City of Redmond

Agenda

Study Session

Tuesday, April 8, 2025
7:00 PM

City Hall: 15670 NE 85th St; Remote: Comcast Ch. 21/321, Ziply Ch. 34, Facebook (@CityofRedmond), Redmond.gov/rctvlive, or 510-335-7371

City Council

Mayor
Angela Birney

Councilmembers
Vanessa Kritzer, President
Jessica Forsythe, Vice President
Jeralee Anderson
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AGENDA

ROLL CALL

1. Solar Plus Energy Storage Feasibility Study Overview

Department: Executive, 45 minutes

Attachment A: Feasibility Study

Legislative History

3/25/25	Committee of the Whole - Parks and Environmental Sustainability	referred to the City Council Study Session

2. Transportation Master Plan Status Update

Department: Planning and Community Development, 60 minutes

Attachment A: Presentation
Attachment B: Issues Matrix
Attachment C: Bicycle Chapter
Attachment D: Freight Chapter

Legislative History

3/25/25	City Council	referred to the City Council Study Session

3. Automated Speed Safety Cameras, Amended City Ordinance, and Camera Vendor Service Agreement

Department: Police, 30 minutes

Attachment A: Amended Redmond Ordinance 10.25
Attachment B: Speed Camera Program Analysis and Recommendations
Attachment C: Service Agreement Between City of Redmond and NovoaGlobal
Attachment D: NovoaGlobal Sole Source Justification
Attachment E: Automated Speed Safety Camera Program Presentation

Legislative History

3/18/25	Committee of the Whole - Public Safety and Human Services	referred to the City Council Study Session

4. Council Talk Time

10 minutes

ADJOURNMENT

Meeting videos are usually posted by 12 p.m. the day following the meeting at redmond.legistar.com, and can be viewed anytime on Facebook/YouTube (@CityofRedmond) and OnDemand at redmond.gov/OnDemand

Redmond City Council Special Meeting

Memorandum

Date: 4/8/2025
Meeting of: City Council Study Session

File No. SS 25-027
Type: Study Session

TO: Members of the City Council
FROM: Mayor Angela Birney
DEPARTMENT DIRECTOR CONTACT(S):

Executive	Lisa Maher	425-556-2427

DEPARTMENT STAFF:

Executive	Jenny Lybeck	Sustainability Manager

TITLE:
Solar Plus Energy Storage Feasibility Study Overview

OVERVIEW STATEMENT:
The City of Redmond recently completed a grant funded solar plus energy storage feasibility study. The study provides a foundation to guide future solar and battery storage opportunities at four City of Redmond facilities. Solar combined with battery storage is an important sustainability strategy to increase resilience and reduce demands on the utility grid. Staff will present highlights from the report and discuss next steps.

☒ **Additional Background Information/Description of Proposal Attached**

REQUESTED ACTION:

☒ **Receive Information** ☐ **Provide Direction** ☐ **Approve**

REQUEST RATIONALE:

- **Relevant Plans/Policies:**
  Community Strategic Plan, Environmental Sustainability Action Plan (ESAP), Climate Vulnerability Assessment, Climate Emergency Declaration
- **Required:**
  N/A
- **Council Request:**
  N/A
- **Other Key Facts:**
  The City was awarded a $100,000 Solar Plus Energy Storage grant from the Department of Commerce to complete the feasibility study.
  The feasibility study was completed in concert with the Facility Condition Assessment Decarbonization Analysis.

OUTCOMES:
Work completed under this grant will implement ESAP strategies B2 (*Advance green building within City facilities*), B3 (*Shift to renewable energy sources and building decarbonization),* and B4 (*Prepare the energy grid for future conditions*).

COMMUNITY/STAKEHOLDER OUTREACH AND INVOLVEMENT:

- **Timeline (previous or planned):**
  N/A
- **Outreach Methods and Results:**
  N/A
- **Feedback Summary:**
  N/A

BUDGET IMPACT:

Total Cost:
2023/2024 grant budget: $100,000

Approved in current biennial budget: ☒ **Yes** ☐ **No** ☐ **N/A**

Budget Offer Number:
264

Budget Priority:
Healthy and Sustainable

Other budget impacts or additional costs: ☐ **Yes** ☐ **No** ☒ **N/A**
If yes, explain:
N/A

Funding source(s):
Grant funds
General Fund

Budget/Funding Constraints:
N/A

☐ **Additional budget details attached**

COUNCIL REVIEW:

Previous Contact(s)

Date	Meeting	Requested Action
9/26/2023	Committee of the Whole - Parks and Environmental Sustainability	Provide Direction
10/3/2023	Business Meeting	Approve
3/25/2025	Committee of the Whole - Parks and Environmental Sustainability	Provide Direction

Proposed Upcoming Contact(s)

Date	Meeting	Requested Action
N/A	None proposed at this time	N/A

Time Constraints:
N/A

ANTICIPATED RESULT IF NOT APPROVED:
This is an information only item.

ATTACHMENTS:
Attachment A - Solar Plus Energy Storage Feasibility Study

CITY OF REDMOND

Solar + Storage Report

Analysis of Four City Buildings on the Potential Incorporation of Solar and Storage Systems to Support Resilient Building Operations

Prepared for:

Jenny Lybeck, City of Redmond

Prepared by:

Mark Frankel, Ecotope
David Kaneda, IDeAs Consulting
Mitch Young, Ecotope

December 19, 2024

ECOTOPE

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Executive Summary

This report explores opportunities for the City of Redmond to improve the resilience of its municipal facilities by evaluating the potential for the deployment of solar plus energy storage systems at key facilities to support emergency operations, while also supporting building performance improvements and emissions reductions at the facilities. These strategies are aligned with the City of Redmond's Environmental Sustainability Action Plan and Climate Emergency Declaration. This work was funded by a grant from the Washington Department of Commerce.

The specific goals of the study were to evaluate the degree to which the installation of rooftop solar photovoltaic systems, combined with a battery storage system could support continuous operation of four key facilities in an emergency situation that included loss of grid power, and to identify other potential benefits to resiliency and emissions reduction that such systems might deliver. The four facilities evaluated were Redmond City Hall, the Public Safety Building, Fire Station 17, and the Redmond Senior and Community Center. For each facility, a number of different building energy use and operating scenarios were identified to represent the impact of a solar/storage system on current building operations, potential emergency operating scenarios, and scenarios where building performance improvements were undertaken.

The report provides context of different ways to evaluate and integrate solar/storage systems, and the types of considerations that must be evaluated to deploy effective and dependable resiliency strategies using solar/storage systems at the building scale. Additional potential advantages and opportunities of these systems are discussed in the context of each building. The report also provides recommendations on solar/storage integration opportunities at potential new facilities in the City of Redmond.

At a high level, the report finds that there is significant potential to leverage solar/storage systems for resiliency improvements at each building, though to different degrees.

The Redmond Senior and Community Center represents a significant opportunity to deploy solar/storage to support community resiliency. The building is highly efficient, and a solar/storage system could support off-grid emergency operation of a significant portion of the building completely for roughly 8 months out of the year. Deployment of a modest portable generator to augment the solar/storage system in cold months would provide year-round emergency resiliency at this facility.

The Public Safety Building is directly linked to the adjacent City Hall Garage, and taken together these buildings provide an opportunity for a substantial PV array installation. Linked with a battery this could provide power to support PSB operations completely for several months of the year. However, energy loads at the facility are significant, and currently it is assumed that the entire facility must remain operational at all times. This makes the magnitude of a solar/storage system to provide significant resiliency at this facility significant and costly. There are opportunities to incorporate a solar/storage system to optimize generator capacity and operation, or to deploy solar power to support significant fleet electrification and emergency operation.

Current loads at Fire Station 17 do not align well with the potential capacity of a solar system at this building, and a solar/storage system would not provide enough energy for full facility operation in an emergency. However, a solar/storage system could support more effective and efficient generator

operation, and provide resilient charging for electric fire vehicles at all seasons and in an emergency. Significant energy performance improvements at this facility would lead to better alignment between available solar power and daily building loads.

City Hall is a significant energy user, and a solar array would not be large enough to provide significant resiliency at this facility. A solar/storage system could be configured to support a modest EOC at this facility, or could support generator optimization.

Deployment of a solar/storage system at any of these facilities would also provide other benefits to the city, including reduced peak loads, and the ability to participate in time of use pricing and on-site generation to reduce utility costs.

The findings of this analysis also suggest that there are significant advantages to considering solar/storage integration in any new facilities planned for the City of Redmond. By considering potential resiliency strategies in the design process, the city can retain the flexibility to more easily deploy resiliency strategies later, and can more directly align building performance with energy performance, decarbonization, fleet electrification, and resiliency goals.

The potential advantages of solar/storage systems in supporting resilient building operations in the Redmond municipal portfolio warrant specific additional feasibility analysis to zero in on effective emergency strategies. In particular, it is critical that the city identify specific resiliency goals for emergency operation that can guide a more detailed analysis of the potential to meet these goals with the deployment of solar/storage systems at key City of Redmond facilities.

Introduction

The 2020 Environmental Sustainability Action Plan and the Climate Emergency Declaration establish aggressive climate and sustainability goals for Redmond, directing the City to increase community resilience and achieve carbon neutrality. This vision requires Redmond to shift how it manages its facilities and leverage new technologies to support resilient operation.

In response to these goals, the City of Redmond has undertaken a strategic evaluation of its municipal building stock, evaluating building condition and energy performance, developing strategies to reduce carbon impacts, and identifying opportunities to enhance resiliency and emergency operations. The analysis outlined in this grant-funded report is a component of that body of work and provides a preliminary evaluation of solar and battery storage opportunities at four key City of Redmond facilities.

This analysis includes a review of the following facilities:

- Redmond City Hall
- Redmond Public Safety Building
- Fire Station 17
- Redmond Senior and Community Center

The goal of the analysis is to determine whether building-scale installations of rooftop photovoltaic (PV) systems, combined with battery energy storage is a potentially feasible strategy to contribute to emergency operation of these facilities, and to assess how a solar/storage system might be integrated into new infrastructure buildings in the future. The analysis also considers different ways in which a solar/storage system might be integrated into building operation to serve other goals such as carbon reduction, reduced utility and infrastructure costs, and other aligned goals.

This document serves as a first step for resilience planning in City Redmond facilities. While it evaluates the four facilities noted, it also provides a framework to guide City decision making as new facilities are constructed.

Project Approach

To develop this analysis, the following steps were undertaken to assess the potential for solar/storage deployment to support facility resiliency:

- Conduct a site visit at each facility
- Collect electrical drawings and other information
- Collect utility performance data for each facility
- Benchmark energy performance and identify reduced energy use scenarios
- Identify potential emergency energy use scenarios
- Develop daily load shapes for all building operating scenarios
- Evaluate potential roof areas and solar PV capacity
- Develop daily load shapes for PV generation
- Evaluate the potential match between building load scenarios and generating potential for typical seasonal loads

- Identify other potential resiliency scenarios for building operation that a solar/storage system could contribute to
- Provide a building-by-building summary of solar/storage resiliency issues
- Develop recommendations for next steps in evaluating solar/storage potential for these facilities
- Identify solar/storage integration issues for new buildings based on this analysis

Contents

This report begins with a discussion of key concepts that must be considered in evaluating building loads, solar capacity, energy storage, and resiliency. These factors are closely inter-related, and there are many ways to consider and prioritize these different system elements and functions. Various resiliency scenarios are described to set up an approach to evaluation of individual buildings.

Next the characteristics of each building in the study are discussed, including assumptions about emergency operation, and building performance characteristics under various scenarios. This leads to a discussion of the alignment of solar/storage capacity available at each building with the various building load characteristics.

A discussion of alternate approaches to resiliency and other advantages of solar/storage systems is provided, and resiliency strategies and recommendations are summarized for each facility, for new buildings, and for the portfolio as a whole.

Detailed information about building load shapes and daily solar generating potential is provided in the appendices.

Solar, Storage, and Resiliency Context

This section describes the relationships between solar generation, energy storage, and daily building loads in the context of the potential for deployment of a solar generation and energy storage system to support resilient building operation in the event of a grid outage.

Building performance evaluation and scenarios

The first step in this evaluation was to determine the existing building load characteristics. First, we determined current total annual building energy use (for all fuels). Data collected from utility data and Energy Star Portfolio Manager allowed us to identify an annual energy use intensity (EUI) for each building. EUI is a common metric used to compare building performance with peer facilities, and is also the basis of compliance requirements with the Washington Clean Building Performance Standard (CBPS). All commercial buildings over 25,000 square feet are required to document compliance with the CBPS requirements in the next few years, with larger buildings facing earlier and more detailed compliance requirements. The reason CBPS compliance is relevant here is because buildings not in compliance with this standard will be required to implement performance upgrades soon to bring buildings into compliance with the standard. This could have an impact on several Redmond portfolio buildings and would change the way these buildings interact with any solar/storage system that might be implemented to serve resiliency goals.

Because solar/storage systems can provide only electricity to buildings, the electrical energy use component of the buildings is the critical factor in determining how well a solar/storage system will meet building energy loads. Resiliency of natural gas systems is not addressed in this analysis.

Redmond has also adopted carbon reduction goals that might influence any potential building performance upgrades that are undertaken in the future. Achieving carbon reduction goals in buildings typically entails a significant improvement in building energy performance, and the reduction or elimination of fossil fuel consumption on site. Both of these strategies will impact the effective deployment of resiliency strategies served by solar/storage systems.

To account for potential decarbonization efforts, this analysis included a 'best in class' comparison, identifying the EUI associated with the best performing buildings of each type that might represent a high-bar target for Redmond's municipal buildings. In the case of these best in class targets, the energy use was assumed to be 100% electric, to support emission reduction goals.

In the context of decarbonization, both on-site combustion and electricity use have carbon emissions impacts. For fossil fuels, the impact is the combustion exhaust from fuel burned on site, and the upstream impact of gas distribution on emissions (in the form of raw methane leakage). The upstream emissions impacts of natural gas use are significant, but are not always accounted for in building emission accounting. For electricity use, the emissions impact comes from the fossil fuels used by the local utility to generate electricity to feed into the grid. Currently, Redmond's local electricity provider (PSE) generates a significant portion of electricity using fossil fuels. However, under state mandates, the percentage of electricity generated using fossil fuels will decline significantly over the next decade, and eventually be completely phased out. So, the use of electricity at any given building will represent a decreasing impact on emissions over time.

The EUIs of the target buildings in this analysis are shown in Table 1 below. These values represent current total EUI of each building, current electric-only EUI of each building, CBPS target EUI for each building, a target electric EUI based on a similar fuel ratio as current performance, and finally a best in class EUI that is assumed to be all electric. These values will be used to assess the effectiveness of a solar/storage system to meet building loads in the event of a grid emergency. Subsequent graphs showing building load shapes represent electric-only portions of building loads.

Table 1: Building performance scenarios

Building	**Current Total EUI**	**Current Electric EUI**	**CBPS Target EUI**	**CBPS Electric EUI** (based on similar fuel ratio)	**Best in Class EUI** (all electric)
City Hall	69	45	66	43	~22
Public Safety Building	79	59	71	54	~30
Fire Station 17	92	68	72	53	~28
Senior Center	15	15	30	30	~24

Notes for Table 1 :

1- *Although the fuel use ratio is kept constant between current and CBPS performance levels, efforts to improve building performance are likely to alter the relative fuel balance in any given building.*
2- *Best in class EUI's are based on industry data but may not directly reflect the mix of services provided in each building in this table.*
3- *Redmond Senior and Community Center performance data includes a time period when the building was not fully occupied and may not reflect a typical operational year.*
4- *For gas heated buildings, resiliency strategies in winter will also depend on continued availability of heating sources for these buildings. This aspect was not evaluated in this report.*

Logically, the lower the electric energy use of a given facility, the larger a percentage of the building load a solar/storage system would be able to meet.

Emergency Operation

For an emergency situation, it may be possible to define a subset of building loads that should be maintained during an emergency, while not necessarily operating the entire building. For example, City Hall includes an emergency operations center (EOC) that represents a small portion of the overall building. In any emergency situation, this area would need to be fully functional, even if some other parts of the building might be shut down.

It is likely that the City of Redmond is developing an official emergency operations plan to describe key operations that must be maintained under different emergency scenarios. However, this information was not available to the project team during this analysis. Instead, a potential emergency operation scenario was identified by the team for each building in the study, and the potential alignment with a solar/storage system was evaluated for these loads.

