigation, seismic upgrades, and infrastructure resilience, often applicable to station retrofits or generator projects.
- **State Infrastructure and Resilience Grants:** May support facility modernization, energy improvements, or electrification infrastructure.

Redmond's ability to leverage grant opportunities depends on having shovel-ready projects, clear local match strategies, and planning documents like this one that demonstrate alignment with larger strategic frameworks.

Bonds and Levies

Voter-approved capital funding remains one of the most powerful tools available to cities for financing large-scale infrastructure investments. When used judiciously, these mechanisms enable major upgrades while spreading costs over time.

- **Voter-Approved General Obligation Bonds (G.O. Bonds):** Allow the City to borrow funds for specific capital projects — such as fire station construction or major renovations — typically repaid through property taxes. G.O. bonds require a supermajority voter approval and can only be used for capital projects, not operations.
- **Capital Levies:** Offer a more flexible, recurring revenue source dedicated to infrastructure. These can support project phases over multiple years and fund a blend of facility, fleet, and technology investments. A capital levy may also be structured to replace aging assets on a planned schedule.

Both options require strong public communication and demonstrate alignment with community safety priorities — something Redmond has established through its long-range planning and transparent capital strategies.

Public-Private Partnerships and Alternative Funding Models

Creative capital solutions will be essential in a land-constrained, high-demand environment like Redmond. In addition to traditional financing tools, the City can pursue collaborative approaches that unlock new value from urban redevelopment and major infrastructure projects.

- **Public-Private Partnerships (P3s):** May include co-development of fire facilities within larger mixed-use projects or joint-use agreements for emergency infrastructure. These arrangements allow the City to secure needed assets while sharing development costs and land risk.
- **Impact Fee Credits:** Developers may offer land, facility space, or direct capital contributions in exchange for impact fee offsets. This mechanism can accelerate project timelines and embed fire readiness into new neighborhoods from the start.
- **Friendly Eminent Domain:** In rare cases where strategic land acquisition is critical for public safety, the City may pursue *friendly eminent domain,* a process in which property is acquired through legal authority, but in partnership with a willing seller and based on fair market value. This approach was successfully used recently by the City of Kirkland to secure land for fire station construction and can serve as a responsible fallback when voluntary purchase is infeasible. It preserves both community trust and the City's ability to act on behalf of public need.

As the City's land supply tightens and its infrastructure needs diversify, these partnerships and tools will be increasingly important for securing strategic sites and deploying infrastructure efficiently.

King County Advanced Life Support Services Levy

The King County EMS levy provides critical regional funding for Advanced Life Support services, including Redmond's assigned medic units. This funding stream can reimburse the City for a pro-rata share of capital costs tied to medic unit deployment, including:

- Dedicated apparatus bays used by medic units
- Living quarters and support space assigned to medic personnel

In facility planning, this allows the City to offset a portion of capital costs when expanding or renovating a station to accommodate Medic One operations. ALS levy eligibility helps ensure that regional services are funded regionally, without placing undue burden on Redmond's general fund.

Public Safety Levy (2007 – Labor Funding Only)

Although not a direct capital funding source, the 2007 voter-approved Public Safety Levy played a pivotal role in expanding Redmond's emergency response capacity. The levy funded the addition of 18 firefighter positions and 17 police officers, enabling the City to maintain service levels and staff critical response units during a period of significant growth.

However, under state law and the structure of the levy itself, revenue is restricted to labor costs — it cannot be used for facilities, apparatus, or other capital expenses. Moreover, the levy is constrained by a 1% annual revenue growth cap, while personnel costs have increased closer to 5% annually. This mismatch has diminished the levy's purchasing power over time, requiring the City to gradually absorb these positions into the General Fund to maintain staffing levels.

Though outside the scope of capital budgeting, the 2007 levy remains a key reference point in Redmond's broader public safety funding strategy. In 2022, the City proposed a new public safety levy to expand staffing, enhance behavioral health services, and support technological upgrades; however, voters narrowly rejected this proposition. Future capital planning efforts may benefit from coordinated ballot measures or financial strategies that align operational and infrastructure investments under a shared vision of community safety.

7.2 Fiscal Alignment and Impact Fee Eligibility

The fire system capital projects outlined in this chapter are not only operationally necessary but also eligible for growth-based funding under Washington State law. This section defines how the City of Redmond can use its existing fire impact fee program to support the investments presented in this plan, in accordance with the requirements of the Washington State Growth Management Act (GMA).

Linking Capital Investments to Population Growth

The GMA allows cities to assess impact fees to fund public facilities that are necessary to serve new development. To qualify, a project must:

- Increase the capacity of a public service to serve growth
- Be identified in a capital plan or facilities strategy
- Demonstrate a clear nexus between new development and service demand

This Fire Functional Plan satisfies those criteria. It provides a comprehensive, growth-informed analysis of the facilities, apparatus, and infrastructure needed to sustain emergency services as Redmond's population, density, and complexity increase through 2050. With its adoption, the City can formally align fire capital investments with its impact fee structure.

Eligible Projects

The following investments meet the statutory requirements for fire impact fee use, either in full or in proportion to the project's role in serving new development:

Station 19: New Construction and Engine Company
Fully eligible as a capacity-expanding facility tied directly to Northeast Downtown Redmond growth and infill development.

Station 12 Relocation
Eligible for costs associated with expanded deployment capacity and strategic site alignment within Redmond's jurisdiction.

Station 11 Relocation or Rebuild
Eligible for new service capacity associated with growth in Downtown, Willows, and west Redmond, including bay expansion for a ladder truck.

Tractor-Drawn Aerial (TDA) Ladder Truck for Station 11
Eligible as a new apparatus required to maintain Level of Service in Redmond's vertically developing urban core. This unit is essential for supporting high-rise response and effective coverage in areas of concentrated growth, particularly Downtown and Overlake. To ensure operational continuity for such a critical asset, this project includes the purchase of **two (2) TDA ladder trucks** — one frontline and one in reserve. Given the strategic importance of ladder truck availability for multi-story structure fires, technical rescues, and dense urban coverage, maintaining a dedicated reserve unit is vital to minimize service disruption during maintenance or mechanical failure of the primary unit. This dual procurement ensures system resilience and supports the City's public protection class rating goals under the Washington Surveying and Rating Bureau.

New Engine Companies (FS16 and FS19)
Apparatus and capital equipment costs (including SCBAs, radios, and PPE) are eligible when tied to staffing increases required to meet growth-based demand.

New Aid Car (Growth-Initiated)
Eligible when tied to a new unit needed to address concurrency strain in expanding service areas. This may include assignment to FS16, FS19, or future stations required by call volume thresholds.

Permanent Logistics Facility
If programmed to support new, population-driven response complexity – such as surge staffing, reserve apparatus, or disaster cache deployment – the growth-proportionate share of the facility may qualify.

All eligibility claims must be accompanied by documentation showing that the investment is directly tied to population growth, land use changes, or service demands introduced by new development.

Capital Investment Plan Structure

The Redmond Fire Department's Capital Investment Plan (CIP) outlines key projects identified to sustain and enhance the City's fire and emergency response infrastructure in alignment with Redmond's long-term growth, evolving service demands, and resilience priorities. The CIP provides a structured framework for improving emergency service delivery, maintaining equitable access to public safety resources, ensuring facility safety and operational continuity, and supporting the City's broader community preparedness goals.

The City of Redmond defines a capital investment as a project costing $50,000 or more with a useful life of five years or longer. The Fire Department's CIP projects are considered general capital investments supporting both essential service operations and future community needs. Proposed projects within the six-year horizon are considered achievable under current staffing and resource capacity. However, detailed cost estimates for larger-scale investments may require further study as projects advance.

Consistent with Redmond's broader financial planning horizon, the Fire Functional Plan also includes a 25-year capital investment strategy. This long-term outlook identifies station renovations, facility replacements, equipment modernization, and new infrastructure needs that extend beyond the immediate six-year window. By establishing these long-range priorities, the department positions itself to leverage future grant funding, intergovernmental partnerships, and developer contributions as opportunities emerge.

The following CIP summary highlights priority fire station, apparatus, equipment, and facility projects under consideration for the next six years (project details in Chapter 6). These investments focus on maintaining safe, effective, and resilient emergency services through facility maintenance and upgrades, expansion of capacity, and replacement of aging infrastructure.

7.3 Capital Investment Plan – 2027-2032

To maintain financial balance while ensuring necessary investments, the Fire Department follows a long-term capital planning strategy that includes:

- **Project phasing to match available funding** – Major projects are sequenced in alignment with anticipated revenue sources.
- **Leveraging grants and state funding** – Identifying opportunities to secure external funding for eligible projects.
- **Strategic debt management** – Evaluating the feasibility of bonds or levies for significant capital projects.

- **Sustainability investments –** Incorporating energy-efficient upgrades to reduce long-term operational costs.

Cost Estimate Methodology

Projected capital investment needs for Redmond Fire extend through 2050 and require a clear, evidence-based methodology for estimating costs. This section outlines the assumptions used to support long-range financial planning and the phased sequencing of facility and equipment needs. All cost estimates are stated in current-year (at time of plan publication) construction dollars, based on recent local public safety facility benchmarks, and do not include escalation for future inflation.

Cost estimates were developed using benchmarks from comparable public safety facility projects in cities like Bellevue, Kirkland, and Seattle. For new fire stations, Redmond assumes a standard configuration of four apparatus bays and capacity for up to 10 operational personnel, resulting in an estimated 20,000 square foot footprint.

Construction costs for new facilities were estimated using a range of $1,200 to $1,400 per square foot, with a median value of $1,300/SF applied for capital planning purposes. For example:

20,000 SF × $1,300/SF = $26 million in direct construction costs.

This reflects Redmond's expectations for seismic performance, energy efficiency, and essential service continuity standards.

Renovations and expansions were estimated at $850 to $1,100 per square foot, depending on the scope and building condition. For example, a 10,000 SF remodel at $950/SF results in a project cost of $9.5 million. This range covers interior reconfiguration, mechanical system upgrades, ADA compliance, and structural/seismic improvements.

Together, these assumptions ensure transparency and consistency in the development of cost estimates. They provide a conservative but realistic foundation for the capital investment plan and allow for future refinements as projects move into the design and permitting phases.

See the full Capital Investments Sequencing for all phases in Appendix E.

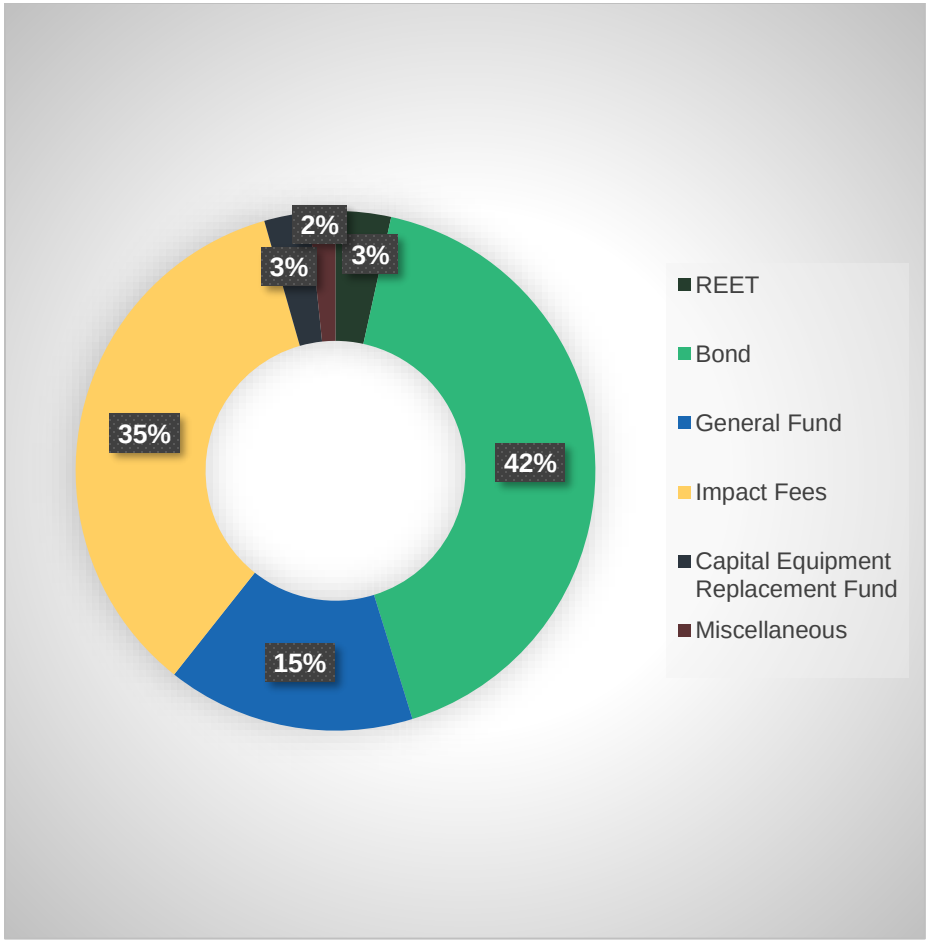
TABLE 11: 2027-2032 CAPITAL INVESTMENT STRATEGY

2027 - 2032 - Blueprint 2050 Capital Investment Strategy			Costs: 2027-2032	Funding Sources
Partial Remodel of FS11 for TDA Deployment and urgent building upgrades	8450 161st Ave NE (Downtown)	Immediate operational need; enables TDA deployment in 2028; links to new engine company at FS16	$1,600,000	REET, Impact Fees
Purchase/Order of Tractor Drawn Aerial (TDA)	Downtown	Address growth impacts due to development impacts (streets and verticality). Projected in-service 2028/2029	$1,405,000	General Fund, Impact Fees
SCBA Replacement	Citywide	Replacement of self-contained breathing apparatus equipment due to end of life	$736,000	General Fund