It should be noted that the project team was not able to determine if specific building loads were isolated on the electrical panels in a way that would allow the building to operate a subset of the electrical system in this way. Additional work would be necessary to assess the possibility of deploying a solar/storage system to operate emergency loads only, and reconfiguration of electrical distribution systems might be necessary to enable this type of operation. It should also be noted that a number of city buildings currently include diesel emergency generators for emergency operation.

Load Shape

Although total energy use provides a good comparison metric in considering the overall match between building energy use and solar/storage capacity, from a resiliency lens a much more important metric is daily load shape.

Daily load shape is the amount of energy used over the course of a day, represented in hourly (or shorter) intervals. This representation shows how much energy is needed to power the building systems at any given hour to keep the building operating as intended. Typically building load shapes peak in the daytime while buildings are occupied and go down at night when the building is unoccupied. Load shapes vary significantly by season based primarily on outside temperature, but length of daylight hours and weather patterns also affect building load shape. Load shapes can be

impacted significantly by a variety of building performance issues; system maintenance issues or control anomalies can cause poor operation, a large west facing window area can drive afternoon cooling load spikes, and a host of other performance issues can manifest in building load shapes. Weekend and holiday load shapes are different than weekday load shapes, and even occupant lunch hours can show up on building load shape diagrams. Resiliency strategies depend on an alignment between daily building load shapes and solar/storage system energy availability.

For purposes of this analysis, load shapes for each building from a typical day in each season were identified to show a typical operating pattern for each building. This data was collected from utility interval data (15 minute increment) that was made available to the project team by the utility at the City's request.

As an example of what a load shape plot looks like, Figure 1 below shows daily load shape data for Redmond City Hall. The horizontal axis represents a 24 hour day (midnight to midnight), and the vertical axis represents total energy use. Four typical days representing seasonal variation are shown: a day in January (purple line), April (green), July (blue), and October (red).

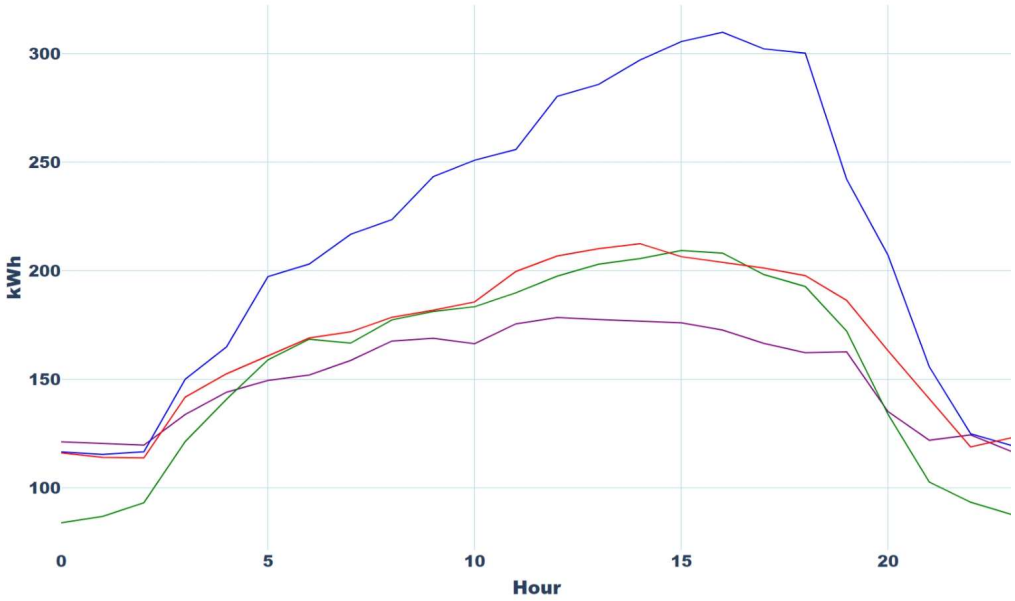

Figure 1: City Hall daily load shape data for typical occupied days in January (purple), April (green), July (blue), and October (red).

Building load shapes provide a wealth of information about building operation. For the building shown above, peak energy use occurs on summer afternoons, while the shoulder and winter months demonstrate relatively smooth and consistent energy use curves throughout the occupied day. This graph also suggests long hours of daily use, since energy use starts rising at 3:00 in the morning and remains high until at least 8:00 pm (represented as hour 20 on this graph). Although it is not unusual for some buildings to be occupied for long hours each day, the early start for increased energy use in this case might suggest that building controls are set for a very early warm-

up cycle, well before building occupancy begins each day, and remain active well after business hours.

In the case of this analysis, load shape data was used to compare what could be available from PV energy generation linked with battery capacity to building consumption patterns to assess operating capabilities in a grid outage situation. This is discussed further in subsequent sections of this report.

Current operating patterns for each building, as demonstrated in the load shape data was also used to predict load shapes under the alternate performance scenarios identified above (CBPS compliance and best in class performance). Current load shapes for all of the buildings in this analysis are provided in Appendix A.

A final category of load shape scenario was developed for each building based on assumptions about emergency operation needs. These scenarios considered whether partial operation of each building would serve as an emergency operations plan to better align building energy use with solar/storage capacity constraints. These scenarios are discussed for each building in subsequent sections of this report.

Solar PV Potential and Storage

Daily Generation and Variability

The next step was to evaluate potential for photovoltaic (PV) system deployment and generating potential at each site. PV panels are typically installed on the roof, ideally facing due south at a mild incline. This orientation maximizes total electricity generation over the course of a year. To increase winter production, panels can be mounted at a steeper angle from horizontal. Panels oriented more to the west generate more energy in the afternoon, while panels oriented more to the east generate more energy in the morning. Other than some general assumptions based on roof orientation, the specific orientation of the PV arrays evaluated for this analysis was not considered or optimized.

PV generation occurs only when the sun is shining and is impacted by shadows and cloud cover. Because of shorter days and increased cloud cover in the winter, daily PV generation is significantly lower in the winter than in the summer. This introduces a seasonal impact to any calculations of resilient building operation, as discussed in subsequent sections.

PV arrays are measured in terms of total installed capacity, representing the total peak wattage that could be generated instantaneously under ideal conditions. The vast majority of time the sun is not directly overhead from the panels, but rather is striking the panels at an angle, or impacted by clouds or dirt on the panels, etc. So nominal capacity does not provide much guidance on total energy production. Instead, we can generate a load shape for PV generating systems, just as for building consumption loads. For this analysis, the PVWatts tool was used to predict PV generation for each site based on latitude, typical weather, and PV panel area.

As expected, the load shape of solar generation on a typical day follows a predictable and consistent pattern. Figure 2 below shows electrical generation data collected from the small existing PV array that is currently mounted on City Hall. This graph shows the expected mid-day peak, and the anticipated significant seasonal variation in the power generated on the average day in different times of year.

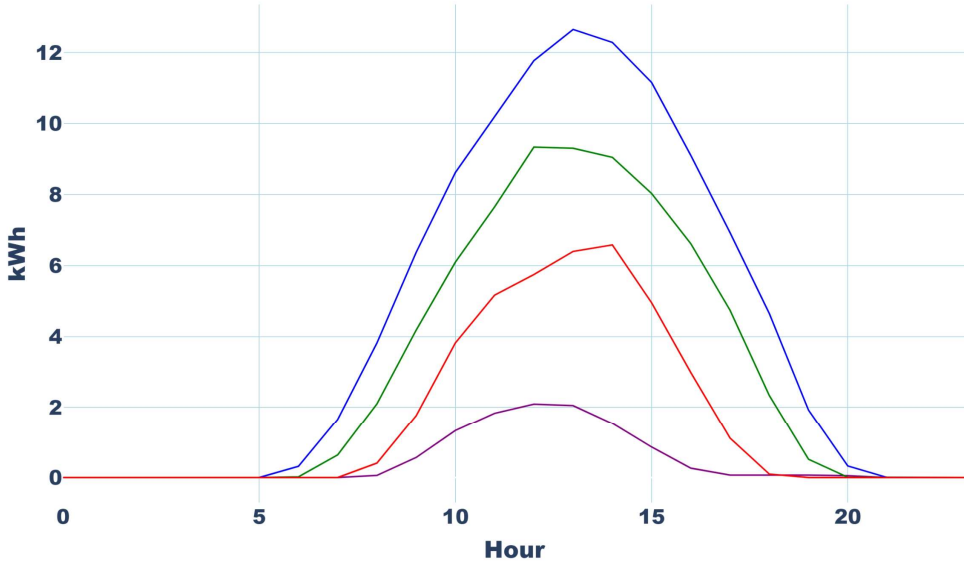

Figure 2: Example of daily solar PV generation by season by currently installed small array at City Hall. January (purple), April (green), July (blue), and October (red).

The generation shapes shown above represent typical days in each season of the year, based on daily data. In this case, the information comes from measured data from an existing installation. The curves are generated as average results for each month represented. This means that the data accounts for whatever sort of cloud cover and weather patterns were present in the year in which this data was collected (2023).

Although we generally consider solar generation as an average daily event, generation is actually subject to significant variation during the day due to weather and obstructions (shadows). These factors can have a critical impact when a building might be relying on daily generation as part of a resiliency strategy. The impact of daily variability in cloud cover can be seen in the example in Figure 3 below, which shows the variability of PV generation over a typical year in Redmond, based on recent historical weather data.

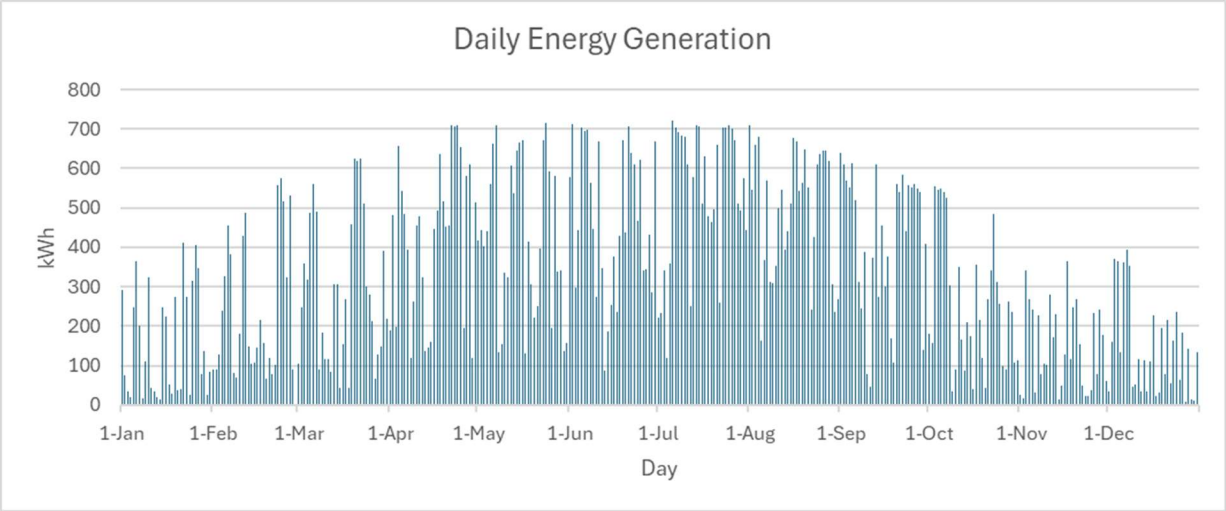

Figure 3: Daily PV generation showing impact of weather variability on daily energy production over the course of a year. (This graph is from an estimate of potential PV generation from a large array that could be installed on City Hall)

Installed PV Capacity

To assess the potential installed PV capacity at each building, total roof areas were evaluated, and a potential PV layout scheme was developed based on available roof space not occupied by mechanical equipment or other roof appurtenances. Note that PV panel installations cannot typically be installed over 100% of roof area, since access and maintenance corridors must be maintained on the roof. Table 2 shows the anticipated roof area and capacity of PV array assumed for each building. Estimated PV installation areas in this study are approximated and would need to be verified if a site were selected for more detailed analysis. PV capacity is a total instantaneous generating capability in full sun; total energy generated over the course of a day must be calculated based on hours of available sun each day. A quick summary of roof area assumptions for PV for each facility is provided in Appendix B, and solar generation load shapes for each building are included in Appendix C.

Table 2: Building floor areas and anticipated PV capacity

Building	Floor Area	PV Installation Area	Estimated PV Capacity (kW)
Public Safety Building	61,523	40,519 (Including Parking Garage)	675
City Hall	107,212	15,556	259
Fire Station 17	19,397	3,375	74
Senior Center	51,986	12,897	215

PV and Battery Integration

Until very recently, PV systems were typically installed on buildings without including electrical energy storage systems. When PV generation occurs for these installations, the energy can be used to offset building electrical loads occurring at the same time, fed back into the grid, or not used. In most larger installations, mid-day PV generation exceeds local building energy demand, so there is surplus power available from the PV system at this time. Although many people think that they can just "run the meter backwards" with PV generation, in fact utilities may be resistant to this outcome for a number of reasons. In particular, it is very difficult for utilities to manage multiple points of generation (distributed generation resources, or DR) because they need to balance individual lines and substations to keep the grid operating smoothly. In commercial buildings the utility may insist on a lower rate for electricity fed back into the grid than they charge for electricity they supply; they may decline to purchase all, or any, of the power made available by PV systems; or they may offer only discounted purchase pricing depending on what time of day the power is generated. For these reasons it may make sense to incorporate energy storage (batteries) into a PV installation even when the grid is supplying power. Batteries allow projects to store excess power generated during the daytime and use it to meet building loads when the sun goes down, or to manage peak loads or participate in demand response programs.

In the context of resiliency, a battery is critical to 'spread out' the availability of PV power so that it can be utilized at other times than just the middle of the day. **The best way to think about resiliency in the context of PV plus storage systems is to consider the solar/storage system as a unit that provides a consistent level of power over 24 hours and is recharged each cycle in daylight hours by the PV system on the roof.** In a sustainable resilient system, the PV system generates as much power in a day as it takes to run the building for 24 hours, with a battery system storing the daytime excess PV generation to distribute to the building through the night hours, before the PV system once again takes over building loads and recharges the battery. In this scenario, the solar/storage system is able to run the emergency loads indefinitely, as the system is recharged every day. Note however that both building and PV loads fluctuate seasonally, so what is a sustainable load in the summer may not be a sustainable load in the winter. This relationship can be seen in Figure 4 below.

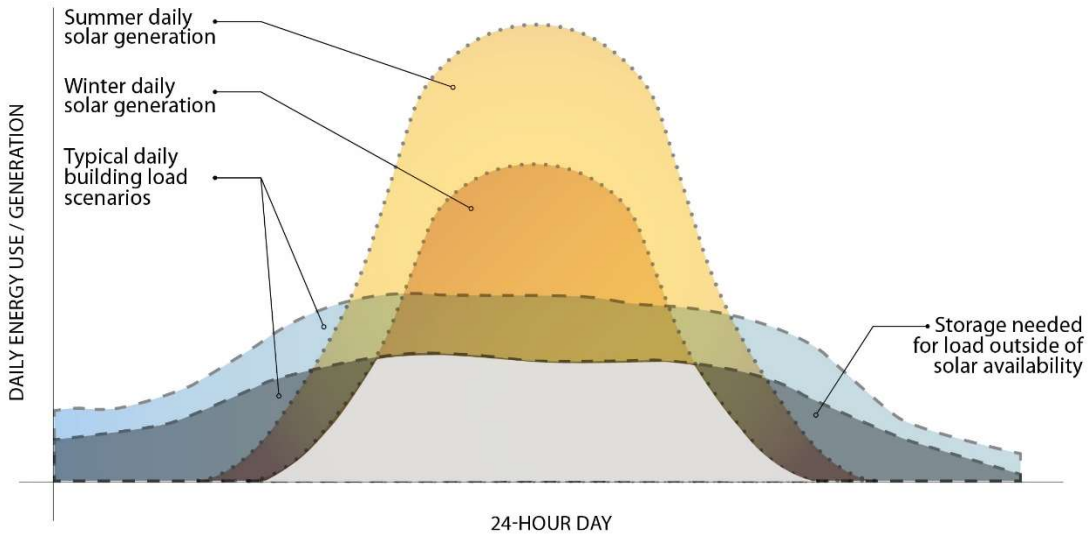

Figure 4: Relationship between daily PV generation, 24 hour building loads, and battery sizing.

Battery Sizing and Storage Duration

It is important to recognize that in the context of building loads, most batteries are not long term storage solutions. The most common battery type, lithium ion is ideally utilized (discharged) over a four to eight hour time period. Over longer terms, these batteries tend to lose a small percentage of their stored power each day, so some sort of regular top-up is required to maintain charge. And although battery costs continue to drop significantly, they are still much more expensive than solar panels. Current commercial building scale batteries cost in the neighborhood of $400/kWh of capacity. For these reasons it is ideal to first consider a primary role for onsite generation, designed to run as much of the building as possible, with enough extra capacity to charge a battery that is sized to provide overnight loads before the solar array comes back online to take over building operation and recharge the battery the next day. Batteries that exceed this sizing criteria can only be used (discharged) once as a resiliency strategy until another source of energy is utilized to recharge the battery.

To support building operation, batteries must be at least as large as the building peak load they need to meet in the short term. Although buildings only run at peak load infrequently and for short duration, the battery capacity must be large enough to meet this short term peak, even if it only lasts for a few minutes.

In addition to supporting resiliency strategies, batteries can provide other advantages to a building, such as reducing building peak loads on the electric grid to reduce demand charges, or to participate in time of use utility pricing strategies that are becoming increasingly common. They can also be used to improve the reliability of a changeover to alternate power sources (like a generator) or to reduce the capacity of generator needed to serve building loads. These issues are discussed in subsequent sections of this report.

Microgrids

Any electrical system designed to power all or part of a building when utility power is not available relies on a 'microgrid' to provide local power to the building. When backup power systems are generators designed to supply the entire building, this can be as simple as a power transfer switch that disconnects utility power and feeds generator power to the building. But with any solar/storge system designed to provide building power or integrate with a generator, a more complicated control and management system (microgrid) is needed. A microgrid also allows for peak load management and time of use control when using a battery.

Resiliency

Resiliency is a broad term with many nuanced interpretations. When designing for resiliency the first question that is asked of the team is "Resilient to what?". Resiliency needs can vary by climate, region, season, and even site. **In the Pacific Northwest we generally consider risks from wildfire smoke, heat events, power outages, and earthquakes as regional resiliency issues.** These risks are more likely to occur in combination. In this analysis, we are focused only on resiliency in the case of utility outages, though the need for emergency operation is likely to be driven by some other event causing a power outage in the first place.

Resiliency Scenarios

The key focus of this study is to determine whether solar/storage systems deployed on the identified buildings can contribute to emergency operation of the building in the event of a power outage. To make this assessment for Redmond municipal facilities, we evaluated several key questions to assess the potential effectiveness of a solar/storage resiliency strategy for each building:

How well do potential daily PV generation estimates align with different building operating scenarios?

PV capacity is relatively inexpensive, but the area available to install these systems is physically limited at each building site. The maximum amount of power that the PV system can generate sets a limit on how much energy use in the building it can support each day. More efficient buildings are more likely to align with PV generating capacity, and likewise if a subset of building loads is considered critical for operation, these loads are easier to meet than total building load. For each building, different operating scenarios based on building efficiency and emergency operation are considered in the context of available PV. Up to four building operating scenarios were considered for each facility:

- Current building electricity use characteristics for full operation
- Building energy performance aligned with CBPS requirements
- Best in class energy performance for each building type
- An emergency operations scenario that might involve partial building operation (depending on the building)

How does seasonal variation in generation and building loads affect resiliency options?

Seasonal power generation varies significantly for PV systems, and a building that can be fully operated day after day on renewable energy and storage in the summer may not be able to operate this way for a full day in the winter. Building loads vary by season as well, and typically do not fluctuate in alignment with solar availability.

What is the minimum battery size needed to meet current building peak loads?

Although different resiliency strategies can be implemented with different levels of battery power, there is a basic minimum battery size that is needed to support building operation. If the battery sees short term loads that exceed its capacity, the system will fault, and no power will be available. Because building peaks are typically short lived, a battery sized for peak load may actually provide a few hours of emergency operation to the building.

Batteries are an expensive component, so this represents a first pass at a reality check as to whether battery storage is a reasonable resiliency strategy for these facilities.

A shorter period of guaranteed emergency operation might be useful to prevent service interruption for shorter duration power outages, or it might allow enough time to marshal other resources to support city operations, bring generators online, or relocate to a central emergency facility.

What other resiliency strategies could be leveraged with a solar/storage systems?

Even if PV storage systems are unable to provide full resiliency to a building, there are a number of ways to leverage solar/storage systems to support resilient building operations. These are discussed in the context of their potential application for each building.

Are building electrical systems currently configured to support partial operation for emergency operation?

Although detailed analysis of electrical system configuration is beyond the scope of this analysis, the team reviewed electrical drawings and visited the building sites to try to assess whether the buildings are currently configured to support full or partial emergency operation.

Individual Building Assessments and Opportunities

In this section the performance characteristics of each building are reviewed, and potential emergency operating scenarios are identified. These are compared to anticipated potential solar generation to assess alignment with the deployment of a solar/storage system at each building. Seasonality of resiliency strategies is also described. Alternate resiliency strategies with solar/storage are described in a subsequent section.

Redmond City Hall

Redmond City Hall is a four story, ~107,212 SF facility housing city offices, council chambers, conference and meeting facilities, public access and information facilities, data and communications, and an emergency operations center for the city on the third floor. The facility

already includes a small 20 kW PV array on the roof, although this is not supported by an energy storage system. This analysis evaluates the possibility of expanding that array significantly to a capacity of 259 kw.

The City Hall building currently has an EUI of 69.4, slightly above the requirements of the CBPS which requires the building to achieve an EUIP of 66 or lower. This facility is subject to imminent enforcement of these requirements and will be required to lower its EUI. A lighting upgrade will be completed in Spring 2025 to support CBPS compliance requirements. For comparison, a best in class building of this type would have an EUI of approximately 32 kBtu/SF/yr.

A portion of the City Hall building on the third floor serves as an emergency operations center for the city. This area includes extensive communications capabilities, workstations, and media connections. In an emergency situation, there might also be a need for some public/media interface areas, and elevator capabilities to reach the EOC. As a basis for this analysis we have assumed that emergency operation of this facility includes an area designated for the EOC with associated office areas, lobby, and restroom facilities, as well as vertical transportation. The rest of the building would not be operational in this scenario.

City Hall currently includes a 375 kW emergency generator. This is sized and circuited to run a portion of the existing building in an emergency.

Loads vs. Capacity

Figure 5 below shows how these different building operating scenarios compare to the anticipated production from a rooftop PV array.

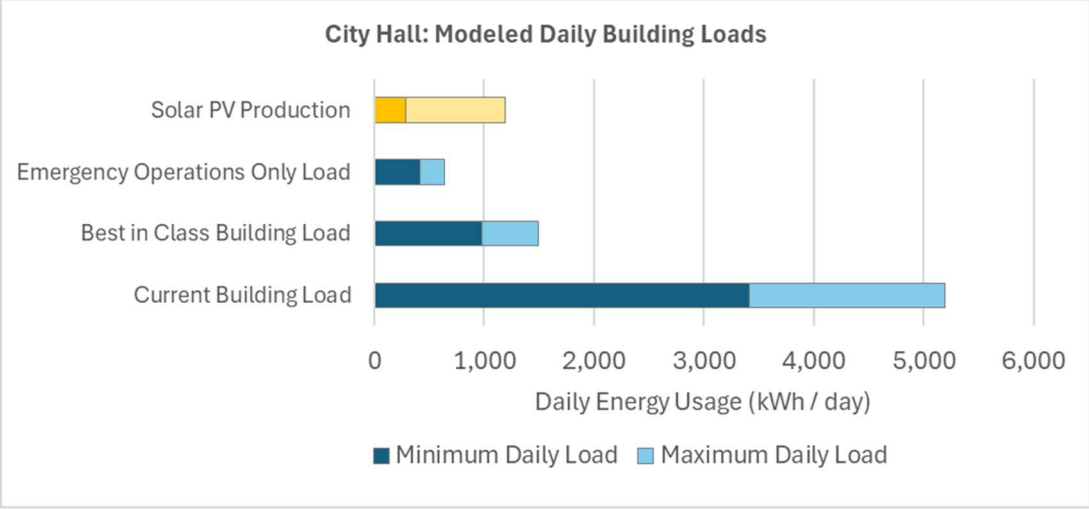

Figure 5: Redmond City Hall load and generation comparison

How to read this graph:

Figure 5 and similar graphs below show a way to consider the alignment of PV generation potential with different building load scenarios. The top bar in the graph ("Solar PV Production") represents the range of total average daily PV generating potential in kWh. The left part of the bar represents a 'minimum' typical day (winter) and the full bar represents the maximum daily generation (summer).

The blue bars below solar generation represent average daily load for different building scenarios, including various combinations of 'emergency operations', 'best in class' building operation, 'CBPS compliance', and current operation. Each building bar also shows a range of daily operating energy representing seasonal variation (Dark and light parts of each bar). Note however that the month when the minimum building energy use occurs may not align with the month when minimum solar energy generation occurs. For example, some buildings use more energy in winter, when solar generation is at its lowest.

Summary

The current loads of the City Hall building are well above what could be supported by the rooftop PV array. Even if the building were performing at a level comparable to best in class, the PV array would not meet building loads in most circumstances. This is not unusual for a four story building, which is generally limited in PV capacity by roof area relative to floor area. However, **the emergency operating scenario evaluated could be supported by a solar/storage system nine months out of the year,** as shown in Figure 6 below. In those months when the PV system is not adequate to fully meet emergency loads over consecutive days, the difference does not exceed 25% of total load. Therefore, it may be possible to tune up this analysis to support either a more detailed emergency operation load analysis or the potential for a somewhat larger PV array, or both.

A solar/storage system could also be integrated to support generator operation and allow the generator to be downsized.

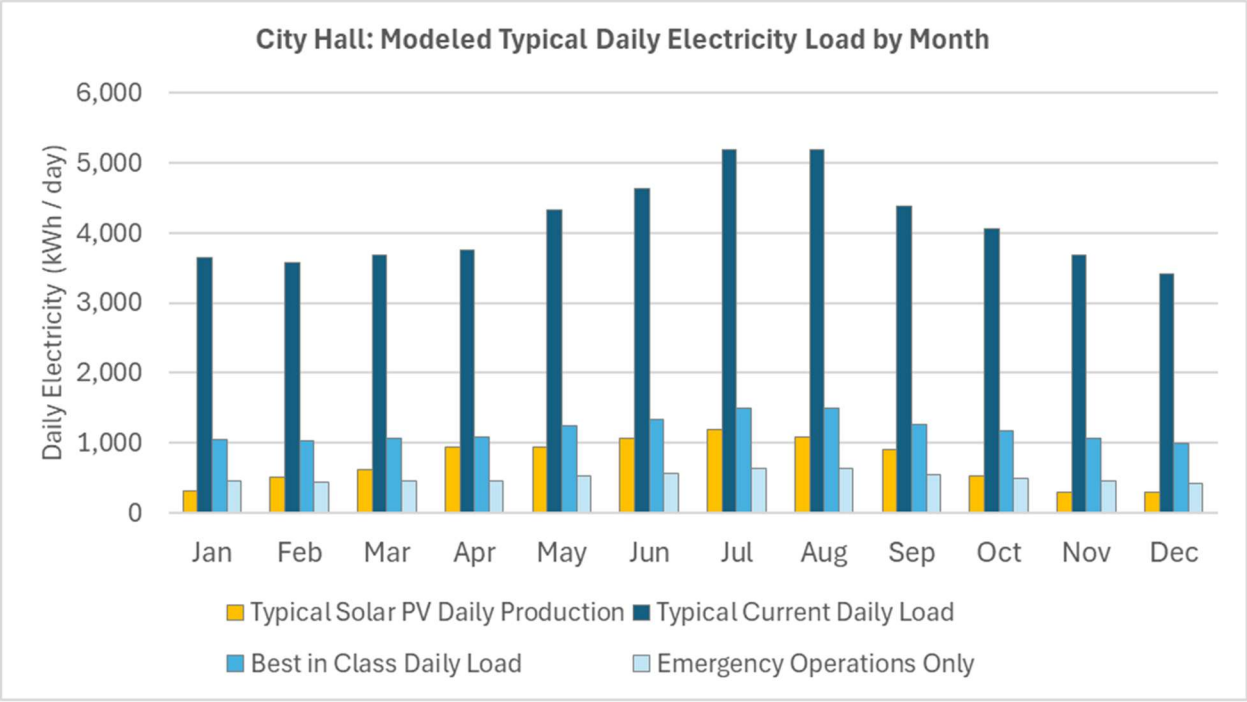

Figure 6: City Hall average daily building loads including potential emergency loads and average daily PV production by month.

Public Safety Building

The 61,523 SF Public Safety Building houses police and other uses, as well as 911 call center, including a backup call center for neighboring communities in an emergency. The building was built in 1988, with some remodeling undertaken in 2009. The building is served by two separate emergency generators associated with different remodels and is connected by a complex electrical system reflecting multiple sequential upgrades. The generators are sized to run the full building, with one generator being a backup for the other. The building is adjacent to the City Hall Parking Garage, to which it is connected by a walkway.

The building has an EUI of 80, above the CBPS performance target of 71.5. Its size makes this building subject to imminent enforcement requirements of the CBPS, and the building is undergoing energy upgrades in 2025 to support CBPS compliance. A lower EUI for this building will support increased viability of solar/storage options for resiliency.

For comparison, a 'best in class' building that includes some level of 24/7 operation might achieve an EUI in the high 20's, depending on what percentage of the facility is operated at all hours.

Because this building houses the police department and the 911 dispatch center, as well as a secondary dispatch center as a back-up for other regions, we anticipated that this building needed to remain fully operational in an emergency. No partial operation plan was considered.

For this evaluation we assumed that PV could be installed on the roof of the building and on the top floor of the adjacent parking garage to serve the Public Safety Building. This led to a substantial size of PV array, and significant available energy on a daily basis. Note that the energy consumption associated with the parking garage was not considered in this analysis.

Loads vs. Capacity

Figure 7 below shows how these different building operating scenarios compare to the anticipated production from a rooftop PV array.

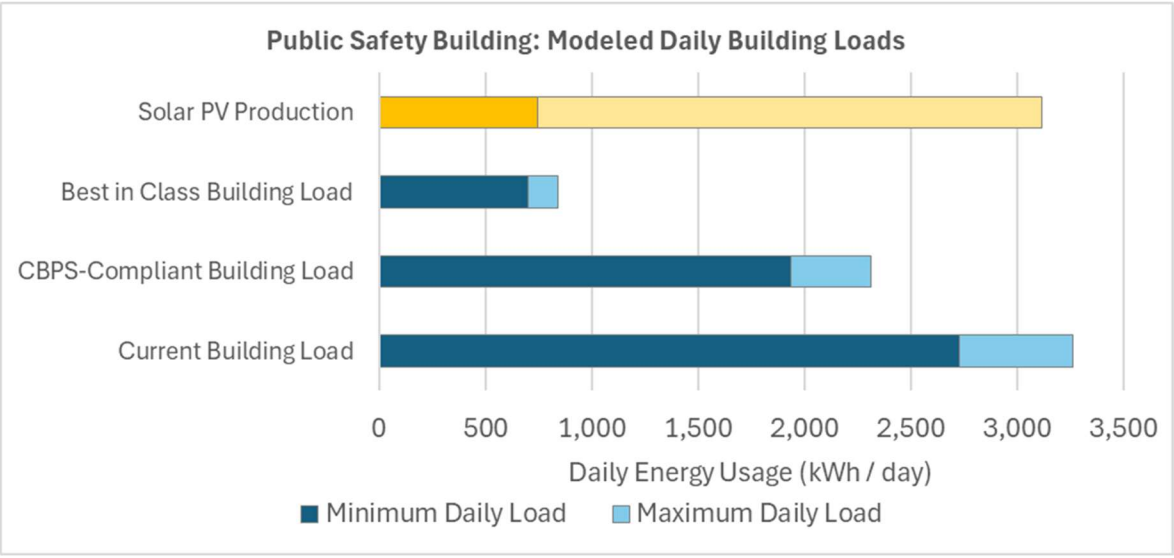

Figure 7:Redmond Public Safety Building loads and generation comparison

Summary

Because of the increased area of PV on the adjacent parking structure, the total peak daily generation from the PV array nearly meets the existing building load, and well exceeds the performance anticipated for the building when CBPS requirements are achieved. However, the generating capacity is seasonal, so a closer examination of seasonal characteristics is warranted.