Logistics Warehouse Tenant Improvements	TBD	Tenant improvements to a 10,000-square-foot leased warehouse to support fire logistics operations, including storage for reserve apparatus, specialized equipment, and a small administrative workspace	$600,000	General Fund
New Engine Company at FS16 - Apparatus	SE Redmond	One-time cost for a new engine at FS 16 to provide suppression capabilities in the SE Redmond area	$1,200,000	General Fund, Impact Fees
Diesel Exhaust Upgrades	Citywide	Upgrade aging diesel exhaust systems in city fire stations	$500,000	General Fund
Generator Upgrades and Redundancy	Citywide	Required to maintain air quality and reliable backup power for essential facilities	$500,000	General Fund
Logistics/Apparatus Maintenance Building/Improvements	TBD		$5,000,000	General Fund, Impact Fees
Phase 2 Renovation/Rebuild of FS11	8450 161st Ave NE (Downtown)	Extensive remodel/renovation of FS/Admin on the current site	$15,000,000	General Fund, Impact Fees
		TOTAL	**$26,541,000**	

	2027-2032						
	REET	Bond	General Fund	Impact Fees	Capital Equipment Replacement Fund	Miscellaneous	TOTAL
Fire Station 11 - Partial remodel for TDA deployment				$1,163,636		$436,364	$1,600,000
Fire Station Phase 2 - Renovation/rebuild	$913,283	$11,086,717		$3,000,000			$15,000,000
Logistics Warehouse Tenant Improvements			$600,000				$600,000
Logistics/apparatus maintenance/Improvements			$2,500,000	$2,500,000			$5,000,000
Fire Station 16 - New Fire Engine				$1,200,000			$1,200,000
Diesel Exhaust Upgrades			$500,000				$500,000
Generator Upgrades and Redundancy			$500,000				$500,000
Tractor Drawn Aerial (TDA)				$1,405,000			$1,405,000
SCBA Replacement					$736,000		$736,000
	$913,283	**$11,086,717**	**$4,100,000**	**$9,268,636**	**$736,000**	**$436,364**	**$26,541,000**

Funding Sources	2027-2032
REET	$913,283
Bond	$11,086,717
General Fund	$4,100,000
Impact Fees	$9,268,636
Capital Equipment Replacement Fund	$736,000
Miscellaneous	$436,364
Total	$26,541,000



7.4 Summary

Redmond's fire capital strategy is grounded in the understanding that financial planning is not separate from public safety planning — it is a core enabler of it. As the City continues to grow more complex and more vertical, fire infrastructure investments must be both timely and fiscally strategic to ensure a responsive, resilient emergency system.

- **Phased investments are essential.** Capital projects must be sequenced to align with both projected service needs and the timing of available revenues. This plan organizes projects across distinct phases to match growth patterns, readiness factors, and funding mechanisms, with an eye toward operational continuity and long-term sustainability.
- **Impact fees remain a primary tool for growth-related investments.** As authorized under the Growth Management Act, fire impact fees provide a dedicated, proportionate source of revenue to fund the facilities, vehicles, and equipment necessary to maintain Level of Service standards in response to new development. Strategic planning ensures these fees are used efficiently and in compliance with statutory requirements.
- **Supplemental funding sources are critical for system-wide upgrades.** Grants, capital levies, and general obligation bonds will continue to play a vital role in bridging the gap for large-scale projects, particularly those that address existing system deficiencies or deliver transformational upgrades. Each funding tool carries different legal, political, and timing considerations that must be coordinated across departments.
- **Sustainable financial planning underpins system resilience.** Redmond Fire's financial strategy is designed not just to fund today's priorities, but to anticipate future system renewal and avoid deferred maintenance cycles. This includes setting aside capital reserves, aligning investments with broader city financial policies, and maintaining flexibility for emerging needs, such as electrification, climate adaptation, and specialized response infrastructure.
- **Land acquisition is a critical early investment.** Even when the City is not yet ready to build, securing strategically located land for future fire stations is essential. In a rapidly urbanizing area, the availability and affordability of appropriate parcels may diminish over time, especially in high-density or redeveloping corridors. Acquiring land now preserves future options, avoids service gaps, and ensures the City can act when construction funding becomes available.
- **Creative approaches and cross-sector partnerships will expand Redmond's options.** As the landscape of public service delivery evolves, Redmond must remain open to new models for capital investment. This includes exploring public-private partnerships, land swaps, co-location within private developments, and integration with regional infrastructure projects. Creative thinking will be essential to maximize public value, especially in space-constrained or high-cost areas.

The total projected investment required to deliver these infrastructure priorities through 2050 is approximately **$83 million**, with an additional **$70 million in long-term projects identified beyond 2050**. This includes $10.4 million in currently funded near-term projects (2025–2030) and **$26.5 million for the next CIP (2027-2032).** These projects cover facility renovations, apparatus

procurement, system upgrades, and strategic station expansions. By providing a phased and realistic forecast of costs, this plan enables City leadership to align funding strategies with project readiness, growth pressures, and community expectations.

This fiscal framework directly supports the capital priorities outlined in the previous chapter and ensures the Fire Department remains fully equipped to meet its mission. By integrating financial planning with service planning and remaining open to innovation, the City can continue to deliver high-quality fire and EMS services that are equitable, scalable, and ready to meet the challenges of a growing and changing Redmond.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08 Implementation and Monitoring

This Functional Plan is not just a document – it is a commitment. It establishes a strategic direction for Redmond Fire's capital investments and provides a framework to align infrastructure decisions with service outcomes, projected growth, and community resilience goals. Chapter 8 outlines how that commitment will be carried out.

Rather than prescribing rigid, year-by-year milestones, this plan adopts an adaptive implementation strategy, recognizing that capital planning must remain flexible in response to emerging risks, funding shifts, and community needs. This mirrors the approach used in other City functional plans, where infrastructure delivery is sequenced over broad time horizons and tied to system readiness, not fixed calendar targets.

As infrastructure ages, growth accelerates, and readiness standards rise, implementation must be nimble and principle-driven. Redmond Fire's strategy is anchored by four pillars:

- **Phased Horizons**, **not fixed timelines** — ensuring that investment sequencing remains responsive to service demand, not static budgeting assumptions.
- **Cross-Department Ownership** — integrating capital planning across Fire, Facilities, Finance, and Planning to reduce silos and improve system coordination.
- **Strategic Levers for Action** — embedding capital readiness into tools like impact fees, facility standards, and emergency preparedness frameworks.
- **Light Monitoring and Learning** — using an iterative, feedback-driven model that balances progress tracking with the flexibility to adjust course.

This chapter also addresses the realities of Redmond's capital governance process — including how projects are authorized and how Fire can participate more fully in shaping infrastructure outcomes. As a living plan, implementation is treated not as a checklist, but as a dynamic alignment between purpose, people, and systems.

The sections that follow define citywide roles, outline governance pathways, and establish accountability structures to guide implementation over time.

8.1 Roles and Responsibilities

Successful implementation of this Functional Plan depends on strong coordination across departments, grounded in shared accountability and aligned priorities. While the Fire Department serves as the steward of this plan, execution relies on sustained engagement from capital planning partners across the City's infrastructure and financial ecosystem.

Redmond's Capital Improvement Program (CIP) is managed by the **Public Works Department**, which oversees citywide capital delivery in alignment with adopted budgets and infrastructure strategies. Governance is provided through a two-tier committee structure:

- The **Portfolio Management Committee (PMC)**, composed of program managers, reviews changes to scope, schedule, and budget, and makes recommendations on capital program adjustments.
- The **Governance Committee (GC)**, composed of department directors and executive leadership, authorizes major changes and oversees strategic alignment across the capital portfolio.

Fire capital projects currently fall within the **General Government** CIP category alongside other civic infrastructure. Day-to-day project delivery is typically led by the **Parks – Facilities Division**, while project scoping and prioritization are shaped through cross-department coordination and ultimately approved via the City's capital governance process.

Key roles include:

- **The Fire Department,** which defines operational facility needs, ensures compliance with Level of Service standards and essential facility mandates, and tracks implementation progress.
- **Parks – Facilities Division,** which manages small projects, facility maintenance, and non-capital improvements for General Government facilities. The division also supports design and construction coordination in collaboration with other departments.
- **The Finance Department,** which oversees CIP fiscal planning, funding strategies, and performance tracking, including integration of impact fees, bonds, and other financial tools.
- **The Planning Department,** which ensures capital investments are aligned with land use, zoning, and Comprehensive Plan policies and support project eligibility for impact fee funding.
- **Public Works,** which manages the City's overall Capital Investment Program (CIP), delivers capital projects, and leads cross-departmental coordination through the Project Management Committee (PMC) and Governance Committee (GC) processes.
- **The Mayor and City Council,** who authorize CIP funding and provide policy-level guidance and oversight for infrastructure investments citywide.

To support implementation, capital stewardship is a core Redmond Fire leadership function. The Fire Chief and Deputy Chief of Support Services and Administration are responsible for advancing the plan's priorities, coordinating with city partners, and ensuring alignment with LOS targets and regulatory mandates. The Deputy Chief of Operations and other administrative staff may contribute to specific projects or funding initiatives as needed.

By embedding capital planning into executive decision-making and department budgeting, rather than assigning it to a separate working group, this structure ensures implementation remains strategic, accountable, and aligned with the Redmond Fire's operational mission.

8.2 Phasing Strategy

While Chapters 6 and 7 outline specific timelines and funding assumptions for priority investments, those projections reflect the best available data at the time of this plan's development. They serve a critical purpose: enabling City Council, Finance, and CIP managers to plan for project scoping, sequencing, and budgeting in alignment with expected service needs and revenue forecasts.

However, experience shows that capital planning rarely follows a fixed timeline. Site readiness, permitting, construction market conditions, emergency needs, and co-location opportunities can all shift priorities. To navigate these uncertainties, this chapter introduces a second planning lens: an adaptive phasing strategy based on project readiness and urgency, not calendar years.

This flexible model organizes Redmond Fire's capital priorities into three horizons: Near-Term, Mid-Term, and Long-Term, mirroring the approach used in the City's other functional plans. It supports:

- A consistent framework for adjusting priorities as new data emerges
- Shared language for governance discussions and decision-making
- Ongoing alignment with Redmond's approach to "living plans" designed for practical use and adaptation

To be clear: the timelines in Chapters 6 and 7 remain the official roadmap for legislative planning, capital intake, and Council budgeting. This section does not replace that roadmap —it strengthens its resilience. Chapter 8 offers the strategic flexibility to stay on course when conditions change, without undermining the plan's overall integrity.

Near-Term (Years 1–6)

This horizon prioritizes projects already in motion or urgently needed to meet Level-of-Service (LOS) standards, health and safety compliance, or system-critical upgrades. These include essential systems like backup power, failing station infrastructure, and decontamination improvements, as well as early-phase growth-related projects identified as impact fee-eligible.

Triggers include:

- Project readiness or design feasibility
- Compliance deadlines (e.g., Clean Buildings Standard)
- Facilities with critical deficiencies
- Cost-sharing or joint-use opportunities

Mid-Term (Years 7–12)

Mid-Term projects support modernization, infill development, and system expansion. This includes new station siting, facility relocations, or phased renovations tied to anticipated population or vertical growth, especially in Overlake and Downtown. Cross-departmental coordination is essential in this horizon to ensure joint planning benefits are captured.

Triggers include:

- Measurable LOS gaps tied to development patterns

- Interdepartmental facility alignment
- Grant availability or funding unlocks
- Outcome of feasibility studies

Long-Term (Years 13–20+)

This horizon includes generational investments such as full facility replacements or system expansion tied to regional trends and emerging risks. These projects typically require extensive planning, community engagement, and integration with major citywide initiatives like fleet electrification or climate resilience.

Triggers include:

- Nearing End-of-life infrastructure
- Alignment with Redmond 2050 initiatives
- Technology-driven changes in service delivery
- Shifts in community risk and hazard exposure

This dual-track model — structured but flexible — ensures the Fire Department's capital priorities remain feasible, fundable, and future-ready. It gives the City the tools to act decisively today while staying adaptable for tomorrow.

8.3 Accountability and Governance

The implementation of this Functional Plan will be guided by Redmond's established Capital Improvement Program (CIP) structure, which provides a transparent and accountable framework for delivering capital projects. Projects are organized into four program areas: Transportation, Utilities, Parks, and General Government. Fire facilities are currently managed within the General Government portfolio. However, the Fire Department does not currently hold a formal seat on either the **Portfolio Management Committee (PMC)** or the **Governance Committee (GC)**, the two oversight bodies responsible for prioritizing, sequencing, and modifying CIP projects across the City.

Each CIP project includes a defined scope, schedule, and budget, and is assigned a delivery lead within Construction, Facilities, Finance, or Maintenance. Progress is tracked monthly via bar charts and program reports. Changes to scope, timing, or budget follow a tiered approval structure: minor changes are resolved administratively; moderate changes require PMC approval; and major changes escalate to the GC. This system ensures fiscal and procedural oversight but currently lacks structured operational input from departments responsible for the services those facilities are meant to support.

Why Fire Is Included

Redmond Fire occupies **8 of the City's 18 government facilities** — a significant share of the City's built portfolio – excluding the new Maintenance and Operations Center. Unlike many other facilities, these structures are directly tied to service delivery outcomes and regulated performance standards. As demonstrated throughout this plan, the condition, location, and configuration of fire stations directly impact response times, operational readiness, and the City's ability to meet its Level of Service (LOS) commitments.

Fire infrastructure is shaped by a distinct set of planning and compliance requirements, including:

- **The Growth Management Act**, which links capital investments to long-term land use and population growth.
- **The Clean Buildings Performance Standard**, which triggers decarbonization requirements for several older fire stations.
- **WAC 296-305**, which establishes design and safety standards specific to firefighter health, turnout zoning, and decontamination.
- **LOS expectations** tied to emergency response performance and equity in service delivery.
- **Essential facility requirements under the International Building Code (IBC)**, which mandate enhanced seismic resilience and redundant life-safety systems to ensure stations remain operational during and after disaster events.

These considerations go beyond conventional building use. Fire stations must be able to house 24/7 emergency personnel, operate independently during prolonged outages, and support highly specialized apparatus, training, and health standards.

Currently, decisions about facility upgrades, sequencing, and funding are made through the City's capital governance process, without direct representation from Fire leadership on the Project Management Committee (PMC) or Governance Committee (GC). This structure, while historically consistent with past practices, may limit the City's ability to fully account for the operational implications of capital decisions affecting emergency response.

Incorporating the Fire Department more formally into CIP governance would help ensure that capital planning processes are informed by real-time operational needs, risk mitigation priorities, and regulatory context. This integration would also support more proactive alignment between infrastructure investments and the service expectations residents rely on —particularly as Redmond continues to grow in complexity and scale.

Strategic Recommendation

To realign responsibility with authority and improve citywide capital outcomes, the Fire Department will participate in both the Portfolio Management Committee and the Governance Committee. Doing so would:

- Ensure public safety infrastructure is prioritized with an operational lens
- Prevent capital project changes from compromising Level-of-Service targets or essential facility mandates
- Enable cross-departmental coordination on hybrid projects (e.g., decarbonization, EV infrastructure, co-location opportunities)
- Provide early insight into tradeoffs and delivery challenges that impact Fire operations and response readiness

Rather than assigning this responsibility to a separate working group, the Fire Department will embed capital planning into its core leadership function, ensuring direct alignment with departmental strategy and executive decision-making, and establishing accountability within its department for participation.

At the same time, the Fire Department must continue to actively participate in the citywide capital

ecosystem. This includes engaging early and earnestly with other departments such as Planning, Parks, Police, and the Executive as they develop their functional plans (as outlined in Chapter 2), and recognizing the role of fire infrastructure in advancing shared city priorities such as resilience, growth management, sustainability, and equity. To be effective partners in the capital process, Fire Department leadership must move beyond a siloed operational mindset and embrace their role as strategic contributors to Redmond's broader civic vision.

As Redmond's growth accelerates and climate, equity, and resilience pressures continue to shape capital priorities, the governance model must evolve. Including Fire as a standing voice in capital decision-making is not just an operational necessity – it is a matter of strategic coherence and civic responsibility.

8.4 Funding Plan Alignment

The Fire Functional Plan aligns with the City of Redmond's biennial budget cycle and long-range Capital Investment Strategy by providing a clear foundation for forecasting, prioritizing, and packaging fire-related capital projects. Chapters 6 and 7 identify the preferred sequence and funding approach for key investments; this section clarifies how those recommendations connect to citywide fiscal governance.

Fire facility projects fall primarily within the General Government program area of the CIP. This positions them alongside other city infrastructure needs competing for limited discretionary revenues. As a result, successful implementation depends not only on project merit but also on timing, alignment with external grants or state/federal funding cycles, and internal advocacy.

To advance fire priorities effectively, this plan incorporates three core fiscal strategies:

1. Targeted Use of Impact Fees for Growth-Related Investments

As outlined in Chapter 7, Redmond's fire impact fees provide a proportional, dedicated revenue stream to fund capital investments needed to support new development. This plan ensures that eligible projects, such as new station construction or growth-triggered apparatus procurement, are scoped to meet legal thresholds for impact fee use. Projects were carefully evaluated to avoid overreach and to preserve fee defensibility in the event of audit or challenge.

2. Leveraging Supplemental Revenues for Readiness Improvements

Not all critical infrastructure qualifies for impact fee support. Therefore, this plan identifies parallel funding strategies to address readiness-related upgrades, such as SCBA systems, alerting networks, and backup power. These projects may be supported through internal transfers (e.g., EMS revenues, telecom leases), external grants (e.g., FEMA AFG), or integrated into broader citywide initiatives such as fleet electrification or Clean Building compliance. Chapter 5 through Chapter 7 identify these dependencies and opportunities in detail.

3. Realistic Acknowledgment of Unfunded Mandates

Despite efforts to align capital needs with available revenue streams, several system-wide upgrades and facility replacements remain unfunded or underfunded. Without intervention, these gaps will

compound, increasing lifecycle costs, reducing operational flexibility, and undermining the City's ability to meet adopted Level-of-Service (LOS) standards. This plan surfaces those risks directly and offers phasing recommendations and project rationales to support future Council deliberations and funding requests.

As Redmond's capital governance continues to evolve, this plan positions the Fire Department to actively contribute to the City's fiscal strategy, not just as a service provider, but as a steward of essential infrastructure. The combination of impact fee alignment, alternative revenue utilization, and clear documentation of remaining gaps ensures that funding discussions are grounded in strategic need, not just project age or visibility.

8.5 Ongoing Monitoring and Evaluation

Implementation of this plan requires more than annual reporting. It requires continuous situational awareness, cross-departmental coordination, and principled adaptability. Rather than establishing a rigid dashboard or new performance bureaucracy, the Fire Department will embed monitoring responsibilities into its existing leadership structure, guided by three key principles:

1. Integrated Oversight, Not Parallel Tracking

The Fire Chief and Deputy Chief of Support Services will provide internal oversight of implementation progress by using the same tools and processes already employed by the City's CIP team, Facilities, and Finance. This includes participation in business case development, alignment with General Government reporting expectations, and collaboration on milestone tracking. Progress will be monitored against the horizon-based phasing outlined earlier in this chapter, not a strict annual schedule, to maintain flexibility while ensuring forward momentum.

2. Milestone-Based Evaluation Anchored in Service Outcomes

Evaluation will focus on project delivery milestones (e.g., scoping complete, design initiated, construction underway) in relationship to their role in sustaining Level-of-Service standards, improving readiness, or meeting regulatory requirements. This outcome-focused lens ensures that monitoring stays tied to mission-critical results, not just procedural completion.

3. Feedback Loop with Citywide Planning Efforts

To remain relevant over time, this plan must evolve alongside other city strategies. Fire Department leadership will actively monitor and engage with cross-departmental planning initiatives, including those related to growth management, fleet transitions, energy efficiency, and climate resilience. Implementation lessons, emerging needs, or shifting priorities will be documented and shared with Planning, Facilities, and Finance to inform updates to this plan and future capital programming.

The Fire Department Functional Plan will be reviewed and updated at least every six years in coordination with the Capital Facilities Plan update, and no more than every ten years in alignment with the Comprehensive Plan's periodic review under RCW 36.70A.130, or sooner if required.

The Fire Functional Plan is a living document. Monitoring its implementation is not about checking boxes. It's about keeping pace with a changing city and ensuring that fire and life safety

infrastructure grows in step with Redmond's vision, values, and risk profile. The Fire Department is committed to continuous engagement, strategic stewardship, and full participation in the City's long-range investment process.

Appendices

Appendix A – Optimal Fire Station Coverage Analysis

Fire stations serve as critical lifelines during emergencies, making their location pivotal to effective response times and community safety. As cities grow and evolve, the placement of fire stations must be reassessed to meet changing demographics, urban landscapes, and risk profiles. This section provides an analysis of factors influencing the relocation or establishment of fire stations and outlines strategic reasons behind each recommendation.

1. Key Factors in Station Location Analysis

Population Density

Areas with higher population densities typically require quicker emergency response times due to the greater likelihood of incidents – like fires, hazardous material releases and water pipe breaks – impacting a larger number of people. Relocating fire stations closer to densely populated neighborhoods ensures that emergency teams can reach affected individuals swiftly, especially in areas above three stories, reducing potential fatalities and property damage.

Urban Expansion

The City of Redmond has been identified by King County as one of 11 designated urban growth areas (UGA), meaning that future urban growth must be concentrated only in designated growth areas. This has resulted in a proliferation of mid- and high-rise structures, mainly in the Downtown, Marymoor and Overlake areas. Relocating fire stations to better serve currently developed and future-developed areas is sometimes necessary and ensures coverage in places that previously lacked adequate emergency infrastructure, balancing accessibility across the urban landscape.

Response Time Optimization

The National Fire Protection Association (NFPA) standards recommend a travel time of four to six minutes for urban areas, which allows additional time for firefighters to access upper floors or complex occupancies. Strategic placement of fire stations in locations that minimize travel distances — from clusters of residential homes to key traffic arteries — enhances compliance with these critical benchmarks.

Risk Assessment

Certain areas are inherently more prone to specific emergencies. For instance, industrial zones may face higher fire risks due to hazardous materials.

Accessibility and Transportation Networks

Fire stations must be easily accessible to main roads and highways to facilitate efficient movement during emergencies. Placing stations near well-maintained transportation networks minimizes delays caused by traffic congestion or infrastructure bottlenecks.

Community Equity

Underserved communities often face disproportionate risks due to inadequate emergency services. Relocating or establishing fire stations in areas that have historically lacked coverage promotes equity and ensures all residents benefit from rapid response capabilities.

2. Strategic Recommendations for Relocation

Locating Fire Stations in High-Density Urban and Industrial Areas

Urban centers with high-rise buildings and concentrated populations pose unique challenges during emergencies. Fire stations should be positioned to allow for four minutes or less of travel time to such areas, ensuring firefighters have sufficient time to access upper floors of such buildings and address incidents involving large numbers of people and complex structures effectively. This travel time standard is recommended for fire stations 11, 12 and 16.

Locating Fire Stations in Suburban Growth Areas

Suburban growth areas primarily service single-family homes and structures less than three stories. This travel time standard is recommended for Fire Station 17. Areas serviced by fire stations 13, 14, and 18 have response time standards stipulated by contract with King County Fire District 34 and are not part of this analysis.

Improving Accessibility in Traffic-Prone Areas

Traffic congestion can dramatically increase response times, undermining the effectiveness of fire services. Relocating fire stations to areas with easy access to highways and major roads minimizes delays, particularly during peak traffic hours.

Expanding Coverage in Underserved Communities

Relocating fire stations to low-income or historically underserved areas ensures equitable access to emergency services. This move also fosters community trust and reduces disparities in safety and health outcomes.

3. Technological Tools Used in this Analysis

Geospatial Mapping

Using Geographic Information Systems (GIS) and five years of response data, we analyzed over 50,000 calls for service by location, incident type, and response time. Every structure in Redmond was plotted and given a risk score: 1 point for single-family homes and 5 points for every multi-

family, commercial, industrial, or middle-housing structure. The reasoning is that a fire in a single-family structure might adversely impact one to four occupants but would have little impact on the community at large. However, a fire in a multi-family occupancy structure might impact hundreds of people, adjacent businesses, and aggregate fire loss costs, which could adversely impact fire insurance premiums for the entire city. Therefore, more weight is given to multi-family, commercial, industrial, or middle-housing structures versus single-family structures.

Each fire station currently covers a zone that is based on historical coverage capability. Each zone was analyzed for two factors using the risk score: a maximum score that reflects the combined value of all the structures in each particular zone, and a coverage capability score that reflects how many structures (points) that station was able to cover within four minutes based on past performance. For example, Fire Station 11 is currently designated to cover a total area score worth 10,935 points, but has historically only been able to cover 8,675 points. Therefore, we would give Station 11 a coverage capability score of 79%.

Predictive Analytics

Using the coverage capability score methodology, we can then use GIS data to theoretically move fire stations and use simulation tools to analyze changes in coverage scores. The goal is to provide the highest coverage score for the least number of fire stations, even if the stations need to be moved. Based on the growth predicted within the Redmond 2050 plan, we know that the current configuration will diminish slightly over time due to any development in areas not adequately covered by the current configuration of fire stations. However, the proposed configuration should be less impacted by future growth, making the recommendations stronger over time.

The analysis resulted in the recommendation to move fire stations 11 and 12, and add a new fire station (Station 19).

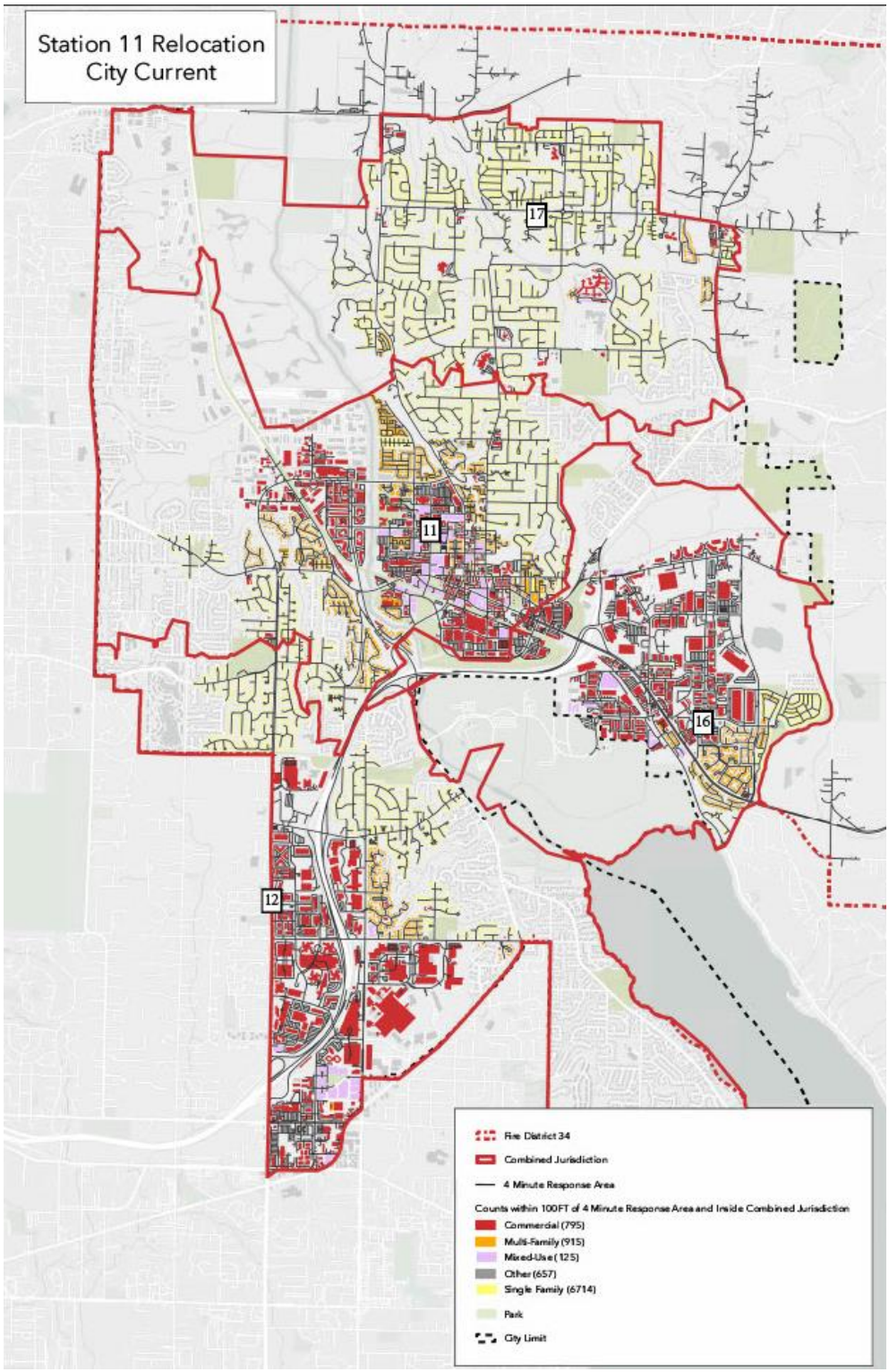
TABLE 1 – COVERAGE SCORES – CURRENT AND PROPOSED CONFIGURATION

Current	Station 11 (4 min.)	Station 12 (4 min.)	Station 16 (4 min.)	Station 17 (6 min.)	Total for City
Max Coverage	10,935	8,733	4,374	5,849	29,864
Current Configuration	8,675	3,855	2,915	4,310	19,755
Percent Covered	79.3%	44.1%	67.1%	73.7%	66.2%