Figure 8 shows the seasonal variation in typical daily energy generation and use at the Public Safety Building compared to the estimated PV generation from the anticipated array. The blue bars on the graph represent typical daily building load by month for two scenarios: the dark blue bars represent current building energy use, and the medium blue bars represent proportional daily energy use if the building meets CBPS requirements. (Note that performance could also be improved beyond CBPS requirements.) The yellow bars represent typical daily solar energy generation by month.

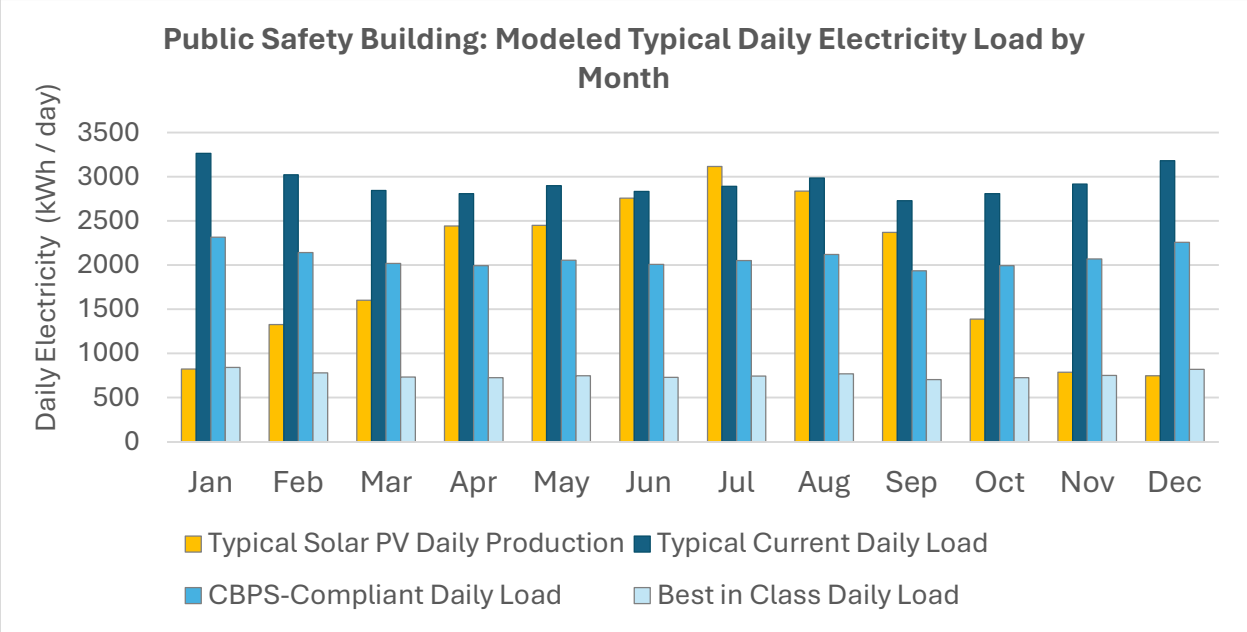

Figure 8:Public Safety Building average daily building loads including potential improved (CBPS) loads, loads, and average daily PV production by month.

In this analysis, solar energy generation is not able to meet current building energy use, except in the peak of summer. Solar generation would exceed CBPS building loads six months out of the year, during the warmer months when solar availability is relatively consistent. If the building were in fact improved to meet CBPS requirements, the solar/storage system would be able to fully run the building continuously in an emergency, if that emergency occurred in warmer months. (Obviously, an emergency strategy is also needed for colder months!)

Although there is significant PV available, the amount of battery capacity needed to match this system and provide 24 hour operation would be significant. And an alternate resiliency solution would be needed for winter months.

This facility is provided with full and redundant generator backup. A combined generator and solar/storage strategy is discussed below and could represent a viable resiliency solution at this facility.

Fire Station 17

FS17 is one of Redmond's newer fire stations, with apparatus bays, living quarters, office area and communications equipment in a two story 19,397 SF facility. Upstairs at the Fire Station is a large classroom/meeting room that is also designated as a backup emergency operations center (EOC) in case the EOC at City Hall is compromised or not operational. Because of this, FS17 is considered a critical facility, and is equipped with a back-up generator for emergency use.

The facility has a large, low-slope roof that would support a substantial PV array. Rough calculations suggest that approximately 74 kw array could be installed on the roof. There is also a significant gravel parking lot to the south of the building which could also support additional PV array installation. (This area was not included in this analysis.) The site is bordered closely by large trees, which would be likely to shade parts of the roof and adversely impact PV generation.

The fire station has a total EUI of 91.4 kBtu/SF/yr, of which three fourths in from electric energy use. Although not immediately subject to CBPS requirements, if compliance were required the building would need to perform at or below an EUI of 71.5 (all fuels). For comparison, a best in class fire station could achieve an EUI of about 28 or lower. Several nearby cities have fire stations operating with EUI's in the low 20's.

Because of its function as a backup EOC, and the emergency response capabilities headquartered at this facility, the emergency operations plan for FS17 in this analysis is for the facility to be fully operational.

Loads vs. Capacity

The alignment of FS17 operational scenarios with potential PV capacity is shown in Figure 9 below.

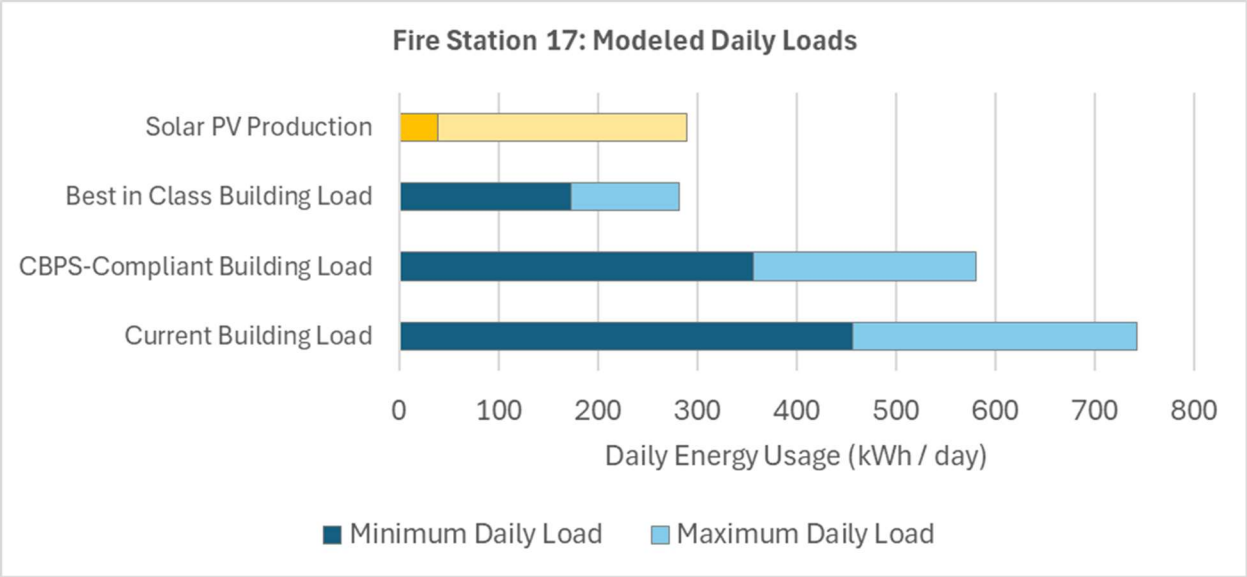

Figure 9: Redmond Fire Station 17 building loads and generation comparison

Summary

The installed PV potential (top bar) represents less than half the total energy use of the existing facility, and barely half of the energy use of the facility if it met CBPS performance requirements. There is also significant seasonal variation in PV array production, in part due to assumptions about the adjacent tree canopy impacting PV generation. These factors suggest that this facility is not a good match for a solar/storage system to provide full resiliency. However, the size of the PV array would fully support facility performing at 'best in class' levels, at least for parts of the year. And the existing electrical system could readily be configured for partial operation if a subset of emergency loads were identified. A solar/storage system could also be integrated with the generator system, as discussed below.

Redmond Senior and Community Center

The City of Redmond recently completed the new Redmond Senior and Community Center (RSCC) located as part of the municipal campus. This two story 51,986 SF facility is all electric, and includes various community activity rooms including a gymnasium, commercial kitchen, shower and restroom facilities, work out areas, and various office and public meeting spaces.

The building has a 156 kW PV array, but the deployment of additional PV capacity was assumed for this analysis.

The RSCC has only been in operation for a bit over a year, and only reached full operation a few months ago. The energy use data we gathered for this facility may not accurately reflect full operation. The facility is currently operating with an EUI of 18, a very low energy use number. Initial energy modeling of the facility suggested an EUI of about 26, very close to what would be considered best in class. Because the facility is all electric, various building components can be supported directly with the electrical energy supplied by a rooftop PV system.

The facility is not considered an emergency facility, but its characteristics make it a potential candidate to support some types of emergency activities. For example, the large gymnasium could serve as an evacuation or emergency bunk center, and the all-electric commercial kitchen could be deployed to prepare emergency meals. The facility also has a number of community amenity spaces like locker rooms and meeting areas that might be useful in an emergency situation. One drawback to this possibility is the facility's location adjacent to the Sammamish River and therefore in a flood zone. Because of this some types of emergencies would render this facility unusable.

For this analysis, we estimated an electrical load to support emergency kitchen operations, a dense occupancy of the main floor gymnasium (for temporary occupied cots), and a portion of the main floor operating normally to support showers, public meetings, etc. Overall, this represents partial operation of the facility in an emergency. We did not evaluate the capability of the existing electrical system to operate in this manner.

Loads vs. Capacity

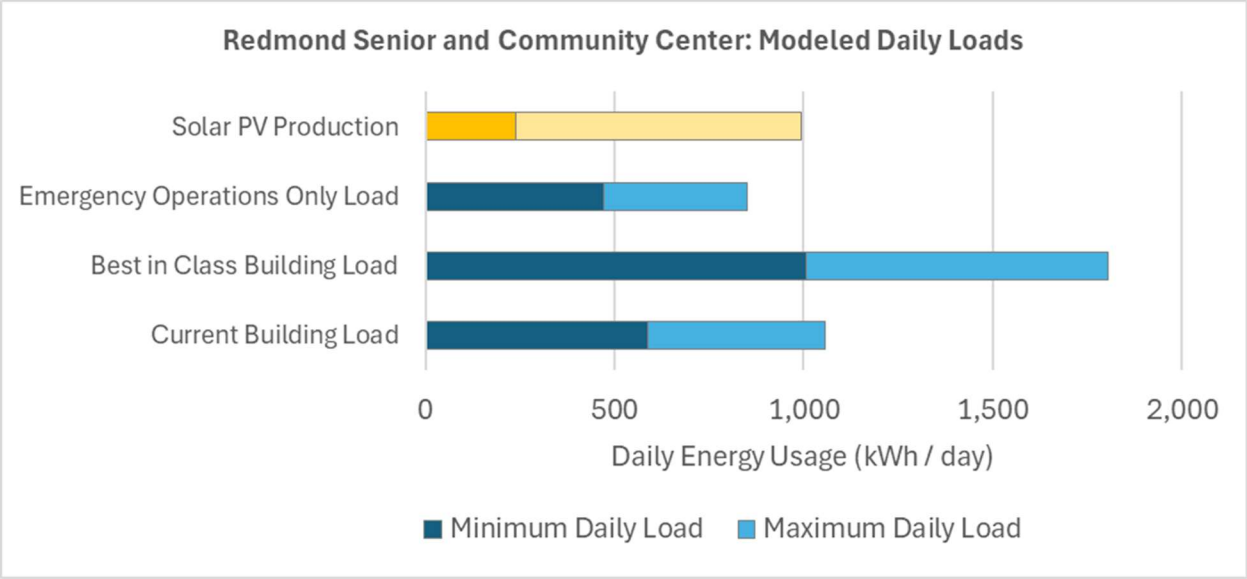

Figure 10: Redmond Senior and Community Center building loads and generation comparison

Summary

An installed PV array on this facility is capable of meeting the full building load in parts of the year. However, it is likely that typical building loads will increase as the facility becomes more fully utilized. It is also possible that an emergency operating scenario for this building could be developed to provide partial operation of the building with a solar/storage system if desired.

Note that in the emergency operating scenario assumed here, there are still some months in the winter when the solar/storage system cannot keep up with daily loads. In the case of this analysis, the PV system cannot keep up for 3 months of the year: November, December, and January.

Alternate Resiliency Opportunities

There are a number of alternate strategies to consider when evaluating the integration of solar/storage systems into these buildings. Incorporating a robust solar/storage system can lead to other benefits, even if the system is not able to fully support year round resiliency.

Seasonal Resiliency and Temporary Operation

Emergency planning needs to include robust solutions for a wide range of conditions. A battery system that only serves emergency loads in the warm months does not represent a complete emergency response plan. However, being able to plan on full resiliency for six months out of the year goes a long way toward supporting resiliency planning. For buildings with significant solar/storage systems, the battery system might represent six our eight hours of emergency operation on a winter day that allows the city to marshal backup resources to support emergency operation without a temporary interruption of services. And some fraction of power outage emergencies are likely to be resolved within the time frame that a battery would be able to support the building.

Generator Integration

Another way to think about the integration of solar/storage systems is to consider the impact such a system could have on emergency generators.

Emergency generators are sized for building peak electricity load, often with a significant oversizing factor built in. This oversizing is arguably justified in case all of the possible building loads are operating simultaneously. This almost never happens, although building startup immediately after a power failure probably represents the largest building load. Most of the time, buildings operate at a much smaller fraction of peak load, as shown in Figure 11 below.

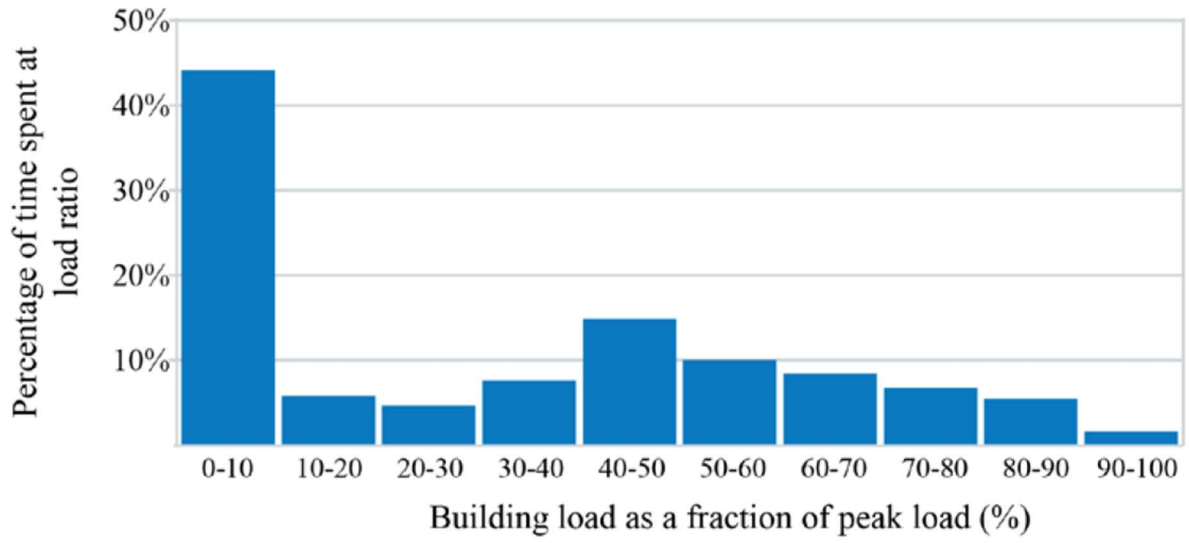

Figure 11: Percent of time buildings operate at partial load. (NREL , 2024)

Generators that operate mostly at part load are significantly less efficient, and part load operation often leads to maintenance and reliability issues for combustion-fired generators. This can also lead to unreliability either at start-up or during operation, a potentially critical problem in an emergency system.