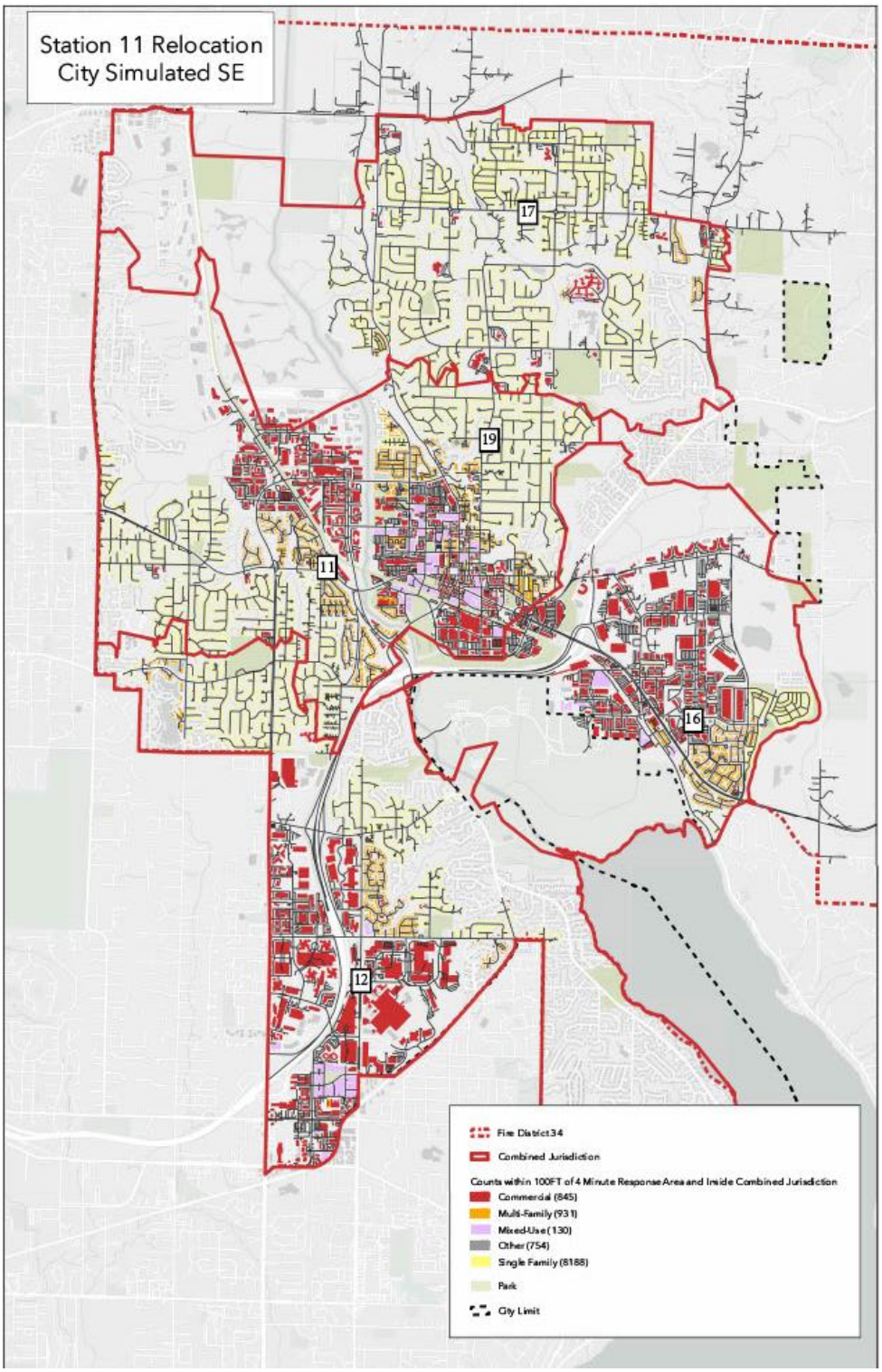
Proposed	Station 11 (4 min.)	Station 12 (4 min.)	Station 16 (4 min.)	Station 17 (6 min.)	Total for City
Max Coverage	10,935	8,733	4,374	5,849	29,864
New Configuration	10,143	4,447	2,915	4,310	21,815
Percent Covered	92.8%	50.9%	67.1%	73.7%	73.0%

FIGURE 1 – CURRENT 4-MINUTE COVERAGE CONFIGURATION MAP

FIGURE 2:



PROPOSED 4-MINUTE COVERAGE CONFIGURATION MAP


Station 11 Relocation
City Simulated SE
17
19
11
16
12
Fire District 34
Combined Jurisdiction
Counts within 100FT of 4 Minute Response Area and Inside Combined Jurisdiction
Commercial (845)
Multi-Family (931)
Mixed-Use (130)
Other (754)
Single Family (8188)
Park
City Limit

Assumptions and Limitations:

This analysis relies on additional factors related to response time performance and incident outcomes that are outlined in the 2022-2027 Redmond Fire Department - Standards of Cover document, but not included in this report. Such factors include patient contact intervals, unit reliability, unit hour utilization, and fire station design to accommodate growth. This analysis also relies on approximate locations for proposed fire stations. Availability of land plays a significant role in the validity and applicability of this analysis. The analysis also assumes that high-density development will follow that which is outlined in the Redmond 2050 plan. Finally, this analysis assumes the proper response vehicle and staffing configuration will be assigned to each station (i.e., Station 16 currently does not have a fire engine assigned to the station, so this analysis would not be valid for fire incidents but would be for EMS incidents).

4. Challenges in Relocating Fire Stations

Community Resistance

Relocating fire stations will certainly face opposition from communities that fear reduced coverage or different impacts to their anecdotal service level experience. Communities adjacent to where a new fire station will be placed might also pose some opposition with anecdotal concerns over additional noise and lighting impacts to the neighborhood. Transparent communication, comprehensive data analysis, and community engagement are essential to mitigate resistance and foster support for relocation plans.

Financial Constraints

Relocating fire stations involves navigating zoning regulations, infrastructure limitations, and governmental approvals. These challenges require careful planning and collaboration with various stakeholders. Building new stations or retrofitting existing ones requires significant financial investment and planning; however, securing the optimal parcel of land is the key constraint for any facility relocation plan.

Appendix B – Fire Station Effectiveness Grading System

The Fire Station Effectiveness Grading System (FSEGS) was developed specifically for Redmond as a novel approach to fire facility evaluation. While each individual criterion in the system is grounded in national codes, regulatory mandates, and published best practices, the integrated scoring and weighting framework is original. It was designed by the City in partnership with our external consultant, who brings extensive fire service consulting experience and has been serving as interim Deputy Fire Chief since 2022. The intent was to move beyond fragmented compliance checks and develop a systems thinking model that reflects the interdependence of safety, resilience, and operational readiness in modern fire service facilities. This appendix explains how that framework works.

Fire stations are complex facilities that must serve as operational command posts, 24-hour workplaces, residential spaces, and critical infrastructure hubs during emergencies. Traditionally, fire station assessments have relied on fragmented evaluations — facility condition reports, seismic studies, compliance audits, or deployment models — each addressing one facet of performance but failing to offer a unified picture. This siloed approach makes it difficult for leaders, planners, and policymakers to clearly understand how well a station functions, where the risks lie, and what improvements should be prioritized. The ultimate goal is to provide the least number of fire stations necessary to effectively cover the communities' desired level of service, while ensuring each facility is functionally safe, efficient and welcoming to the community and the firefighters that rely on it.

The **Fire Station Effectiveness Grading System (FSEGS)** was developed to solve this problem by integrating diverse evaluation criteria into a single, transparent scoring framework. It provides a comprehensive view of station performance — connecting structural readiness, operational capability, workforce health, and regulatory compliance in one place. Just as importantly, the system assigns weighted scores that reflect the risk associated with each deficiency, enabling the City to prioritize investments based on both urgency and impact**.**

Scoring Methodology and Criteria Summary

The FSEGS uses a point-based system across multiple performance domains, clustered under three tiers: High-Risk/Life Safety-Critical, Medium-Risk/Regulatory Compliance, and Low-Risk/Operational Quality of Life. Each criterion is scored with both positive and negative values depending on how well the facility meets defined standards or exposes the organization to operational, legal, or reputational risk.

1. High-Risk, Life Safety–Critical Criteria

These components directly impact the safety of firefighters or the public's ability to receive emergency service. Because failures in these areas pose immediate, high-consequence risks, they are assigned **higher weights** and allow for **negative scoring**.

Criteria:

- **Seismic performance** - **FEMA P-58 and ASCE 41-23**, which outline seismic performance tiers for essential buildings — including the "Operational" performance level required for full post-event functionality and **International Building Code (IBC) §1604.5**, which classifies fire stations as Risk Category IV, requiring enhanced seismic design to ensure life safety and continuity of service.

TABLE 2 – SEISMIC PERFORMANCE SCORING

Performance Tier	Definition	Score
Life Safety	Building won't collapse, but may be unusable	-10
Immediate Occupancy	Safe to re-enter, limited systems functionality	+5
Operational	Fully functional post-event, with systems active	+10

- **Backup power** - Per NFPA 110, essential facilities must have backup systems that can support critical operations – such as lighting, HVAC, bay doors, communications, and apparatus/equipment charging – for extended durations during utility outages.

TABLE 3 – BACKUP POWER SCORING

Performance Tier	Definition	Score
No Back Up	Lack of any backup power source	-10
Minimal	Backup power less than 200kW	0
Sufficient	Backup power more than 200kW	+10

- **Turnout Time** – Turnout time begins when a unit is dispatched and ends when the wheels start moving. This criterion evaluates **travel path distance** from living quarters to first due emergency response units, including penalties for doors that must be opened (beyond two).

TABLE 4 – TURNOUT TIME SCORING

Performance Tier	Definition	Score
Poor	More than 150 ft	-10
Poor	More than 125 ft	-5
Moderate	More than 100 ft	0
Fair	Less than 100 ft	+1
Good	Less than 80 ft	+5
Optimal	Less than 60 ft	+10
*Minus 3 points for each door past 2 in the travel path		

- **Airborne Contamination Control** – Particulate, bacterial, viral, and other carcinogenic materials are common hazards associated with fire apparatus, equipment, and personal protective gear. Limiting exposure, especially in living quarters, is a critical design consideration in any modern fire station. This includes an evaluation of diesel exhaust extraction systems (enforced by LandI), ventilation of PPE storage rooms, and decontamination areas.

TABLE 5 – AIRBORNE CONTAMINATION CONTROL SCORING

Performance Tier	Definition	Score
Poor	No Exhaust or PPE storage	-10
Poor	Absence of one system	-5
Moderate	Exhaust system and PPE storage area	0
Good	Exhaust system and PPE storage area with sufficient ventilation	+10

- **Decontamination Area** – Particulate, bacterial, viral, and other carcinogenic materials are common hazards associated with fire apparatus, equipment, and personal protective gear. Unlike the airborne contamination control criteria described above, this section evaluates the physical space and equipment required to decontaminate apparatus, gear, and equipment — ensuring they do not pose a hazard to firefighters or the public when redeployed outside the fire station (enforced by LandI). An optimal decontamination area includes features such as a separate shower, eye wash station, sink, and drying area. Surfaces and materials are designed for easy cleaning and decontamination (e.g., stainless steel and glass), and appropriate soaps and neutralizing agents are readily available.

TABLE 6 – DECONTAMINATION AREA SCORING

Performance Tier	Definition	Score
Poor	No designated Decontamination area	-10
Moderate	Decontamination area is designated but not adequately designed or supplied	-5
Good	Decontamination area is designated and has sufficient space and supplies	+10

- **Air Monitoring Systems** – In accordance with the Washington State Building Code, RCW 19.27.530, and local amendments to the International Fire Code, essential facilities such as fire stations are required to install air monitoring systems — specifically smoke alarms and carbon monoxide (CO) detectors. While the regulations for each device differ, in general:
  - **Smoke alarms (SA)** must be installed in each occupiable living space, including sleeping quarters, offices, fitness rooms, and similar areas.

- **Carbon monoxide detectors (COD)** are required on each floor, positioned outside of any sleeping areas and adjacent to rooms or spaces containing fuel-burning appliances or other CO-producing equipment.

TABLE 7 – AIR MONITORING SYSTEMS SCORING

Performance Tier	Definition	Score
Poor	Lack of any SA or COD	-10
Minimal	SA and COD are present, but not in sufficient quantity (meets the code but not the level of risk due to size of station)	0
Good	SA and COD are present and appropriately placed	+10

- **Fire Protection Systems** - Per Washington State Building Code, RCW 19.27.530, Redmond Municipal Code (RMC) 15.06.016, and Redmond Fire Department Standard 5.3.1, fire stations must have fire sprinkler systems. This requirement is enforced by LandI.