The incorporation of a battery system to support peak loads at start-up can allow for a significant downsizing of the generator, and also allow the generator to run closer to its peak efficiency and performance. In this scenario the battery is used to meet peak loads at startup, or during the few hours when building peak loads occur, and the generator is used to provide enough energy to keep the battery from running out of charge over a 24-hour period. A battery would also prevent a service gap between power failure and generator start-up, and insure against generator starting failures, which is a not uncommon problem for emergency generators.

The combination of generator capacity and runtime scenarios can be optimized based on individual building load characteristics, but some studies suggest that this strategy can lead to reductions in generator capacity of 50% or more, as well as an increase in generator efficiency and reliability, and a reduction in emissions and maintenance.

This strategy might also make a scenario relying on temporary portable generators for emergency use more practical, since the battery system can power the building for short or medium-term emergencies while generators are deployed, and the smaller generator capacity needed represents less expensive and potentially portable infrastructure.

V2G

Another technology that may come into play in Redmond sustainability discussions is two way electric vehicle charging. If Redmond decarbonizes its vehicle fleet, a number of options with respect to electric power will come into play.

Vehicle to Grid, or V2G, is the ability of electric vehicles to feed power back into the grid through specifically designed charging infrastructure. A number of vehicles on the road today have this capability, and significant expansion is anticipated as utilities modernize grid infrastructure. Currently the technology is focused on direct grid integration, but the deployment of a microgrid can allow for more localized building-level support from electric vehicles. For fleet vehicles, this capability could be a significant component of resiliency and emergency operations planning. As an example, if Redmond had a number of electric fleet vehicles housed at the Public Safety Building or the new Municipal Operations Center, these vehicles could be available to buildings as a back-up for building emergency operation, either at their home base or at other buildings in the portfolio. For the buildings in this analysis that have seasonal gaps in resiliency planning (i.e. winter solar generation doesn't meet 24 hour building loads), portable storage in the form of electric vehicles could help fill the gap.

For perspective, currently available Ford Lightning vehicles have battery capacities up to about 230 kWh. This represents about eight hours of operation at Fire Station17. If the city had a central vehicle charging infrastructure for emergencies, electric vehicles with V2G capabilities could be located at or shuttled to specific buildings in an emergency to augment on-site solar storage capacity, as an alternative to generators.

Vehicles are also a critical part of city emergency operation so the provision of emergency vehicle charging capabilities at sites with substantial PV array potential, such as the Public Safety Building, could add a substantial element to city resiliency planning. A PV array at FS17 could also support charging for electric fire trucks, adding some resiliency to this aspect of the city's emergency response capabilities.

Load Shape/Demand Response

Although resiliency is a priority in this analysis, storage systems are more often deployed to mitigate high utility bills. Utility supply constraints around the country result in significant demand charges in many areas, where electricity is priced not only based on total consumption, but also based on peak 15 minute load during the billing period. In some regions demand charges represent more than half of a typical utility bill. Battery systems can be used to smooth out building loads and reduce demand charges. (Similar to the function anticipated in the generator capacity discussion above.)

Some utilities have also adopted time of use pricing models, where electricity becomes significantly more expensive at certain times of day when utility supplies are constrained, and cheaper when power is plentiful.

The PNW has not been subject to significant demand charges or time of use pricing in the past, but regional efforts to shift away from fossil fuels in the generating system are introducing new time and capacity constraints on the utility system based on the availability of wind and solar generating resources. This has resulted in the local adoption of pilot time of use pricing models for many utilities, including PSE which serves Redmond. A battery system would enable Redmond buildings to take advantage of time of use utility pricing by deploying battery storage to reduce building consumption in high peak energy price time periods, and recharge the battery when prices are lower. It would also help insulate the city from anticipated increases in utility demand pricing structures.

An additional advantage of coupling battery storage with solar energy generation is to maximize the value of the PV system. Many utilities limit the amount of surplus power they will accept (or pay for) from building mounted PV arrays. By installing a storage system, the building increases the amount of solar power it can use onsite, without needing to sell power at a discount or shut off surplus daily power from the PV system.

Summary of Building Strategies

Opportunities in Evaluated Buildings

Based on the narrative and evaluation above, the viability of opportunities for different types of solar/storage integration with each building is shown in Figure 12 and discussed for each building below.

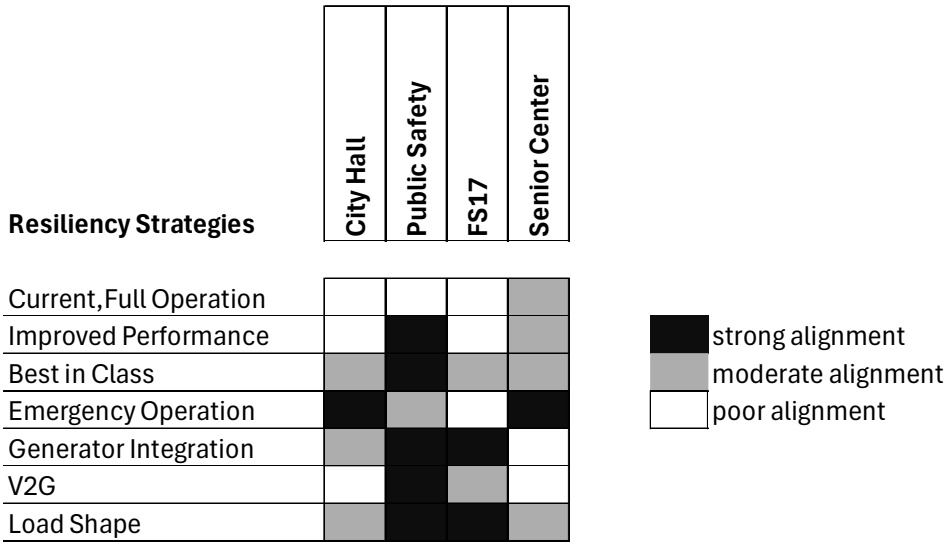

Figure 12: Opportunities by building

City Hall

Though improved building performance makes solar/storage more viable in all cases, the building loads at City Hall do not align well with any whole building operating scenario for the solar/storage system. However, if the building were configured to support the use of an emergency operations center independently of other building elements, a solar/storage system could provide a strong resiliency strategy to meet these loads. The building could also benefit from load shape management and generator integration with a solar/storage system.

Recommendations: Develop a more concise emergency operations plan to zero in on power needs necessary to support this function. Review electrical system in detail to determine viability of subsystem operation or needed upgrades. Consider battery/generator integration to improve generator performance and dependability, and identify options to reduce generator capacity.

Public Safety Building

The potential deployment of a large solar array on the roof of PSB and the adjacent parking garage leads to substantial solar capacity to support PSB operations. However, the high consumption level of the current building exceeds what a solar system could provide. PSB will be subject to improved performance requirements of the CBPS, and the more efficient this building becomes, the more opportunities there are to support resilient operation with a solar/storage system. There are also opportunities to improve emergency operation on generator power and manage load shape fluctuations with this system. The adjacency of the parking garage also provides substantial opportunities for the integration of V2G charging capabilities to serve an integrated strategy for emergency fleet operation and full building emergency power.

Recommendations: Improve building performance to CBPS requirements or beyond to improve resiliency options with solar/storage. Incorporate adjacent parking garage to expand PV capacity and include V2G charging capabilities in garage. Consider generator optimization with integrated battery, which could lead to a single, downsized generator. Significant review of complicated existing electrical system is needed to evaluate any options.

Fire Station 17

The energy loads of FS17 are well above what could be met by a solar/storage system, though if this building were performing at best in class many more opportunities would exist. Partial operation of this building was not considered as an emergency scenario in this analysis. A solar/storage system could support more reliable generator operation and a smaller generator at this site and could also help mitigate the significant load fluctuation apparent in the load shape of this building. A solar system could also be integrated with vehicle charging to make the recharging of fire engines or other fleet vehicles more dependable in an emergency.

Recommendations: Utilize solar/storage system to support electric vehicle charging and to optimize generator performance and capacity. Reduction in total building loads would generate more resiliency options.

Redmond Senior and Community Center

The RSCC is highly efficient, so there are more opportunities for emergency operation based on a solar/storage system at this building. Although the RSCC is not considered an emergency facility, the types of spaces and services that this building could provide might be a good city resource for some types of emergencies. The kitchen, shower/restroom, and gymnasium spaces could combine to provide emergency meals and housing for emergency staff or at-risk community members that could be fully powered by a solar/storage system in emergencies. The small gap in seasonal resiliency capabilities could be overcome with a small portable generator or a temporary V2G connection. The usefulness of these capabilities might be somewhat mitigated by flooding risk at the site.

Recommendations: Evaluate whether potential emergency uses described in this analysis are worth pursuing. Determine whether existing system configuration (electrical/mechanical) support this type of operation, or what modifications would be necessary for partial building operation. Consider V2G input capabilities (or portable generator) to expand seasonal resiliency capabilities.

Considering Solar/Storage Integration in New Buildings

Although specific parameters for new buildings were not evaluated in this report, conclusions can be drawn about how this evaluation can inform opportunities to optimize the incorporation of solar/storage systems in new buildings by addressing issues in the design phase.

Design new buildings as all-electric. In addition to mitigating emissions impacts, all electric buildings can be designed for full resiliency using on-site generation and storage systems as discussed in this report.

Target best in class performance for new buildings. For three of the four buildings evaluated in this report, overall building energy loads were excessive compared to what the solar system could

produce. (The fourth building was already performing at best in class levels). Buildings performing at best in class levels are often referred to as 'net zero ready' meaning there is direct alignment between what an on-site solar system can generate annually and the annual energy consumption of the building. With this alignment, the addition of battery capacity to the solar system can provide the opportunity for a range of resilient operating scenarios, potentially including full building operation.

Identify emergency operating scenarios in the design process and provide electrical circuiting and controls to allow for this type of operation. It is costly and complicated to reconfigure building electrical systems to allow for partial building operation if this was not considered during the building design phase and incorporated into construction.

Include solar/storage features in the design. This includes a PV layout plan integrated with mechanical and access requirements on the roof, provision of electrical routing from the roof, microgrid capabilities to support off-grid operation, and the provision of a battery and control room.

Use solar/storage capabilities to offset generator capacity. If a generator is to be deployed at the site, develop an integration plan to minimize generator capacity by utilizing battery storage as a peak load strategy. This will reduce generator size and cost, improve generator reliability and efficiency, and reduce emissions associated with generator operation. Generator solutions can also consider planning for mobile modular generators.

Include two-way vehicle to grid charging capabilities. This allows the building to not only provide emergency vehicle charging/operation, but also to leverage vehicle storage capacity to support building load management and emergency operation.

Summary and Recommendations

The purpose of this analysis is to provide a high level overview of the potential for deployment of solar/storage systems in four Redmond municipal buildings. This analysis has focused on the potential alignment of daily building loads under various scenarios with the daily generating potential of on-site PV systems integrated with battery storage. This analysis has identified alignment between certain types of building loads and solar/storage capacities that can help prioritize a more detailed evaluation of solar/storage deployment strategies in these buildings. This section identifies opportunities and limitations of this analysis and provides recommendations on how to use the findings of this report to identify next steps in this process.

Issues outside the scope of this analysis

This assessment provides a preliminary evaluation of the potential alignment of solar/storage deployment in key Redmond municipal buildings, as a starting point to identify the general feasibility of these strategies, and to prioritize applications with more potential for further evaluation. Several aspects of the implementation of solar+ storage were outside the scope of this evaluation and will require additional evaluation to further clarify the feasibility of these strategies. These issues include the following:

Specific emergency management parameters

In this evaluation the project team made some assumptions about how individual buildings might be used in an emergency situation. For some buildings it was assumed that the entire building would need to remain operational in an emergency. For others, the team speculated on potential emergency operation scenarios and estimated the portions of the building and services that would need to remain functional in an emergency. The scope of emergency operation is not linked to any specific emergency plan developed by the City of Redmond and may not reflect the City's priorities for use of these buildings. Emergency operating scenarios and loads should be revisited to align with official emergency operations plans when these become available.

Electrical system capabilities for partial operation, including microgrid deployment

Each building in the study was visited to assess electrical system characteristics, and electrical plans for each building were reviewed. However, the team was not able to assess the degree to which these systems might have been designed to support emergency operation of a subset of building loads. This capability would be critical to any strategy that planned to operate only part of the building in an emergency. A more detailed evaluation, potentially with circuit tracing and onsite load measurement would be necessary to verify partial building operational capabilities, or to assess the possibility to modify these systems for this purpose.

Buildings with generator backup were assumed to be designed for full operation on generator power. However, specific basis of design and operating parameters of these systems were not evaluated. Any system designed to operate 'off grid' during an outage by definition has some microgrid capabilities. These systems would need to be further evaluated regarding the possibility of integrating solar/storage systems into the existing system, and to identify additional control and management features that might be necessary to integrate solar/storage systems.

Detailed daily load fluctuation

This report highlights seasonal and daily fluctuations in solar availability but does not go into detail about how to size and manage battery capacity in response to daily fluctuation in solar availability. Neither are strategies to optimize battery capacity and extreme use case discussed. Meeting the most extreme long duration winter overcast conditions with a battery system could require alternate backup strategies, just as the statistical risk of emergency generator failure requires a contingency plan.

Battery sizing and location

Although some approximate battery capacities were discussed in the context of each building evaluation, specific sizing criteria were not developed, and identifying an appropriate space in each building to locate batteries was not undertaken. Battery locations need to account for fire safety considerations with current battery technologies. Forthcoming battery technologies may make this less critical.

Gas integration

Some of the buildings in this analysis include gas heating systems. For winter operation, these systems would need to remain operational to support building habitability in an emergency. This analysis did not evaluate the resiliency or control capabilities of these gas systems to determine how they could be integrated into any emergency operations scenarios.

Cost

Anticipated system costs and benefits were not evaluated in this report to inform prioritization among buildings and resiliency strategies.

Shared Resources

Each building in this analysis was evaluated in isolation, even though three of the buildings are directly adjacent to one another on the City Hall campus. If the buildings included a utility connection to each other, additional opportunities for shared storage capacity and emergency operational integration would be available.

Other Critical Facilities

The scope of the analysis focused on critical city buildings. During the report presentation, internal stakeholders requested a similar analysis of city-managed traffic signals, water wells, and sewer lift stations. These are essential facilities that are either inoperable or rely on generators during power outages and may be ideal candidates for solar plus storage.

Recommended Next Steps

Each of the buildings evaluated in this report demonstrates opportunities for the deployment of a solar/storage system to provide some level of resiliency benefit, though at significantly different scales.

The first priority recommended by this evaluation is to more carefully define what emergency operations are desired for each of the facilities in this study. Based on some broad assumptions, it is clear that there is an opportunity for solar/storage systems to contribute to resiliency and emergency operations at several facilities, but a more detailed assessment of what constitutes emergency operation will be necessary to move forward with an effective design of a solar/storage system for resiliency.

The second most compelling recommendation is to consider how emergency operations would be incorporated into the new municipal operations center currently in design, or other upcoming projects. This represents an opportunity to consider this at the front end of a project, and the building typology lends itself to significant resiliency features for the City of Redmond's vehicle fleet. As discussed in the narrative above, electric vehicles with V2G capabilities can also serve as back up storage systems for emergency loads at other buildings, with the right infrastructure.

Finally, based on stakeholder feedback, a similar analysis may be beneficial for other critical city infrastructure (city-managed traffic signals, water wells, and sewer lift stations).

With respect to the specific buildings evaluated in this report, the following recommendations are provided in order of recommended priority for consideration.

The most significant opportunity seems to be at the Public Safety Building, due to the adjacent parking garage which could provide significant additional PV array capacity to the building. Taken together PV arrays on these two structures would produce significant amounts of power to offset building loads. Since an imminent upgrade is planned at the building to meet CBPS requirements, this might be a good time to think about incorporating solar/storage resiliency features associated with lowered energy use at the facility. In conjunction with that analysis, the City should consider

how a battery system could integrate with an optimized back-up generator to improve reliability and reduce costs of the generator system.

The potential solar array capacity at City Hall is not adequate to fully operate the building in an emergency, but it is conceivable that such a system could provide power for the part of the building housing the emergency operations center. This would be a much smaller system than the one described above for PSB, so it might be a more manageable project. However, work would be needed to more specifically define EOC loads, and to determine if these loads can in fact be separated from the main building with the current electrical system. Also, this building has a backup generator of its own, and any solar power system would need to be integrated with that system. This would require additional engineering and evaluation work.