TABLE 8 – FIRE PROTECTION SYSTEMS SCORING

Performance Tier	Definition	Score
Poor	Lack of a sprinkler system	-10
Minimal	Sprinkler systems compliant with Building/Fire code at the time of construction	0
Good	Sprinkler system meets current Building/Fire code	+10

2. Medium-Risk, Legal or Regulatory Compliance Criteria

These elements may not cause immediate harm but expose the City to legal action, civil liability, or regulatory penalties. These carry a **moderate weight** and may also include **negative scores** for non-compliance.

- **ADA Accessibility** - Accessibility is both a legal requirement and an operational necessity under the Americans with Disabilities Act of 1990 (ADA). During disasters or staff surges, facilities may be accessed by a wider range of personnel, including reserve responders, city volunteers, or mutual aid partners. During normal operations, access must be provided for employees and visitors. Inaccessible stations introduce operational friction and potential liability. This criterion was evaluated using the ADA Title II Transition Plan, as commissioned by the City of Redmond in 2021.

TABLE 9 – ADA ACCESSIBILITY SCORING

Performance Tier	Definition	Score
Poor	Has Priority 1 Needs	-10
Poor	Has Priority 2 Needs	-5

Moderate	Has Priority 3 or 4 Needs	0
Fair	Has Only Priority 5 Needs	+5
Good	Has No Priority Needs	+10

- **Industrial Safety** – Washington State Labor and Industries (LandI) regulates facility safety for fire stations. Key facility standards, not already covered in other sections, include emergency lighting, sanitation and hygiene, apparatus bay safety and configuration, and training and safety programs (hazard communication, accident prevention, safety committee, record keeping, etc.). This criterion was evaluated using the Safety, Health, and Environmental Services, LLC report, as commissioned by the City of Redmond in July 2024.

TABLE 10 – INDUSTRIAL SAFETY SCORING

Performance Tier	Definition	Score
Poor	Facility has multiple high-risk deficiencies	-10
Poor	Facility has at least (1) high-risk deficiency	-5
Moderate	Facility has only minor deficiencies	0
Fair	Facility has (3) or fewer minor deficiencies	+5
Good	Facility has no deficiencies	+10

- **Facility Security** – Fire stations provide occasional healthcare and social services, often to emotionally escalated individuals. As such, Washington State Labor and Industries (LandI) would likely consider violence prevention measures to be part of the agency's responsibilities under RCW 49.17 and WAC 296-800 – General Duty Clause. This criterion evaluates the following items:
  - Controlled access systems (locks, keypads, secured lobbies, parking areas)
  - Emergency notification systems (panic buttons, radios, phones)
  - Lighting and camera systems in public-facing areas
  - Window and door hardening
  - Training and protocols

TABLE 11 – FACILITY SECURITY SCORING

Performance Tier	Definition	Score
Poor	Facility does not meet the Landl General Duty Clause	-10
Moderate	Facility meets LandI General Duty Clause	0
Fair	Facility meets LandI General Duty Clause and some requirements for Healthcare/Social Services setting	+5
Good	Facility meets all LandI standards	+10

- **Gender Appropriate Facilities** – Firefighters operate on 24-hour shifts. Bedrooms, restrooms, dressing rooms, and locker areas must be appropriate for a mixed-gender workforce. This criterion evaluates the following items:
  - Private bedroom, restroom, shower, dressing rooms, and locker facilities

TABLE 12 – GENDER APPROPRIATE FACILITIES SCORING

Performance Tier	Definition	Score
Poor	Facility lacks appropriate facilities	-10
Moderate	Facility has appropriate facilities and can accommodate 25% female staffing	-5
Fair	Facility has appropriate facilities and can accommodate 50% female staffing	0
Good	Facility has appropriate facilities and can accommodate 100% female staffing	+10

- **Clean Building Standard** – Under Washington's Clean Buildings Act, public facilities over 50,000 square feet are covered under Tier 1 mandates for Energy Use Intensity target (EUIt), while smaller buildings are encouraged to meet Tier 2 targets as these standards become more stringent over time.

TABLE 13 – CLEAN BUILDING STANDARD SCORING

Performance Tier	Definition	Score
Poor	Facility mandated but non-compliant	-10
Moderate	Facility non-mandated and non-compliant	0
Fair	Facility is non-mandated but compliant	+5
Good	Facility is mandated and compliant	+10

3. Low-Risk, Operational Quality-of-Life Criteria

These factors improve functionality or firefighter wellness but are not essential to safe or legal operation. They carry the **lowest weight** and have **only positive scores**, recognizing their value without penalizing their absence.
Examples include:

- **Apparatus Bay Configuration** – Vehicle access and egress are important for response time performance as well as safety and efficiency in accessing the bays to return the unit to a ready status for the next deployment. Ideal station design allows for a sufficient number of bays for rapid deployment of all frontline units, as well as pull-through bays to avoid safety issues caused by repetitive backing maneuvers.

TABLE 14 – APPARATUS BAY CONFIGURATION SCORING

Performance Tier	Definition	Score

Poor	(1) or no pull-through bays	0
Moderate	(2) pull-through bays	+2
Fair	(3) pull-through bays	+5
Good	(4) pull-through bays	+10

- **Bedrooms to Accommodate Staffing** – Efficient and effective deployment requires flexibility in assigning vehicles and staffing in the right configuration. This requires fire stations to have the appropriate number of bedrooms in its design.

TABLE 1 – STAFFING ACCOMADATIONS SCORING

Performance Tier	Definition	Score
Poor	Facility accommodates (5) or less	0
Moderate	Facility can accommodate (6)	+2
Moderate	Facility can accommodate (7)	+4
Fair	Facility can accommodate (8)	+6
Good	Facility can accommodate (9)	+8
Good	Facility can accommodate (10+)	+10

- **Kitchen/Dining Facilities** – Efficient and effective deployment requires flexibility in assigning vehicles and staffing in the right configuration. This requires fire stations to have the appropriate facilities to allow all assigned staff to cook and eat together, including chairs, tables, dishes, a dishwasher, ice, etc. Each shift has access to an assigned refrigerator and food locker space.

TABLE 16 – KITCHEN/DINING FACILITIES SCORING

Performance Tier	Definition	Score
Poor	Facility accommodates (5) or less	0
Moderate	Facility can accommodate (6)	+2
Moderate	Facility can accommodate (7)	+4
Fair	Facility can accommodate (8)	+6
Good	Facility can accommodate (9)	+8
Good	Facility can accommodate (10+)	+10

- **Training and Meeting Space** – Efficient and effective deployment requires flexibility in assigning vehicles and staffing in the right configuration. This requires fire stations to have the space available to meet training requirements and administrative needs.

TABLE 17 – TRAINING AND MEETING SPACE SCORING

Performance Tier	Definition	Score
Poor	Facility accommodates (5) or less	0
Moderate	Facility can accommodate (6)	+2
Moderate	Facility can accommodate (7)	+4
Fair	Facility can accommodate (8)	+6

Good	Facility can accommodate (9)	+8
Good	Facility can accommodate (10+)	+10

- **Parking Space for Employees and Visitors** – Efficient and effective deployment requires flexibility in assigning vehicles and staffing in the right configuration. This requires fire stations to have the space available for employees and visitors to park their vehicles. Ideal design includes parking for each employee coming on and off duty (total employees assigned to a shift x's 2), parking for 4 visitors, including ADA accessible spaces.

TABLE 18 – PARKING SCORING

Performance Tier	Definition	Score
Poor	Facility accommodates (13) or less	0
Moderate	Facility can accommodate (14)	+2
Moderate	Facility can accommodate (16)	+4
Fair	Facility can accommodate (20)	+6
Good	Facility can accommodate (22)	+8
Good	Facility can accommodate (24+)	+10

- **Space for Exercise and Fitness** – Efficient and effective deployment requires flexibility of assigning vehicles and staffing in the right configuration. This requires fire stations to have the space available to meet fitness requirements of employees.

TABLE 19 – FITNESS FACILITIES SCORING

Performance Tier	Definition	Score
Poor	Facility accommodates (5) or less	0
Moderate	Facility can accommodate (6)	+2
Moderate	Facility can accommodate (7)	+4
Fair	Facility can accommodate (8)	+6
Good	Facility can accommodate (9)	+8
Good	Facility can accommodate (10+)	+10

4. Low-Risk, Environmental Sustainability

- **EV Charging Infrastructure** – As Redmond transitions toward electric apparatus in support of citywide climate goals, electrification is an important part of the overall strategy. The capacity to charge multiple vehicles rapidly will need to be incorporated into the design of fire stations. Providing EV charging infrastructure for employee and visitor use is less critical but also an important component for station design. The best design would allow for (4+) Level 3 chargers for emergency response units, and (4+) Level 2 chargers for employees and visitors.

TABLE 20 – EV CHARGING INFRASTRUCTURE SCORING

Performance Tier	Definition	Score
Poor	Facility has no chargers	0
Moderate	Facility has (1+) L3 chargers	+2
Moderate	Facility has (2) L3 chargers	+4
Fair	Facility has (2+) L3 and (2+) L2 chargers	+6
Good	Facility has (3+) L3 and (3+) L2 chargers	+8
Good	Facility has (4+) L3 and (4+) L2 chargers	+10

- **Fire Station Design Meets LEED Gold or Higher**
  Under Redmond's Climate Emergency Declaration and the adopted City of Redmond Operations Zero Carbon Strategy, all new city facilities are expected to achieve LEED Gold or higher. This standard is a critical part of Redmond's goal to reach carbon neutrality in municipal operations by 2030, and it reflects the City's leadership in climate-smart capital investment. While older stations may not be eligible for certification, renovations and major retrofits should be designed to meet or exceed LEED Gold criteria whenever feasible.

TABLE 21 – FIRE STATION DESIGN SCORING

Performance Tier	Definition	Score
Poor	Facility does not meet LEED Gold	0
Good	Facility meets LEED Gold	+10

- **Onsite Renewable Energy (Solar or Alternative Energy Systems)**
  To support the City's transition to 100% renewable electricity and a 30% reduction in municipal energy use, fire stations should incorporate onsite generation whenever feasible. Solar photovoltaic (PV) systems, battery storage, and other renewable technologies reduce long-term operating costs, support continuity of operations during outages, and directly advance Redmond's carbon neutrality by 2030 target. This criterion evaluates the presence and capacity of such systems, giving greater credit to facilities that can meaningfully offset peak demand or support grid independence during emergencies.

TABLE 22 – ONSITE RENEWABLE ENERGY SCORING

Performance Tier	Definition	Score
Poor	Facility has no renewable energy systems	0
Moderate	Small-scale solar (offsets <10% of load)	+2
Fair	Solar system offsets 10–25% of annual load	+4
Good	Solar system offsets 25–50% of annual load	+6
Very Good	Solar system offsets >50% of annual load or includes storage	+8
Exceptional	Facility is net-zero energy ready or exceeds 75% offset	+10

5. Fire Station Facility Condition Assessment

The **Citywide Facility Condition Assessment (MENG 2024)** provided a structural and system-level evaluation of fire stations, using the Facility Condition Index (FCI) and capital forecasting to determine baseline building integrity.

This criterion carries **very high weight** and has **only positive scores**, recognizing that a functional facility maintenance, repair, and replacement program will ensure fire stations remain in operational condition the longest. Deferred maintenance, repair, and replacement relegates the agency to more frequent and longer duration "out of service" time, as well as adverse impacts on the budget.

6. Fire Station Location/Coverage (covered in Appendix A)

Fire station location is the most important aspect of this analysis since the best fire station in the wrong location will not be able to carry out its core function, which is to provide rapid response to incidents. Therefore, this criterion carries the **highest weight** and has **only positive scores**, recognizing that the best fire station locations equal better service for a broader area, and a poorly located fire station means a more restricted service area and possibly the need to place additional fire stations to fill the service gap.

Fire Station 11 Effectiveness Scorecard

Score	
	Fire Station Location/Coverage
	0 to 200 points
161	Covers urban areas within four minutes of travel time, or suburban/rural areas within eight minutes of travel time
	Fire Station Functionality
	-10 to +10
-3	Turnout Time - Path of Travel Configuration
0	Airborne Contaminate Control (exhaust systems, PPE storage areas, etc.)
8	Decontamination Area and Contamination Reduction Corridor
10	Smoke and CO Alarm Coverage
0	Fire Sprinkler System
-10	Seismic Protection
-5	Gender Appropriate Restroom, Shower and Locker Facilities
0	Back Up Power
5	Station Security
0	ADA Compliant
0	OSHA/LandI Compliant

-10 Clean Building Performance Standard (required for Station 11)

Fire Station Accommodations

0 to +10

8 Apparatus Bays for Engine, Truck, Aid Car, and Command Officer + Reserves
10 Bedroom, Bathroom, and Locker facilities
10 Kitchen
8 Training/Meeting Room
10 Sufficient parking
4 Exercise/Workout Facilities

Fire Station Environmental Sustainability

0 to +10

0 EV Charging Infrastructure
0 LEED Gold or higher
0 Solar System

Fire Station/Facilities Condition Assessment

60 **-50 to +100**

266 Total Score (out of 510)

52% Effectiveness Percent

Fire Station 12 Effectiveness Scorecard

Score **Fire Station Location/Coverage**

0 to 200 points

88 Covers urban areas within four minutes of travel time, or suburban/rural areas within eight minutes of travel time

Fire Station Functionality

-10 to +10

-5 Turnout Time - Path of Travel Configuration
0 Airborne Contaminate Control (exhaust systems, PPE storage areas, etc.)
8 Decontamination Area and Contamination Reduction Corridor
10 Smoke and CO Alarm Coverage
0 Fire Sprinkler System
-10 Seismic Protection
-5 Gender Appropriate Restroom, Shower and Locker Facilities
0 Back Up Power
7 Station Security
0 ADA Compliant
0 OSHA/LandI Compliant

0 Clean Building Performance Standard (required for Station 11)

Fire Station Accommodations

2 **0 to +10**
0 Apparatus Bays for Engine, Truck, Aid Car, Command Officer + Reserves
10 Bedroom, Bathroom, and Locker facilities
3 Kitchen
6 Training/Meeting Room
1 Sufficient parking
3 Exercise/Workout Facilities

Fire Station Environmental Sustainability

0 **0 to +10**
10 EV Charging Infrastructure
0 LEED Gold or higher
0 Solar System

Fire Station/Facilities Condition Assessment

60 **-50 to +100**

188 Total Score (out of 510)
37% Effectiveness Percent

Fire Station 16 Effectiveness Scorecard

Score **Fire Station Location/Coverage**

0 to 200 points
Covers urban areas within four minutes of travel time, or
134 suburban/rural areas within eight minutes of travel time

Fire Station Functionality

-10 to +10
1 Turnout Time - Path of Travel Configuration
Airborne Contaminate Control (exhaust systems, PPE storage areas,
0 etc.)
8 Decontamination Area and Contamination Reduction Corridor
10 Smoke and CO Alarm Coverage
0 Fire Sprinkler System
-10 Seismic Protection
0 Gender Appropriate Restroom, Shower, and Locker Facilities
0 Back Up Power
5 Station Security
0 ADA Compliant
0 OSHA/LandI Compliant
0 Clean Building Performance Standard (required for Station 11)

0 to +10

Apparatus Bays for Engine, Truck, Aid Car, and Command Officer +
4 Reserves
6 Bedroom, Bathroom and Locker facilities
10 Kitchen
8 Training/Meeting Room
6 Sufficient parking
7 Exercise/Workout Facilities

Fire Station Environmental Sustainability

0 to +10

0 EV Charging Infrastructure
0 LEED Gold or higher
0 Solar System

Fire Station/Facilities Condition Assessment

60 **-50 to +100**

249 Total Score (out of 510)
49% Effectiveness Percent

Fire Station 17 Effectiveness Scorecard

Score **Fire Station Location/Coverage**

0 to 200 points

Covers urban areas within four minutes of travel time, or
147 suburban/rural areas within eight minutes of travel time

Fire Station Functionality

-10 to +10

-5 Turnout Time - Path of Travel Configuration
0 Airborne Contaminate Control (exhaust systems, PPE storage areas, etc.)
8 Decontamination Area and Contamination Reduction Corridor
10 Smoke and CO Alarm Coverage
0 Fire Sprinkler System
-10 Seismic Protection
5 Gender Appropriate Restroom, Shower, and Locker Facilities
0 Back Up Power
7 Station Security
0 ADA Compliant
0 OSHA/LandI Compliant
0 Clean Building Performance Standard (required for Station 11)

0 to +10

Apparatus Bays for Engine, Truck, Aid Car, and Command Officer +
8 Reserves
8 Bedroom, Bathroom, and Locker facilities
10 Kitchen
10 Training/Meeting Room
10 Sufficient parking
10 Exercise/Workout Facilities

Fire Station Environmental Sustainability

0 to +10
0 EV Charging Infrastructure
0 LEED Gold or higher
0 Solar System

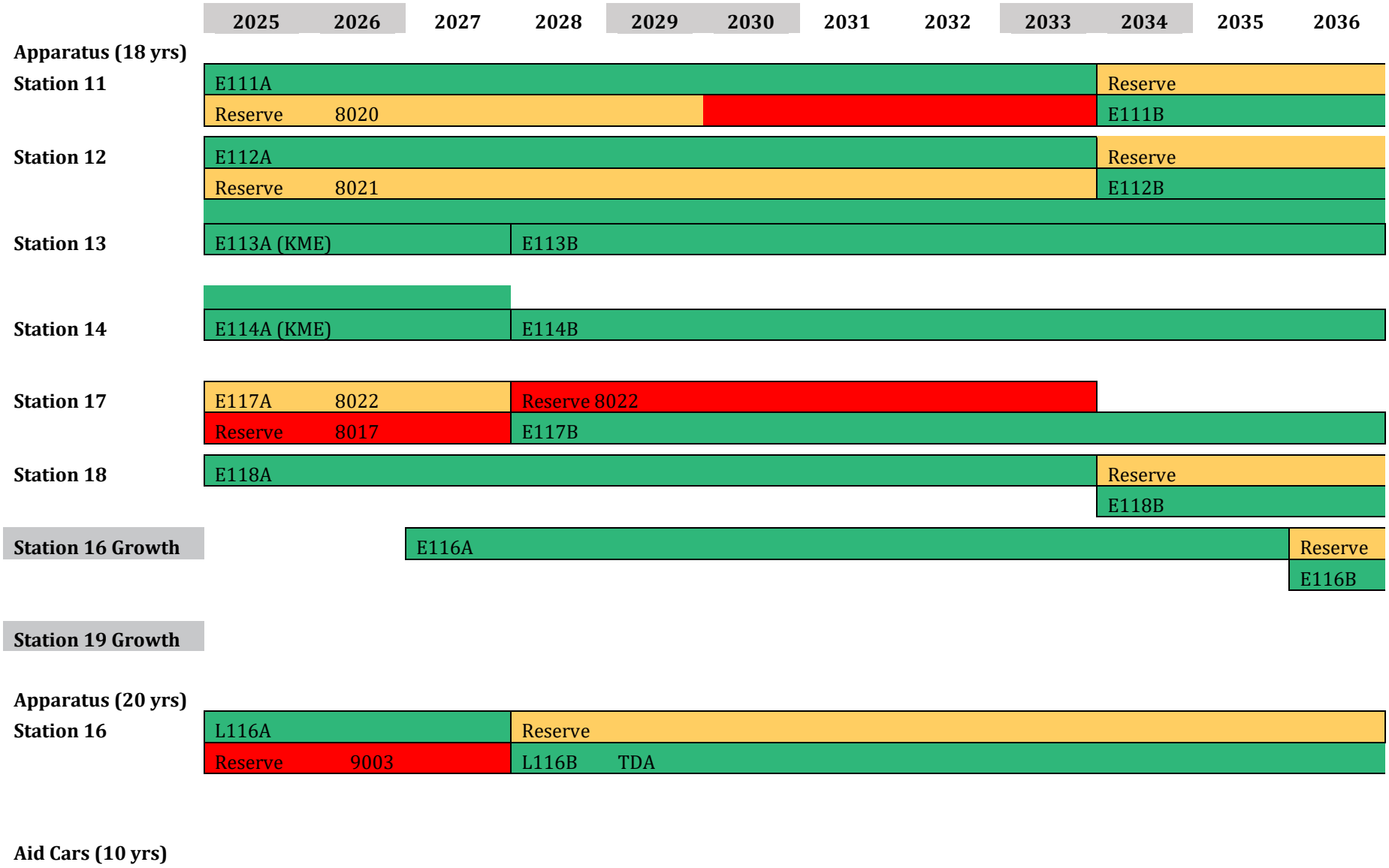
Fire Station/Facilities Condition Assessment

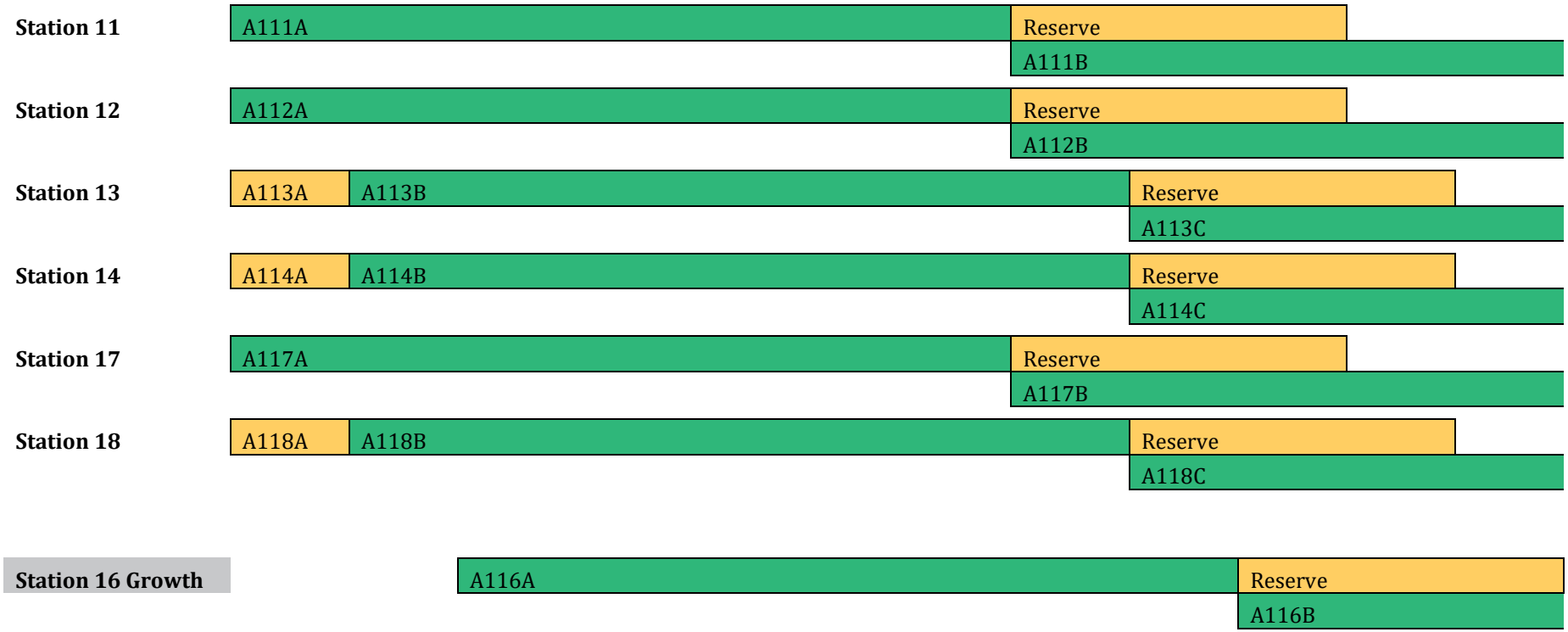
70 **-50 to +100**

288 Total Score (out of 510)
56% Effectiveness Percent

Appendix C – Fleet Inventory and Cost

Figure 1: Fleet replacement Gantt chart 2025 to 2036




Station 11
A111A
Reserve
A111B
Station 12
A112A
Reserve
A112B
Station 13
A113A
A113B
Reserve
A113C
Station 14
A114A
A114B
Reserve
A114C
Station 17
A117A
Reserve
A117B
Station 18
A118A
A118B
Reserve
A118C
Station 16 Growth
A116A
Reserve
A116B
Specialty Veh(20 yrs)
Rescue Unit
RescueA
6005
RescueB
Haz Mat Unit
HMA
Wildland Unit
BE1A
BE1B
Wildland Unit
BE2A
Battalion Veh (14 yrs)
B111A
B111B
Reserve
Reserve
Reserve
B111C

Staff Vehicles

Shop	Shop111A	Reserve
Shop	Reserve	Shop111B
Growth?		

Training	TRN111A		
Training	TRN112A		TRN112B
Training	TRN113A	TRN113B	

Admin (14 yrs)		
Fire Chief	CH111A	CH111B
Deputy Chief	CH112A	
Deputy Chief	CH113A	CH113B
Emerg Mgnt	EMA	
Logistics	LogsA	
Investigator	InvA	InvB

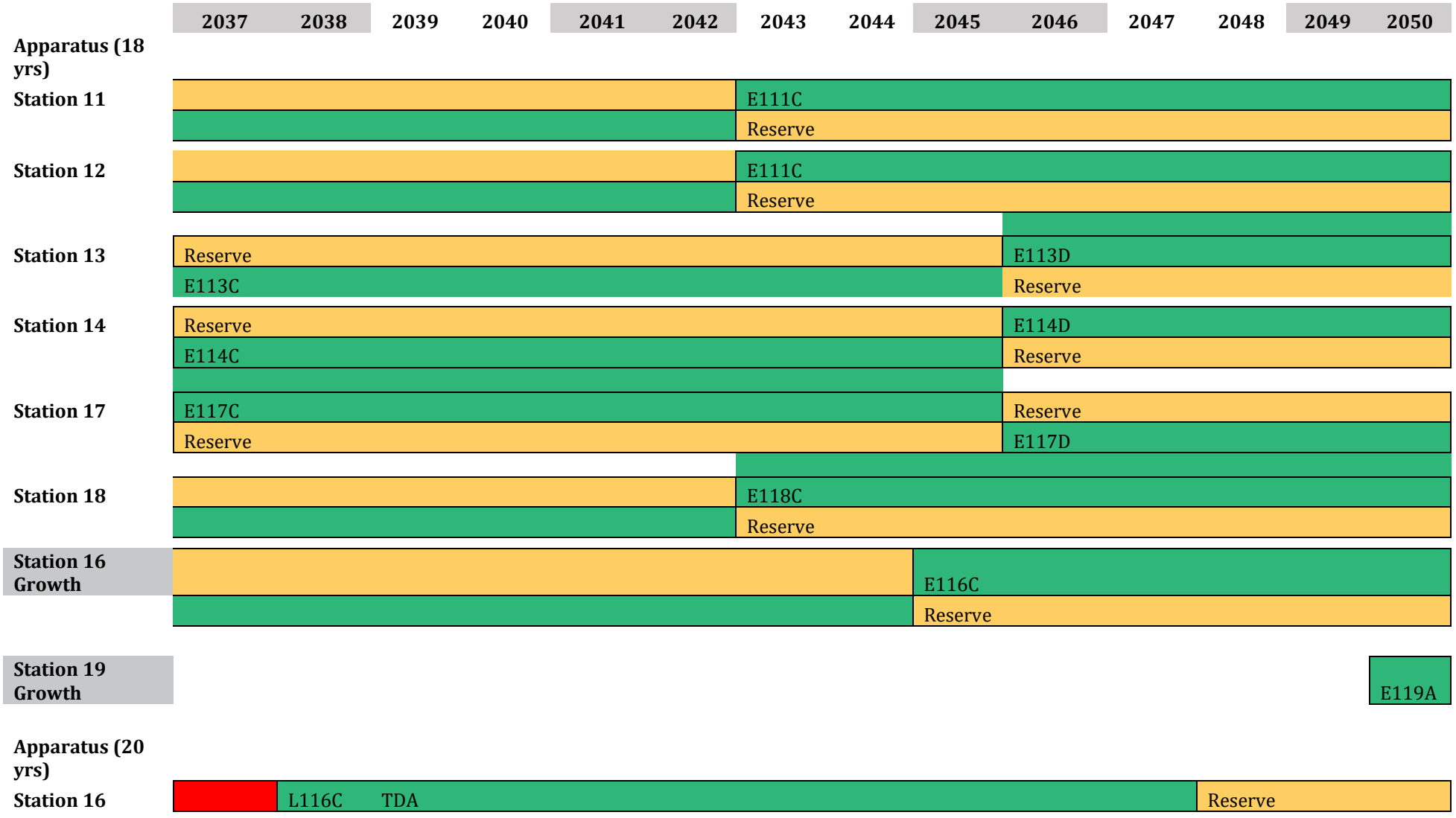
Logistics Growth?