Although the Senior Center does not perform a critical function in city operations, the facility characteristics lend themselves to several options to support emergency situations. In particular the facility could be used as a community resource for emergency evacuation housing, or emergency meal preparation in some types of emergencies. The low energy use and all-electric fuel use at this building make solar/storage integration more feasible, especially if the city were able to operate a subset of the building in an emergency.

Fire Station 17 is the most limited opportunity for solar storage integration for resiliency, because of the mis-match between solar capacity and total building loads. Since there is not a partial operation plan for emergency use of this facility, solar deployment could primarily serve for vehicle charging and generator optimization as discussed in this report.

Sources:

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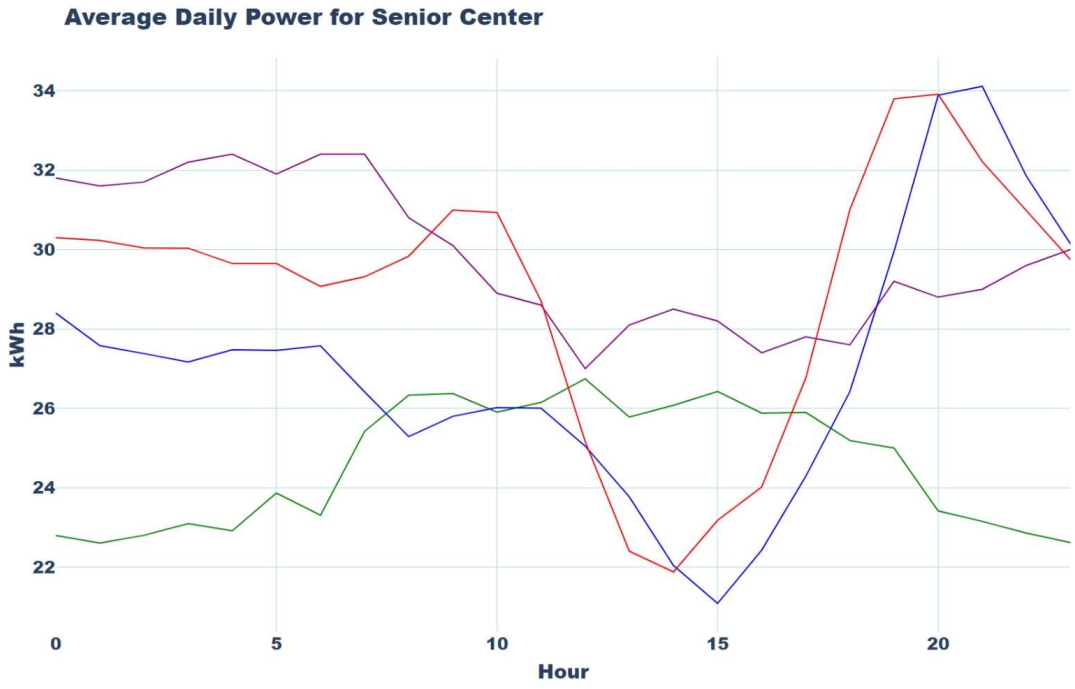
Zhang, J., Zabrowski, D. A., Schrock, D. W., Lane, M. D., Fisher, D. R., Athalye, R. A., Livchak, A., & Liu, B. (2010). *Technical Support Document: 50% Energy Savings for Quick-Service Restaurants* (PNNL-19809). Pacific Northwest National Laboratory. Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830.

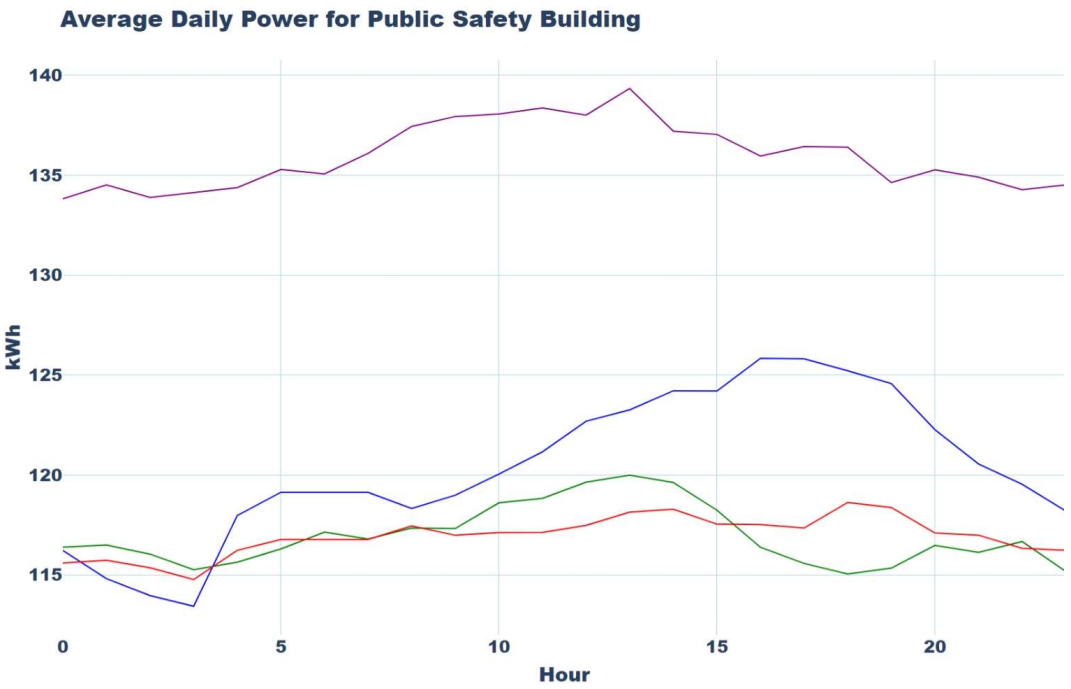
Appendices

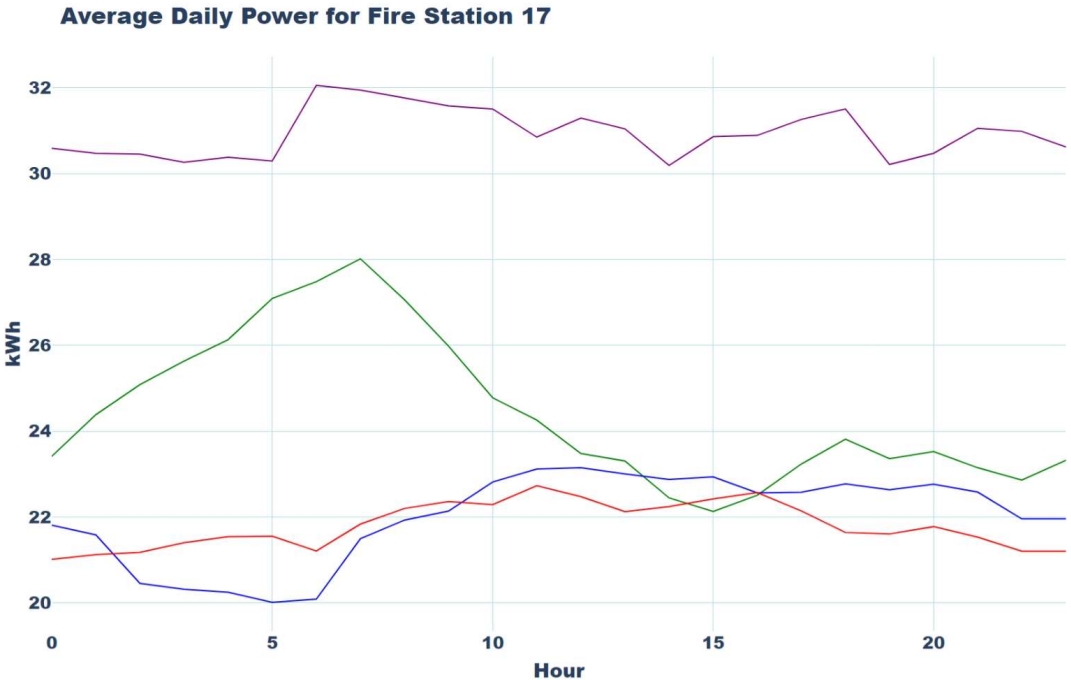
Appendix A: Building Daily Load Shapes by Season

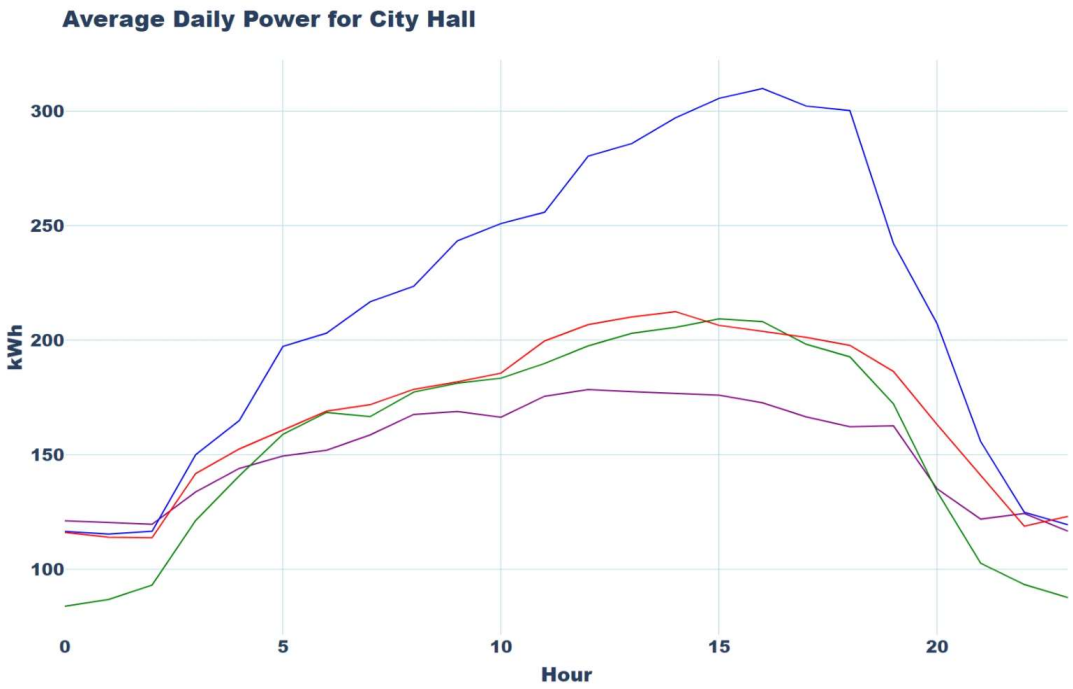
Legend:

January Building Load
April Building Load
July Building Load
October Building Load




Average Daily Power for Public Safety Building
140
135
130
125
120
115
kWh
0
5
10
15
20
Hour


Average Daily Power for Fire Station 17
32
30
28
26
24
22
20
kWh
0
5
10
15
20
Hour


Average Daily Power for City Hall
300
250
200
150
100
kWh
0
5
10
15
20
Hour

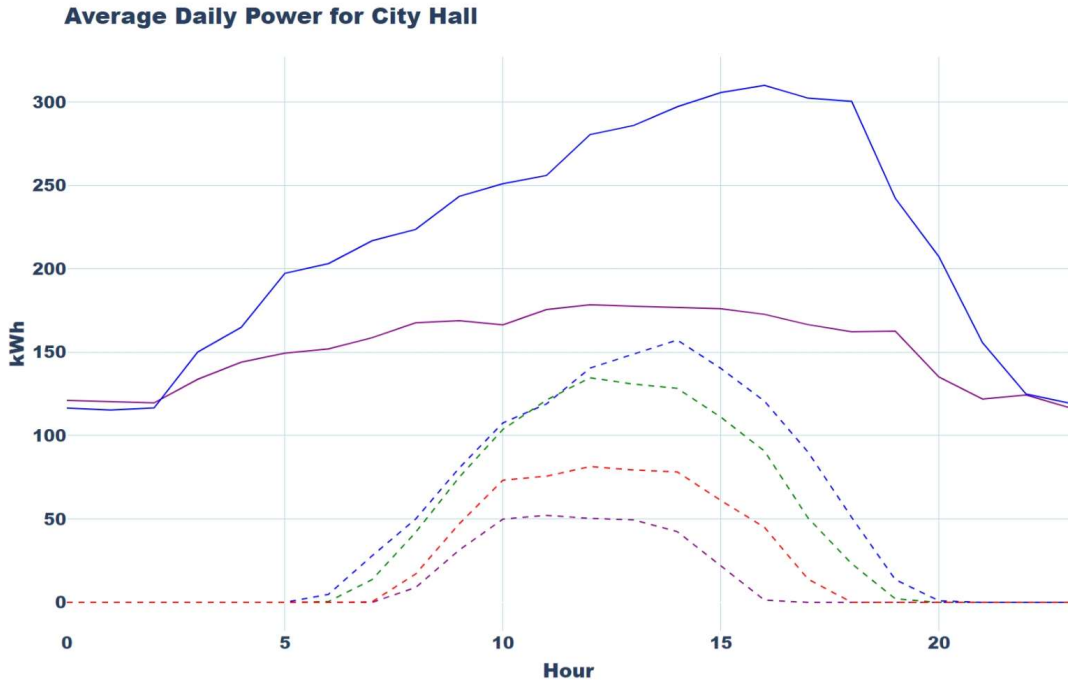
Appendix B: Solar Generation Daily Load Shapes by Season

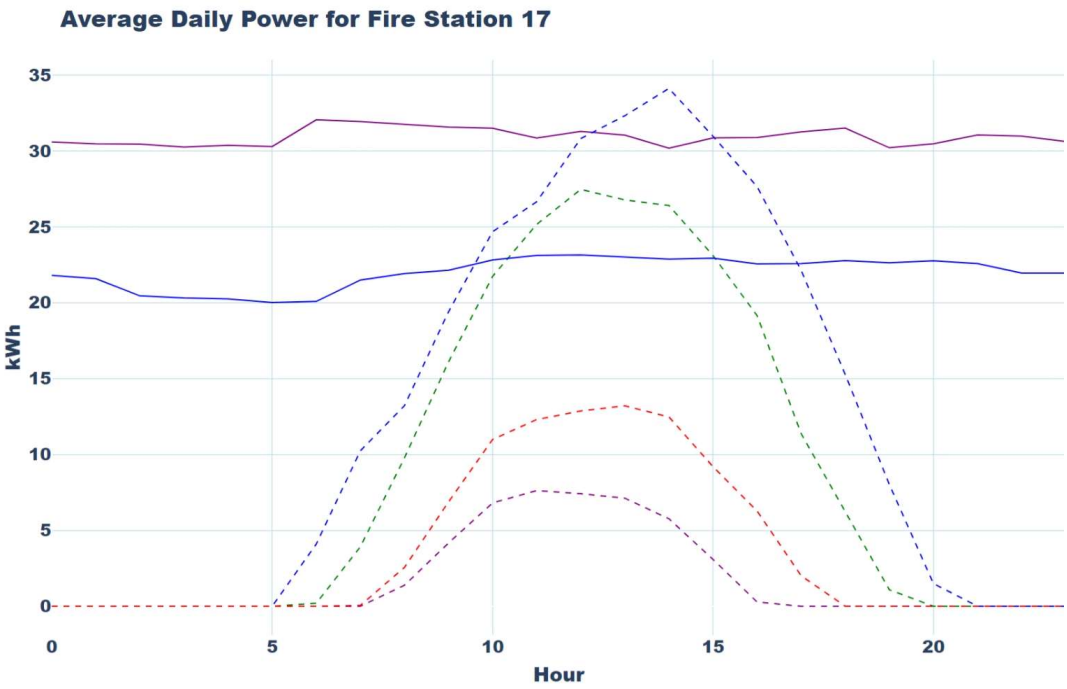
These graphs show the seasonal PV generation for each building, compared to summer and winter building loads.