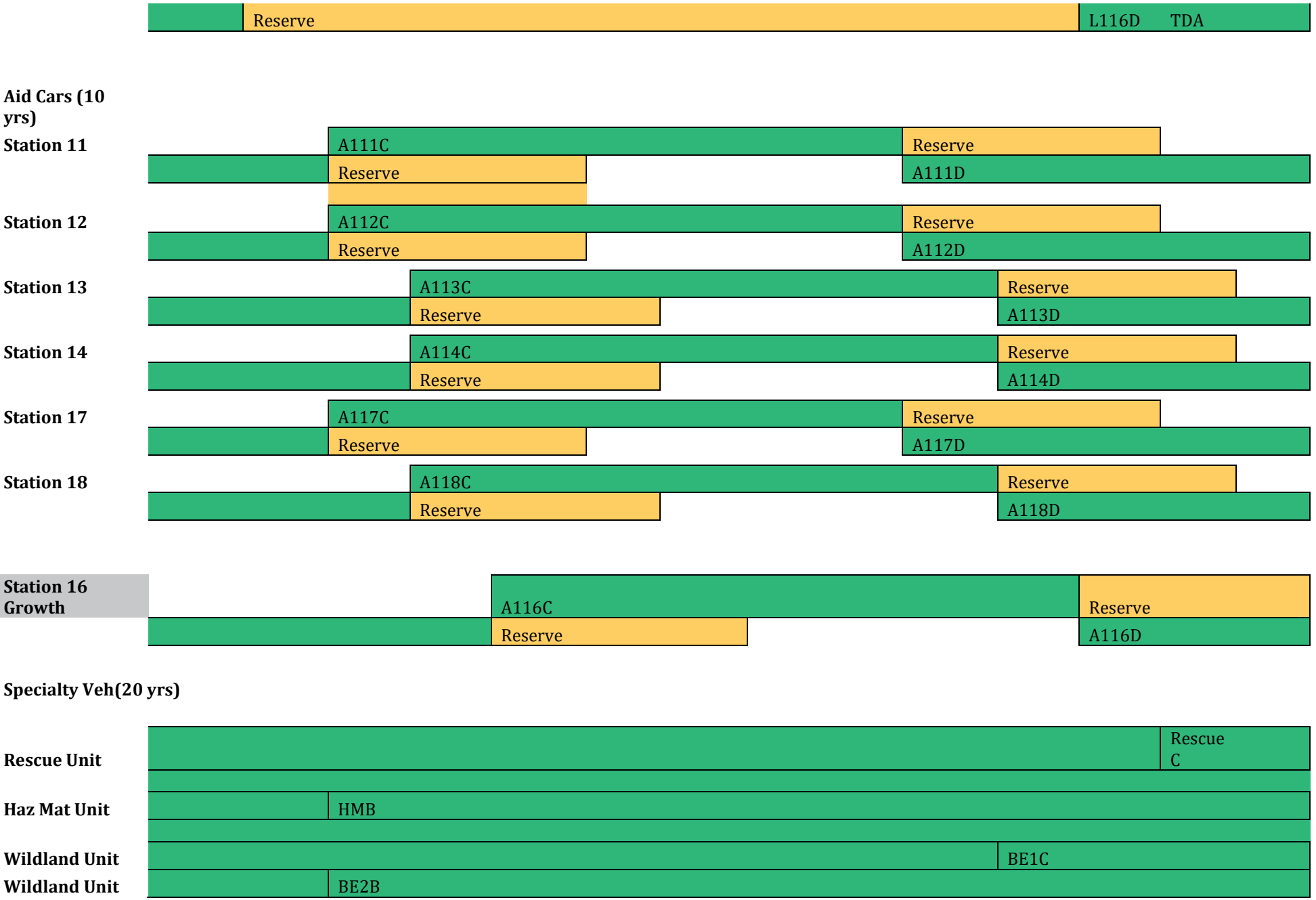
Admin (20 yrs)		
Prevention	P111A	P111B
Prevention	P112A	P112B
Prevention	P113A	P113B
Prevention	P114A	P114B
Prevention	P115A	P115B
Prevention	P116A	P116B
Prevention	P117A	P117B
Prevention	P118A	P118B
Prevention	P119A	P119B
Prevention	P120A	
Prevention	P121A	

Growth?

Beyond lifesplan

Figure 2: Fleet replacement Gantt chart 2037 to 2050




Reserve
L116D
TDA
Aid Cars (10 yrs)
Station 11
A111C
Reserve
Reserve
A111D
Station 12
A112C
Reserve
Reserve
A112D
Station 13
A113C
Reserve
Reserve
A113D
Station 14
A114C
Reserve
Reserve
A114D
Station 17
A117C
Reserve
Reserve
A117D
Station 18
A118C
Reserve
Reserve
A118D
Station 16 Growth
A116C
Reserve
Reserve
A116D
Specialty Veh(20 yrs)
Rescue Unit
Rescue C
Haz Mat Unit
HMB
Wildland Unit
BE1C
Wildland Unit
BE2B

Battalion Veh (14 yrs)		B111D	Reserve
		Reserve	B111E

Staff Vehicles

Shop	Shop111C	Reserve
Shop	Reserve	Shop111D

Growth?

Training	TRN113B		
Training			TRN112C
Training		TRN113C	

Admin (14 yrs)			
Fire Chief		CH111C	
Deputy Chief	CH112B		
Deputy Chief		CH113C	
Emerg Mgnt	EMB		
Logistics	LogsB		
Investigator		InvC	

Logistics Growth?

Admin (20 yrs)		
Prevention		P111C
Prevention		P112C
Prevention		P113C
Prevention		P114C
Prevention		P115C

Prevention		P116C
Prevention		P117C
Prevention		
Prevention		
Prevention	P120B	
Prevention	P121B	
Growth?		

Beyond lifesplan	

Figure 3: Fleet replacement cost estimates 2025 to 2036

			2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Apparatus														
Engine	18R				$ 1,272,000	$ 4,290,000						$ 6,090,000		$ 2,280,000
Ladder	20R					$ 2,810,000						$ 4,223,697		
Total			$ -	$ -	$ 1,272,000	$ 7,100,000	$ -	$ -	$ -	$ -	$ -	$ 10,313,697	$ -	$ 2,280,000
Aid Cars														
Aid Car	14R			$ 1,152,000	$ 407,000					$ 1,635,000	$ 1,731,000	$ 612,000		
Total			$ -	$ 1,152,000	$ 407,000	$ -	$ -	$ -	$ -	$ 1,635,000	$ 1,731,000	$ 612,000	$ -	$ -
Other														
Brush Engine	18				$ 590,000									
HazMat Unit	18													
Heavy Rescue	20						$ 1,389,000							
Total			$ -	$ -	$ 590,000	$ -	$ 1,389,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Heavy Veh Total			**$ -**	**$ 1,152,000**	**$ 2,269,000**	**$ 7,100,000**	**$ 1,389,000**	**$ -**	**$ -**	**$ 1,635,000**	**$ 1,731,000**	**$ 10,925,697**	**$ -**	**$ 2,280,000**
Command														
Battalion	16R										$ 152,000			
Chief/Dep Chief	14					$ 114,000	$ 120,000							
Investigator	14							$ 128,000						
Training Officer	14				$ 107,000					$ 143,000				
Support Staff														
Prevention	20						$ 448,000		$ 142,000					
Shop	20							$ 128,000						
Adminstrative	20													
Lt Veh Total					**$ 107,000**	**$ 114,000**	**$ 568,000**	**$ 256,000**	**$ 142,000**	**$ 143,000**	**$ -**	**$ -**	**$ -**	**$ -**
Grand Total			**$ -**	**$ 1,152,000**	**$ 2,376,000**	**$ 7,214,000**	**$ 1,957,000**	**$ 256,000**	**$ 142,000**	**$ 1,778,000**	**$ 1,731,000**	**$ 10,925,697**	**$ -**	**$ 2,280,000**

Figure 3: Fleet replacement cost estimates 2037 to 2050

		2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	Totals
Apparatus																
Engine	18R	$ 7,245,000						$ 10,278,000		$ 3,849,000	$ 12,240,000				$ 5,150,245	$ 52,694,245
Ladder	20R									$ 8,017,839						$ 15,051,536

Total		$ 7,245,000	$ -	$ -	$ -	$ -	$ -	$ 10,278,000	$ -	$ 11,866,839	$ 12,240,000	$ -	$ -	$ -	$ 5,150,245	$ 67,745,781
Aid Cars																
Aid Car	14R			$ 2,457,000	$ 2,604,000	$ 920,000					$ 3,693,000	$ 3,915,000	$ 1,383,000			$ 3,669,018
Total		$ -	$ -	$ 2,457,000	$ 2,604,000	$ 920,000	$ -	$ -	$ -	$ -	$ 3,693,000	$ 3,915,000	$ 1,383,000	$ -	$ -	$ 20,509,000
Other																
Brush Engine	18			$ 1,187,000								$ 1,892,000				$ 3,669,018
HazMat Unit	18			$ 2,487,000												$ 2,487,018
Heavy Rescue	20						$ 2,962,050							$ 4,454,000		$ 8,805,070
Total		$ -	$ -	$ 3,674,000	$ -	$ -	$ 2,962,050	$ -	$ -	$ -	$ -	$ 1,892,000	$ -	$ 4,454,000	$ -	$ 10,507,050
Heavy Veh Total		**$ 7,245,000**	**$ -**	**$ 6,131,000**	**$ 2,604,000**	**$ 920,000**	**$ 2,962,050**	**$ 10,278,000**	**$ -**	**$ 11,866,839**	**$ 15,933,000**	**$ 5,807,000**	**$ 1,383,000**	**$ 4,454,000**	**$ 5,150,245**	**$ 98,761,831**
Command																
Battalion	16R				$ 228,000							$ 343,000				$ 723,000
Chief/Dep Chief	14		$ 203,000					$ 544,000								$ 981,014
Investigator	14								$ 288,000							$ 416,014

Training Officer	14	$ 192,000				$ 242,000					$ 323,000					$ 1,007,014

Support Staff

Prevention	20	$ 202,000												$ 1,421,000		$ 2,213,020
Shop	20	$ 192,000								$ 305,000						$ 625,020
Adminstrative	20		$ 214,000													$ 214,020

Lt Veh Total	**$ 586,000**	**$ 417,000**	**$ -**	**$ -**	**$ 242,000**	**$ -**	**$ 544,000**	**$ 288,000**	**$ 305,000**	**$ 323,000**	**$ -**	**$ -**	**$ 1,421,000**	**$ -**	**$ 6,179,102**

Grand Total	**$ 7,831,000**	**$ 417,000**	**$ 6,131,000**	**$ 2,604,000**	**$ 1,162,000**	**$ 2,962,050**	**$ 10,822,000**	**$ 288,000**	**$ 12,171,839**	**$ 16,256,000**	**$ 5,807,000**	**$ 1,383,000**	**$ 5,875,000**	**$ 5,150,245**	**$ 104,940,933**

Assumptions and Limitations:

This analysis assumes a 6% annual increase for vehicle costs starting with actual base rates paid in 2025. Vehicle order price estimate and actual delivery cost could be different due to fluctuations in Washington state sales tax rates. Vehicle order and delivery years could vary due to supply chain restrictions, national sales demand, and other economic factors.

Appendix D: Glossary of Key Terms

This glossary provides definitions for key terms, acronyms, and concepts used throughout the Fire Functional Plan. It is intended to support clarity and consistency for all readers — including city staff, elected officials, and community stakeholders. Many of these terms reflect technical language from the fire service, capital facilities planning, and the broader regulatory framework that governs public infrastructure in the City of Redmond. Where appropriate, definitions align with national standards, state laws, and city policies referenced in the plan.

Glossary of Terms

Advanced Life Support (ALS): Emergency medical care that includes advanced procedures and medications provided by paramedics.

Aid Car: Ambulances staffed and equipped to handle low-acuity emergency medical calls that require only Basic Life Support (BLS) service.

Apparatus: A general term for fire trucks and other specialized vehicles used in emergency response.

Basic Life Support (BLS): Emergency medical care that includes basic life-saving procedures and transportation to a hospital.

Brush/Wildland Fire Units: Fire apparatus designed for fighting fires in wildland or wildland-urban interface areas.

Capital Equipment: Non-fleet assets with a replacement cost between $5,000 and $50,000, such as medical equipment, extrication tools, and generators.

Capital Facilities Element (CFE): A section of the City of Redmond's Comprehensive Plan that guides planning for major infrastructure investments, including fire stations.

Capital Facilities Plan (CFP): A six-year plan that identifies and prioritizes capital facility investments for the City, including fire department facilities.

Capital Investment Strategy (CIS): Redmond's long-term financial framework for funding infrastructure projects across all city departments.

Community Resilience Infrastructure: Non-response facilities and resources that support the community's ability to prepare for and recover from emergencies, such as the Station 11 Annex, which houses the Mobile Integrated Health and Community Care programs.