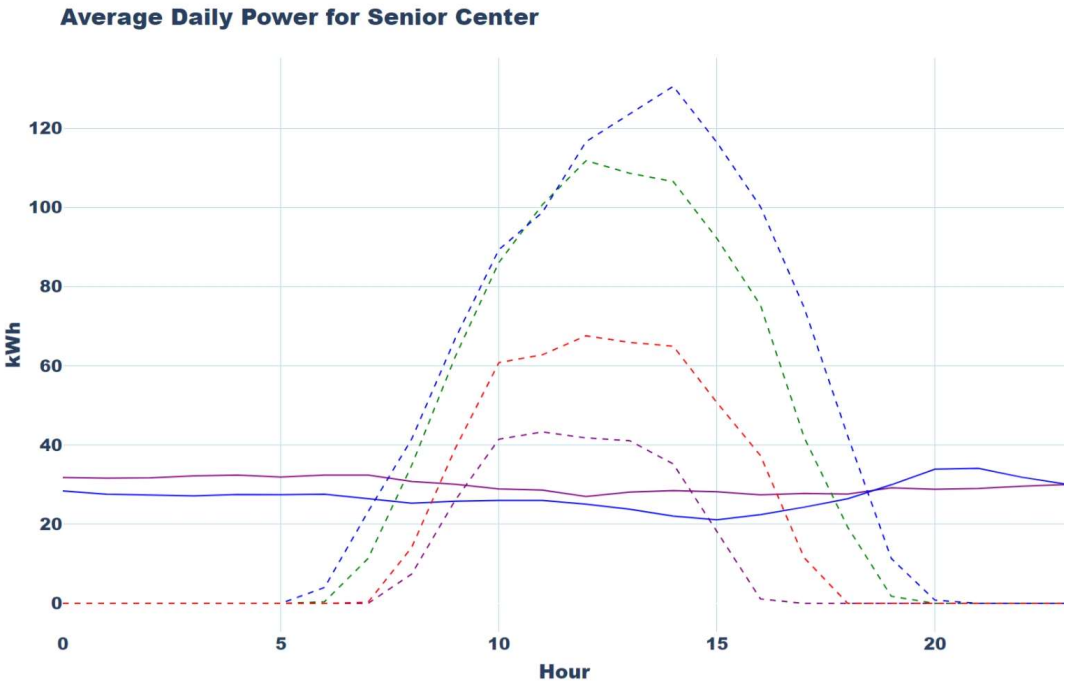
Legend for all graphs:

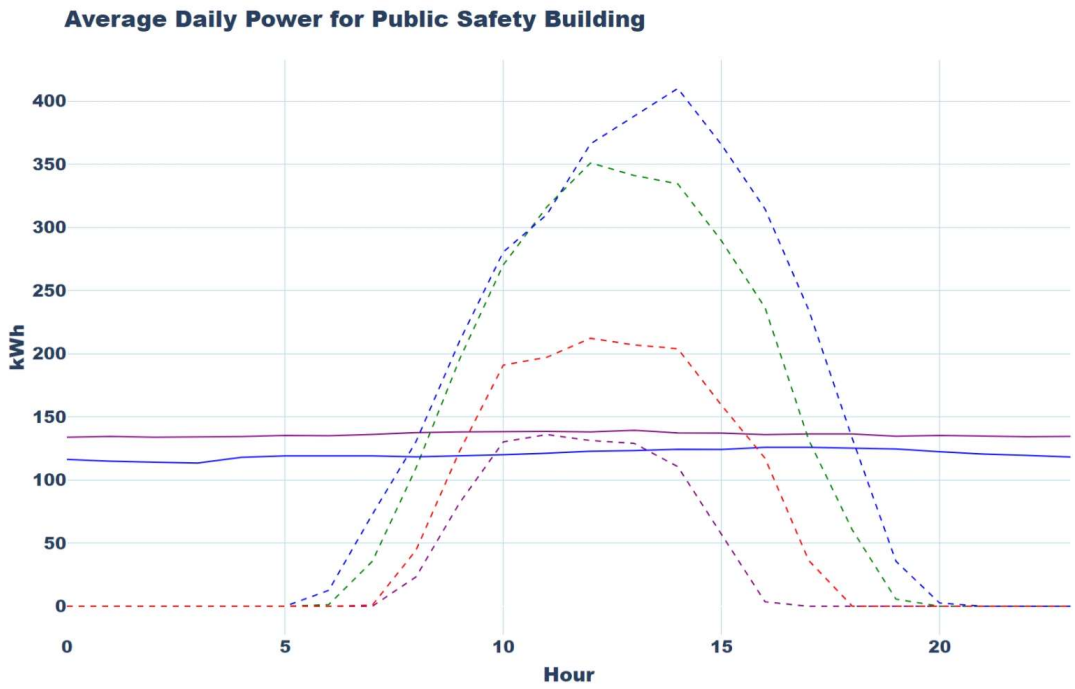
January PV Generation
April PV Generation
July PV Generation
October PV Generation

January Building Load
July Building Load




Average Daily Power for Fire Station 17
kWh
Hour
0
5
10
15
20
25
30
35


Average Daily Power for Senior Center
kWh
Hour
0
20
40
60
80
100
120

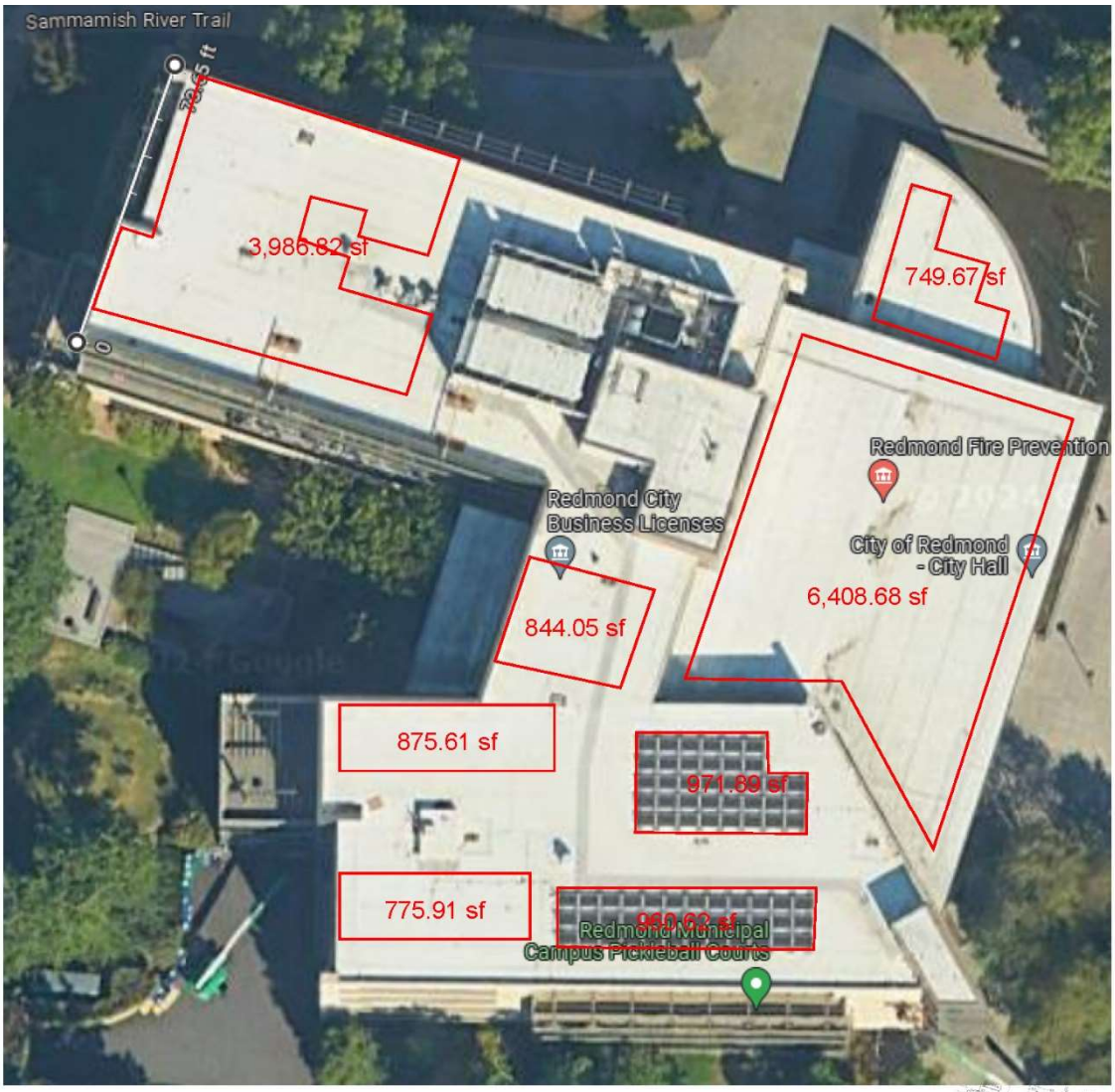


(Includes City Hall Garage roof area)

Appendix C: Assumed Solar Roof Areas by Building

CITY OF REDMOND - SOLAR STUDY

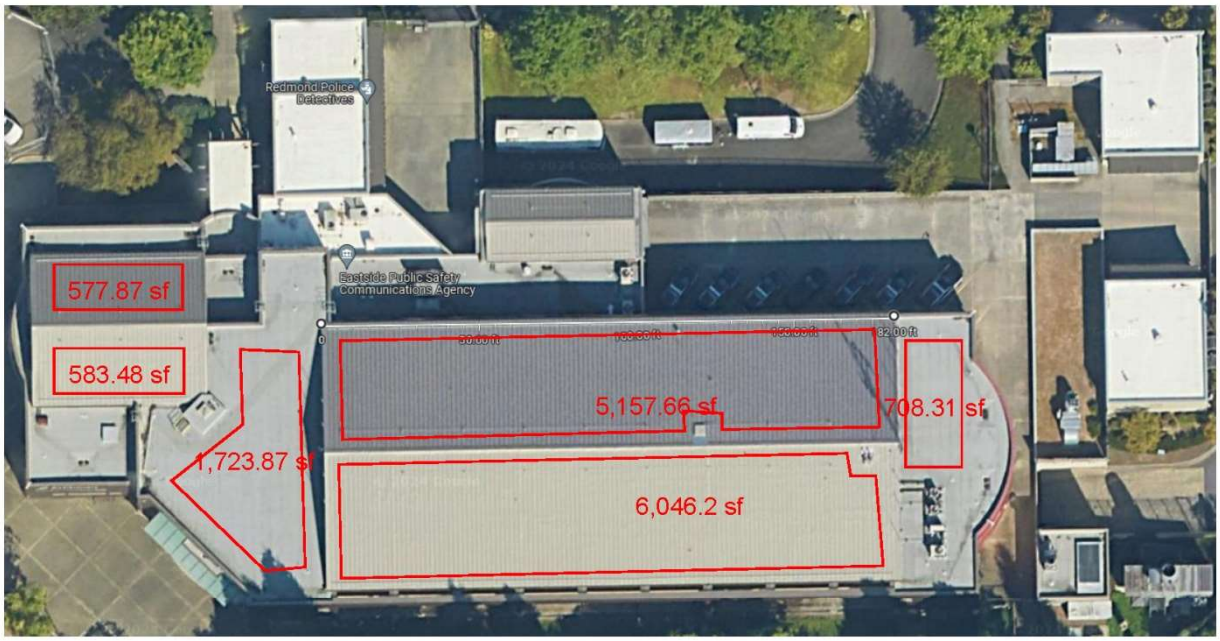
CITY HALL



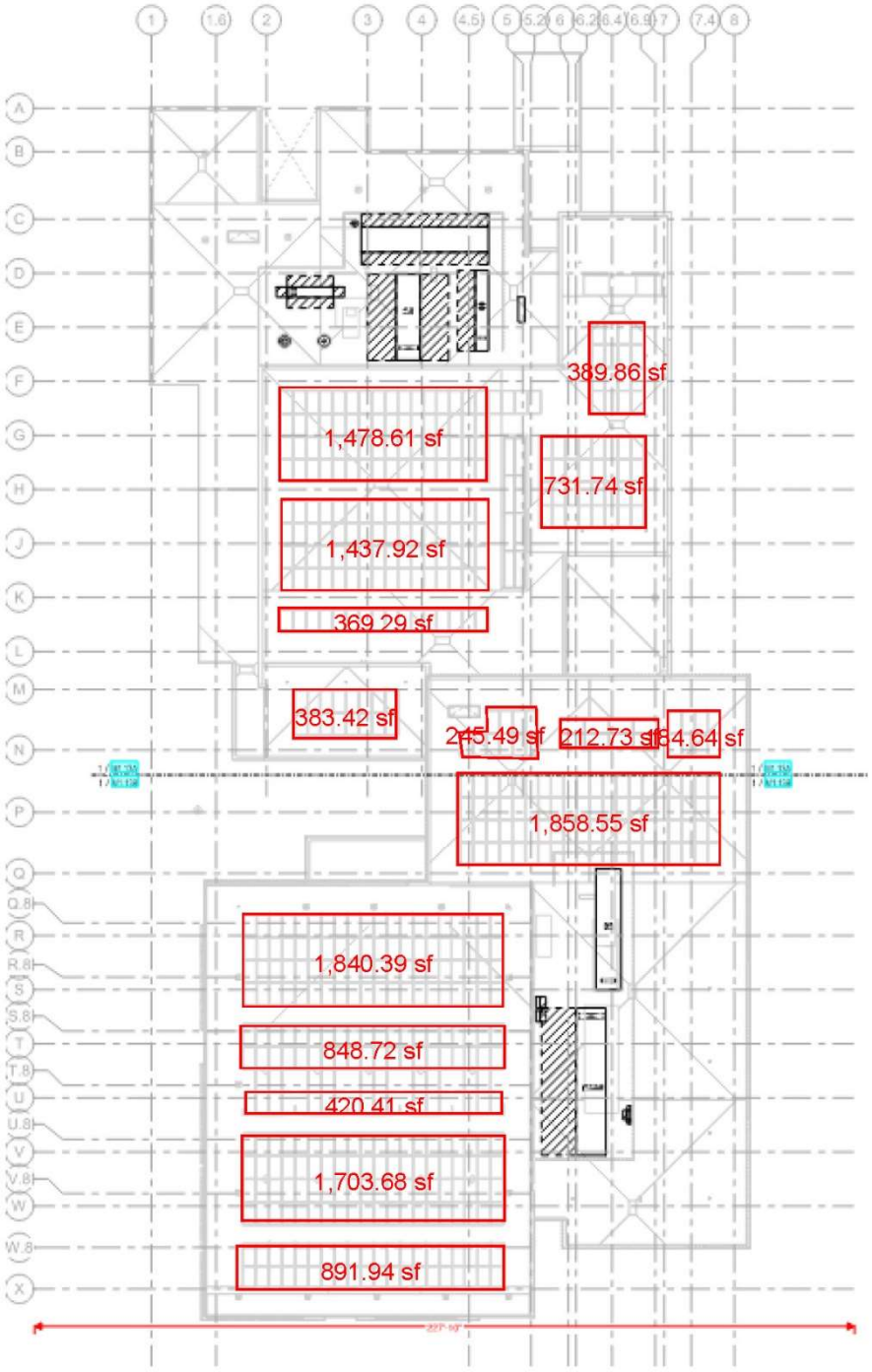
FIRE STATION 17

REDMOND CITY HALL GARAGE

REDMOND PUBLIC SAFETY BUIDLING



REDMOND SENIOR & COMMUNITY CENTER



Memorandum

Date: 4/8/2025
Meeting of: City Council Study Session

File No. SS 25-022
Type: Study Session

TO: Members of the City Council
FROM: Mayor Angela Birney
DEPARTMENT DIRECTOR CONTACT(S):

Planning and Community Development	Carol Helland	425-556-2107

DEPARTMENT STAFF:

Planning and Community Development	Seraphie Allen	Deputy Director
Planning and Community Development	Michael Hintze	Transportation Planning Manager
Planning and Community Development	Francesca Liburdy	Senior Transportation Planner

TITLE:
Transportation Master Plan Status Update

OVERVIEW STATEMENT:
Following the adoption of the Comprehensive Plan Update, Redmond 2050, the City is working on updating the Transportation Master Plan (TMP). The TMP is the functional strategic plan that guides transportation investment and activities to support the Comprehensive Plan vision. This status update will include progress updates on the workplan for TMP completion, including a detailed review of strategies included in the Bicycle Network and Freight chapters. Bicycle strategies will focus on the development of a high-comfort separated bikeway system and other strategies to achieve the bicycle mode shift needed to achieve the green-house gas reduction goals in the City's Environmental Strategic Plan. Freight strategies will include maintaining Redmond's designated freight street network while enhancing last-mile delivery and planning for emerging technologies such as drone delivery. Staff will provide completed draft Bicycle and Freight TMP chapters. Finally, staff will highlight future Council touchpoints and milestones.