Community Risk Reduction (CRR): A fire-service strategy that proactively reduces risks to the community through education, prevention, inspections, and targeted interventions.

Cross-Staffing: An operational model in which a single crew of firefighters is assigned to operate multiple types of apparatus, depending on the nature of the call. For example, the same crew may staff either an engine or a specialty rescue vehicle, but not both simultaneously. This model improves flexibility and efficiency, but requires temporarily placing one apparatus out of service while deploying the other.

Diversity, Equity, and Inclusion (DEI): A commitment to fostering an inclusive and equitable environment for all employees and community members.

Effective Response Force (ERF): The minimum number of personnel and apparatus needed to effectively and safely manage an emergency incident.

Emergency Backup Power: Minimum power systems required to maintain life-safety, communications, and operational functions at a fire station during a power outage. This includes systems such as bay doors, exhaust removal, radios, and critical lighting.

Emergency Medical Services (EMS): A system that provides urgent medical care, stabilization, and transportation for individuals experiencing medical emergencies. In Redmond, EMS is delivered through a tiered response model that includes Basic Life Support (BLS) provided by firefighter-EMTs and Advanced Life Support (ALS) provided by paramedics through Northeast King County Medic One.

Emergency Medical Technician (EMT): A healthcare provider trained to deliver Basic Life Support (BLS), including patient assessment, CPR, bleeding control, airway management, and stabilization for transport. In Redmond, all firefighters are certified as EMTs and provide the first level of pre-hospital emergency medical care as part of the fire department's integrated EMS response.

Emergency Operations Center (EOC): A centralized facility used during major incidents to coordinate citywide response and recovery efforts.

Engines: The primary fire apparatus used for fire suppression, water supply, and emergency medical response.

Environmental Sustainability Action Plan (ESAP): A citywide plan that establishes sustainability goals for municipal operations, including infrastructure and fleet.

Essential Facility: A building or structure designated to remain operational during and after an emergency to support public safety and disaster response. Fire stations are classified as essential facilities because they provide critical life-safety services. Under building codes, essential facilities must meet higher standards for structural integrity, seismic resilience, and operational reliability, including backup power systems and emergency communications.

Extractors: Industrial washing machines designed for decontaminating firefighter turnout gear to remove carcinogens and biohazards.

Facilities Master Planning: A strategic process for assessing current facilities and planning future capital investments to meet operational, safety, and service delivery needs.

Fire Functional Plan: A strategic document that guides the development, maintenance, and investment in fire protection facilities and infrastructure to support public safety in Redmond.

First-Due Unit: The fire unit that is assigned to and typically the first to arrive at the scene of an emergency.

General Fund: The City's primary source of revenue for funding essential municipal services, including fire department operations.

Green Infrastructure: Sustainable infrastructure elements that promote environmental resilience, such as solar energy systems, electric vehicle charging, and stormwater management features.

Growth Management Act (GMA): Washington State law (RCW 36.70A) requiring cities to plan for growth and ensure that infrastructure, including fire protection, keeps pace with development.

Hazardous Materials (HazMat) Response: Specialized fire department response to incidents involving hazardous chemicals, biological agents, radiological materials, or other dangerous substances.

Impact Fees: Fees charged to new development to fund public infrastructure, including fire stations, needed to support growth.

Incident Command System (ICS): A standardized framework for command, control, and coordination of emergency response, used nationwide.

Interlocal Agreement (ILA): A formal agreement between two or more jurisdictions to share services or collaborate on programs, such as emergency medical services.

International Building Code (IBC): A widely adopted model building code that establishes minimum standards for building design, construction, and safety, including structural strength, fire protection, energy efficiency, and seismic design. The IBC defines facility classifications, including *essential facilities*, and mandates additional requirements for their construction to ensure public safety during disasters.

Ladder Trucks: Fire apparatus equipped with aerial ladders designed for high-angle rescues, ventilation, and firefighting in multi-story buildings.

Level of Service (LOS): Standards that define the minimum acceptable performance for fire protection and emergency response, typically including response time and staffing adequacy.

Liquefaction Zone: Areas prone to ground instability during earthquakes due to saturated soils losing strength, posing risks to buildings such as fire stations.

Maintenance and Operations Center (MOC): A centralized facility for managing the City's fleet, logistics, and support operations, including some services supporting the fire department.

Mass Casualty Incident (MCI): An incident in which the number of casualties exceeds the local emergency response system's immediate capacity to provide care.

Medic Units: Ambulances staffed by paramedics capable of delivering Advanced Life Support (ALS) for high-acuity medical emergencies.

Mobile Integrated Health (MIH): A fire department program that provides non-emergency, community-based healthcare and outreach services to improve patient outcomes and reduce strain on 911 systems.

Mutual Aid Agreement: A formal agreement between fire departments or jurisdictions to provide assistance during emergencies beyond their normal service boundaries.

National Fire Protection Association (NFPA): An international nonprofit organization that develops codes, standards, and guidelines for fire safety, including NFPA 1710, which governs fire department deployment standards.

Northeast King County Medic One: A regional ALS (paramedic) service providing emergency medical care across multiple jurisdictions, including Redmond.

Occupational Cancer Risk (Fire Service): The elevated risk of cancer among firefighters due to chronic exposure to carcinogens in fires and fire suppression environments.

Occupational Safety and Health Administration (OSHA): A federal agency responsible for establishing and enforcing workplace safety regulations.

Response Time: The total time elapsed from when a 911 call is received to when the first fire department unit arrives on scene.

Resilience: The ability of the fire department and community to anticipate, absorb, respond to, and recover from emergencies and disasters.

Resilience Hub: A facility designed to support community members during disasters by providing backup power, communications, shelter, and essential services.

Resilient Infrastructure: Buildings and facilities designed to continue operating during and after natural disasters, such as earthquakes, wildfires, and power outages.

Seismic Resilience: A building's capacity to withstand earthquakes without suffering catastrophic failure, protecting both occupants and operations.

Sound Transit: The regional public transit agency that operates bus, light rail, and commuter rail services across the Puget Sound region.

Specialty Rescue Vehicles: Apparatus equipped for specialized rescue missions such as water rescue, hazardous materials incidents, trench rescue, and technical rope rescue.

Standards of Cover (SOC): A fire service planning tool used to evaluate operational performance, deployment models, and risk-based coverage needs for fire protection services.

Station Equity: The principle of ensuring that all fire stations meet a minimum standard of operational safety, wellness facilities, backup power, and equipment, regardless of geographic location or age.

Tractor-Drawn Aerial (TDA): A type of ladder truck that consists of a tractor unit pulling a steerable trailer with an aerial ladder, offering superior maneuverability in dense urban environments.

Turnout Gear: The personal protective clothing worn by firefighters during emergency response, including helmets, coats, pants, gloves, boots, and hoods.

Turnout Time: The time interval from when a dispatch alarm is received until firefighters are suited up and departing the station.

Vehicle Exhaust Removal System: A system installed in fire station apparatus bays that removes harmful diesel exhaust emissions to protect firefighter health.

Washington Administrative Code (WAC): The compilation of state-level regulations. WAC 296-305 specifically governs firefighter health and safety standards in Washington State.

Washington Surveying and Rating Bureau (WSRB): An organization that evaluates fire protection capabilities and assigns ratings that influence property insurance premiums within communities.

Wildland-Urban Interface (WUI): Areas where human-built structures are located adjacent to or intermixed with wildland vegetation, presenting increased wildfire risks.

Appendix E – Capital Investment Sequencing Summary

This appendix provides a consolidated summary of all major capital investments identified in Chapter 6, organized by implementation phase and aligned with the City's long-range growth strategy. Each project is listed with its location, description, estimated cost, funding sources, impact fee eligibility, and contribution to key Redmond 2050 themes: **Level of Service**, **Sustainability**, **Resilience**, and **Equity and Inclusion**.

The sequencing framework mirrors the four-phase structure outlined in Chapters 6 and 7:

- **Current CIP (2025–2030)**
- **Blueprint 2050 (2027–2032)**

- **Growth Response (2033–2040)**
- **Sustainment and Long-Term Expansion (2041–2050 and Beyond)**

This summary is intended to support transparent decision-making, resource alignment, and coordination across departments. It also serves as a reference for capital funding strategies, including the City's use of fire impact fees under the Growth Management Act. Project timing is based on operational urgency, infrastructure condition, population growth patterns, and the readiness of associated planning or design efforts.

Table 1: Capital Investment Sequencing

Project	Location	Description	Costs: 2025-2030	Funding Sources	Impact Fee Eligible?	Level of Service Impacts	Supports Redmond 2050 Themes		
							Sustainability	Resiliency	Equity & Inclusion
CURRENT CIP (2025-2030) & Other Approved Capital Purchases									
Fire Station 11 Repairs	8450 161st Ave NE (Downtown)	Improvements to Fire Station 11 and Medic One building shell and systems were identified as deficiencies in the Facilities Condition Assessment.	$4,985,722	REET, Misc	No			✓	✓
Fire Station 11 and Fire Station 12 EV Charging Stations	Downtown and Overlake	Install EV charging infrastructure at FS11 and FS12 to support new electric vehicles	$903,000	Grants, REET	No		✓	✓	
Fire Station 17 Siding Replacement	16917 NE 116th St (Education Hill)	Replacement of exterior siding	$1,119,620	General Fund	No			✓	
Fire Station 17 Unfinished	16917 NE 116th St (Education Hill)	Expansion of facility to accommodate staff (operational and administrative)	$390,000	General Fund	No		✓	✓	
PPE Management - Storage and Extractors	Citywide	Additional storage and cleaning facilities for personal protection equipment at multiple fire stations	$505,000	General Fund	No			✓	✓
Purchase/Order of Tractor Drawn Aerial (TDA)	Downtown	Address growth impacts due to development impacts (streets and verticality) - projected in-service 2028/2029	$1,405,000	General Fund, Impact Fees	Yes	✓		✓	

SCBA Replacement	Citywide	Replacement of self-contained breathing apparatus equipment due to end of life	$864,000	General Fund	No	✓		✓	
SCBA Compressor Replacement	Downtown and SE Redmond	Replacement of aging breathing air cylinder filling compressors due to end of life at FS11 and FS16	$220,000	General Fund	Partial	✓		✓	
		TOTAL	**$10,392,342**						
2027 - 2032 - Blueprint 2050 Capital Investment Strategy			**Costs: 2027-2032**	**Funding Sources**					
Partial Remodel of FS11 for TDA Deployment and urgent building upgrades	8450 161st Ave NE (Downtown)	Immediate operational need; enables TDA deployment in 2028-link to new engine 16 time*remodel	$1,600,000	REET, Impact Fees	Partial	✓	✓	✓	✓
Purchase/Order of Tractor Drawn Aerial (TDA)	Downtown	Address growth impacts due to development impacts (streets and verticality). Projected in-service 2028/2029	$1,405,000	General Fund, Impact Fees					
SCBA Replacement	Citywide	Replacement of self-contained breathing apparatus equipment due to end of life	$736,000	General Fund					
Logistics Warehouse Tenant Improvements	TBD	Tenant improvements to a 10,000-square-foot leased warehouse to support fire logistics operations, including storage for reserve apparatus, specialized equipment, and a small administrative workspace.	$600,000	General Fund	No	✓		✓	

New Engine Company at FS16 - Apparatus	SE Redmond	One-time cost for a new engine at FS 16 to provide suppression capabilities in the SE Redmond area	$1,200,000	General Fund, Impact Fees	Yes	✓		✓	
Diesel Exhaust Upgrades	Citywide	Upgrade aging diesel exhaust systems in City fire stations	$500,000	General Fund, Grants	No		✓	✓	
Generator Upgrades and Redundancy	Citywide	Required to maintain air quality and reliable backup power for essential facilities	$500,000	General Fund, Grants	No	✓	✓	✓	
Logistics/Apparatus Maintenance Building/Improvements	TBD		5,000,000	General Fund, Impact Fees	Yes		✓	✓	✓
Phase 2 Renovation/Rebuild of FS11	8450 161st Ave NE (Downtown)	Extensive remodel/renovation of FS/Admin on current site	$15,000,000	General Fund, Impact Fees	No	✓			
		TOTAL	**$26,541,000**						

2033- 2040			**Costs: 2033-2040**						
Reserve TDA Truck Procurement		Required for vertical growth and ERF coverage (Reserve) - order 2034, arrival 2038	$3,346,000	General Fund, Impact Fees	Yes	✓		✓	
Acquire Property for FS12	Overlake	Estimated land acquisition costs for a minimum 1.25-acre site in Overlake to support relocation and construction of a new 4-bay fire station with 10 dorm rooms and associated operational infrastructure.	$10,000,000	General Fund, Impact Fees	Yes	✓	✓	✓	✓
Build New FS12	Overlake	Construction of a new 4-bay fire station in Overlake	$30,000,000	General Fund, Impact Fees	Partial	✓	✓	✓	✓
		TOTAL	**$43,346,000**						

2041 -2050			Costs: 2041-2050					
FS16 Lifecycle Renovation	SE Redmond		$12,000,000	General Fund	No		✓	✓
Specialty Equipment Packages (High-Rise, Rail, Wildland)	Citywide		$1,000,000	General Fund, Grants, Impact Fees	Partial	✓		✓
		TOTAL	**$13,000,000**					
Beyond 2050								
New Station 19	Downtown	Construction of a new 4-bay fire station in Downtown	$35,000,000	General Fund, Bonds, Grants, Impact Fees	Yes	✓	✓	✓	✓
Relocated FS 11	Downtown	Construction of a new 4-bay fire station in Downtown	$35,000,000	General Fund, Bonds, Grants, Impact Fees	Yes	✓	✓	✓	✓
		TOTAL	**$70,000,000**					
		Total Investments (2027 -2050)	**$82,887,000**					
		Additional Investments Beyond 2050	**$70,000,000**					

The City of Redmond assures that no person shall, on the grounds of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 and the Civil Rights Restoration Act of 1987, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity. For more information about Title VI, please visit redmond.gov/TitleVI.

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