☐ **Additional Background Information/Description of Proposal Attached**

REQUESTED ACTION:

☒ **Receive Information** ☐ **Provide Direction** ☐ **Approve**

REQUEST RATIONALE:

- **Relevant Plans/Policies:**
  - **Redmond 2050**, **FW-TR-1**: Plan, design, build, operate, and maintain a safe transportation system that advances an equitable, inclusive, sustainable, and resilient community by providing for the mobility and access needs of all.
  - **Redmond 2050, FW-TR-2**: Maintain the transportation system in a state of good repair for all users

- **Redmond 2050, FW-TR-3**: Complete the accessible and active transportation, transit, freight, and street networks identified in the Transportation Master Plan in support of an integrated and connected transportation system.
  - **TR-**14: Prioritize transportation investments that reduce household transportation costs, such as investments in transit, bicycle and pedestrian system access, capacity, and safety.
  - **TR-**16: Prioritize the comfort, safety, and convenience of people using pedestrian and bicycle facilities over other users of the transportation system. Establish standards for bicycle and pedestrian facilities to attract users of all ages and abilities. Prioritize improvements that address safety concerns, connect to centers or transit, create safe routes to school, and improve independent mobility for those who rely disproportionately on the pedestrian and bicycle network
- **Redmond 2050, FW-TR-4:** Plan, design, build, operate, and maintain a transportation system that supports the City's sustainability principles.
- **Redmond 2050, FW-TR-5:** Influence regional transportation decisions and leverage regional transportation investments in support of Redmond's transportation policy objectives.
- **Redmond 2050, FW-EV-2:** Support policies that contribute to a high quality of life in Redmond, such as career and education opportunities, housing, transportation, and recreation choices, as well as a healthy natural environment.
- **Redmond 2050, FW-**LU-2: Ensure that the land use pattern in Redmond meets the following objectives:
  - Reflects the community values of sustainability, resilience, and equity and inclusion;
  - Advances sustainable land development and best management practices and a high-quality natural environment;
  - Promotes development sufficiently away from environmentally critical areas;
  - Encourages a mix of uses that create complete neighborhoods ;
  - Maintains and enhances an extensive system of parks, trails, and open space;
  - Supports and encourages flexible places for a resilient and adaptive economy that includes a mix of research, retail, health, technology, and manufacturing uses;
  - Ensure the siting and delivery of public infrastructure and community services to support preferred land use pattern; and
  - Promotes sufficient density for development pattern and urban design that enable people to readily use a variety of accessible and active forms of travel including but not limited to walking, rolling, bicycling, transit.
- **Redmond 2050, FW-CR-1:** Develop partnerships and programs to rapidly and equitably reduce greenhouse gas emissions and create a thriving, climate resilient community.

- **Required:**
  N/A
- **Council Request:**
  The TMP will be adopted by Council in its entirety when complete.
- **Other Key Facts:**
  N/A

OUTCOMES:

The Transportation Master Plan document has not been fully updated since 2013. The Transportation Master Plan communicates the strategies, actions, and programs to implement the policies of the Comprehensive Plan and achieve current City priorities as they relate to the transportation system.

COMMUNITY/STAKEHOLDER OUTREACH AND INVOLVEMENT:

- **Timeline (previous or planned):**
  - Capital Projects Ideas Mapping, Spring 2020
  - Routes to Rails Community Engagement Campaign, February-June 2023
  - Derby Days Questionnaire (seeking feedback about how community members would plan to access future light rail stations without a car), July 2023
  - City of Redmond Parking Questionnaire, March-April 2024
  - Sound Transit 2 Line Opening, April 2024
  - Safer Streets for All (SS4A) Action Plan Community Road Safety Assessment, May 2024
  - Redmond Pedestrian & Bicycle Advisory Committee (PBAC) Transit Open House, May 2024
  - Bike Everywhere Day, May 2024
  - Safer Streets for All (SS4A) Action Plan Staff Road Safety Assessment and Debrief Workshop, May-June 2024
  - Overlake Open Streets Festival, June 2024
  - Derby Days Festival, July 2024
  - Downtown Redmond Open Streets Festival, August 2024
  - Redmond PBAC Meeting, October 2024
  - Redmond PBAC Meeting, December 2024
  - Redmond PBAC Meeting, January 2025
  - Redmond PBAC Meeting, February 2025
  - City of Redmond Transit Questionnaire, February 2025 (ongoing)

- **Outreach Methods and Results:**
  Surveys, Questionnaires, Listening Sessions, Community Discussions
- **Feedback Summary:**
  While the community engagement process is still ongoing, some preliminary results are as follows:
  - Overall community interest in first/last mile connections to the existing and future transit network
  - Interest and desire for more multimodal connections to the existing and future transit network, specifically via pedestrian and bicycle modes
  - Desire for more bicycle infrastructure connecting Redmond to neighboring communities, including Kirkland and Bellevue
  - Desire for more education about and awareness of public transit programs, especially King County Metro programs such as Community Van and Metro Flex
  - Desire for safety measures to reduce pedestrian-bicycle conflicts on shared-use trails
  - Interest in using future light rail stations in Redmond, especially to access the airport when possible

BUDGET IMPACT:

Total Cost:
$400,000 in one-time funding was provided to support the TMP update.

Approved in current biennial budget: ☒ **Yes** ☐ **No** ☐ **N/A**

Budget Offer Number:
0000310 - Mobility of People and Goods

Budget Priority:
Vibrant and Connected

Other budget impacts or additional costs: ☐ **Yes** ☐ **No** ☒ **N/A**
If yes, explain:
N/A

Funding source(s):
General Fund, Grant Funding

Budget/Funding Constraints:
N/A

☐ **Additional budget details attached**

COUNCIL REVIEW:

Previous Contact(s)

Date	Meeting	Requested Action
3/7/2023	Committee of the Whole - Planning and Public Works	Provide Direction
3/28/2023	Study Session	Receive Information
6/6/2023	Committee of the Whole - Planning and Public Works	Provide Direction
6/13/2023	Study Session	Receive Information
11/3/2023	Committee of the Whole - Planning and Public Works	Receive Information
11/14/2023	Study Session	Receive Information
6/18/2024	Committee of the Whole - Planning and Public Works	Receive Information
8/5/2024	Special Meeting	Receive Information
11/4/2024	Committee of the Whole - Planning and Public Works	Receive Information
11/19/2024	Business Meeting	Receive Information
1/7/2025	Business Meeting	Receive Information
1/28/2025	Study Session	Receive Information

Proposed Upcoming Contact(s)

Date	Meeting	Requested Action
N/A	None proposed at this time	N/A

Time Constraints:
Transportation components that are mandatory for the Comprehensive Plan have been included in the appendices of the Transportation Element of Redmond 2050. These components will be brought into the TMP, and in many cases, expanded upon with more specific policies and strategies.

ANTICIPATED RESULT IF NOT APPROVED:
The Study Session is for informational purposes and no direction is required at this time.

ATTACHMENTS:
Attachment A - Presentation Slides
Attachment B - Issues Matrix
Attachment C - Draft Bicycle Chapter
Attachment D - Draft Freight Chapter

Moving Toward 2050
Transportation Master Plan Status Update

Transportation Planning and Engineering Division

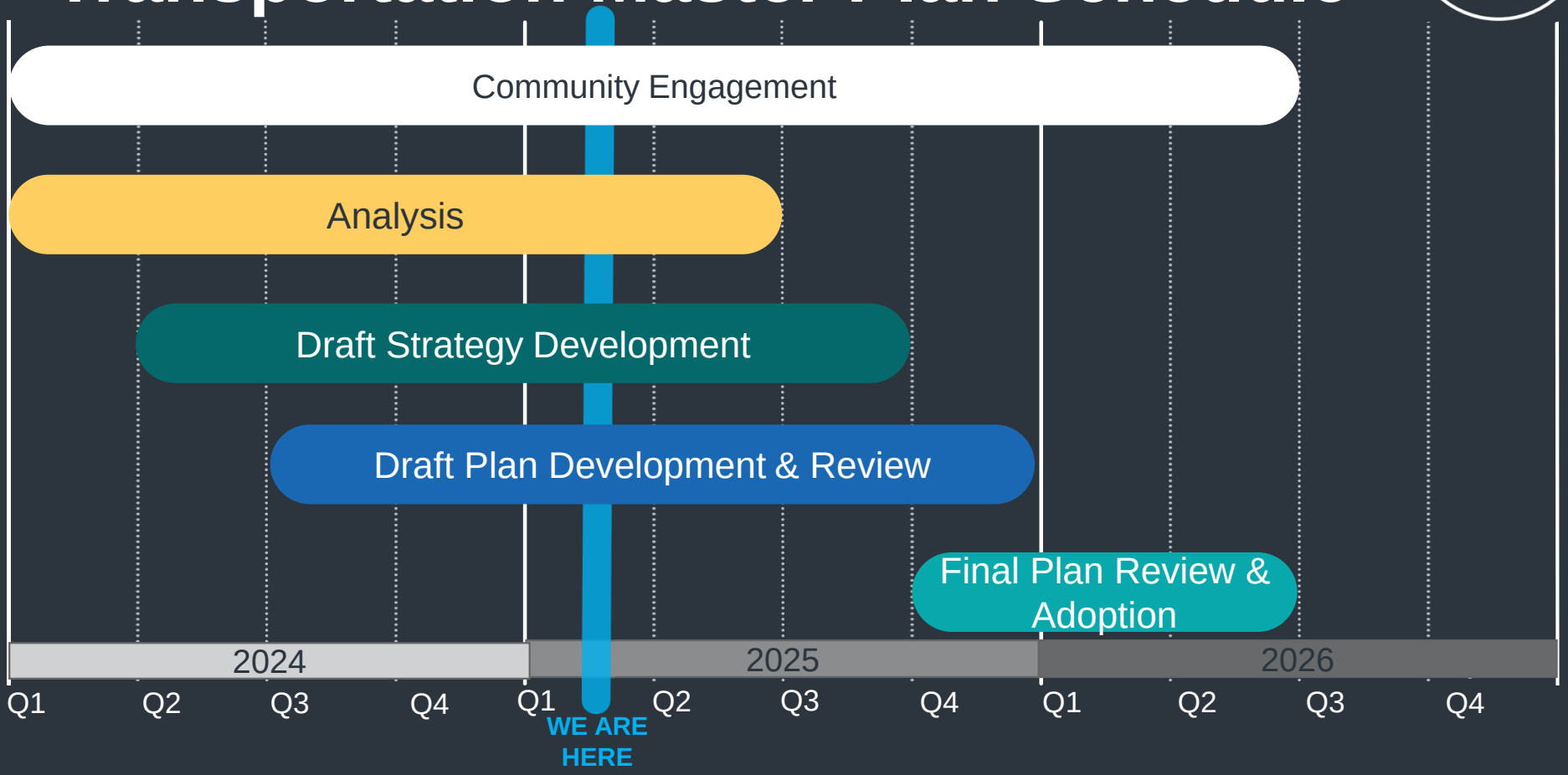
March 18, 2025

Redmond
WASHINGTON

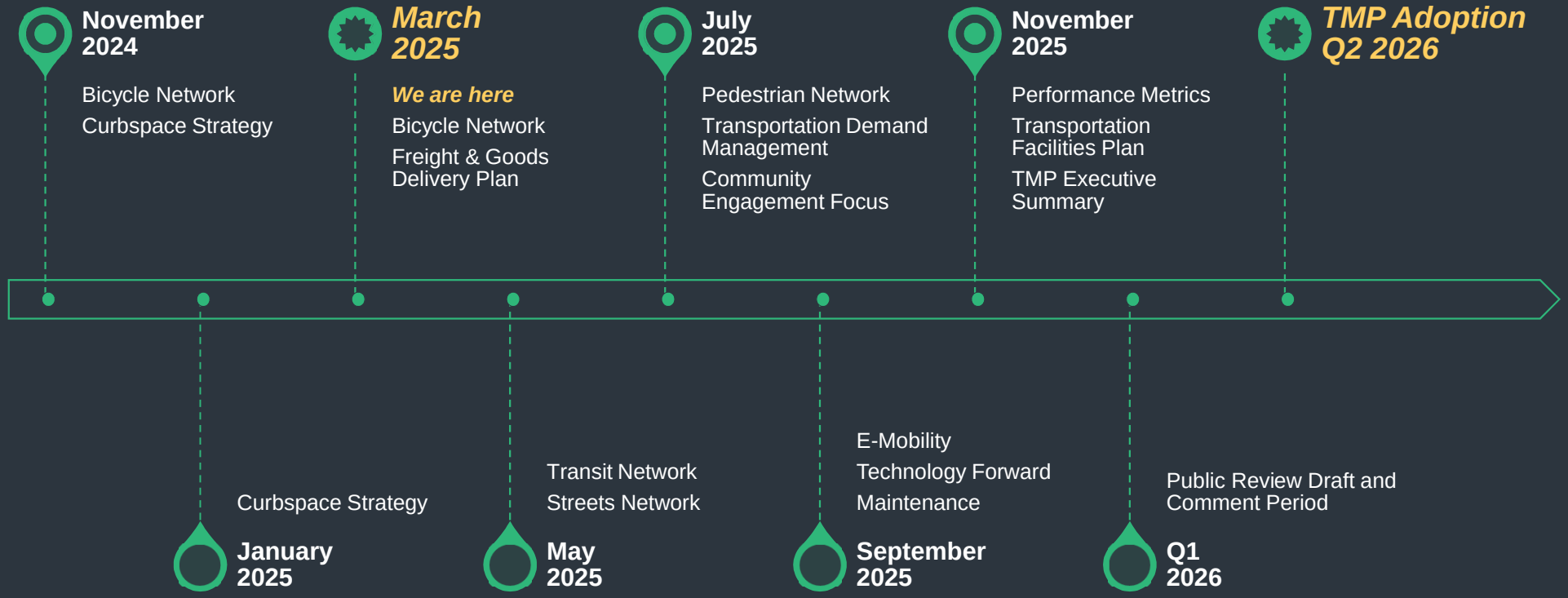
Agenda

- Schedule Updates
- Chapters in Progress
  - Bicycle Network Strategy
  - Freight & Goods Delivery Plan
- Upcoming Milestones

Transportation Master Plan Schedule



Transportation Master Plan
Anticipated Council Review Timeline



Note: Schedule subject to change

Bicycle Strategy Outcome Goals

- Bicycle and micromobility (scooters) mode share is 15% of all trips in urban centers, 5% citywide by 2035
- Reduce single-occupant vehicle (SOV) trips by 30% by 2035/50% reduction in per capita VMT by 2050
- Reduce greenhouse gas (GHG) transportation emissions 50% by 2030 (71% by 2050)
- Connect all key destinations with low stress bicycle facilities

Bicycle Network Principles

Connected

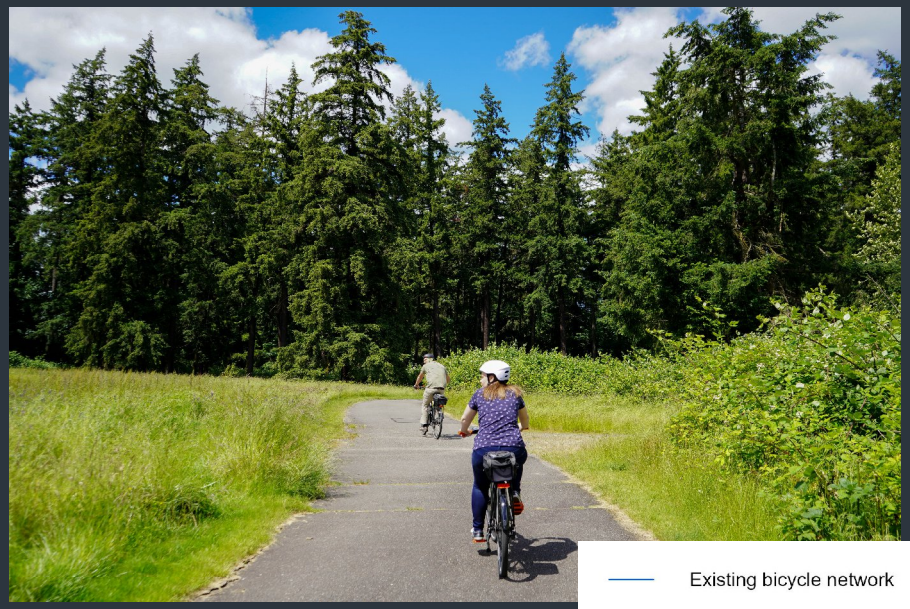
Direct

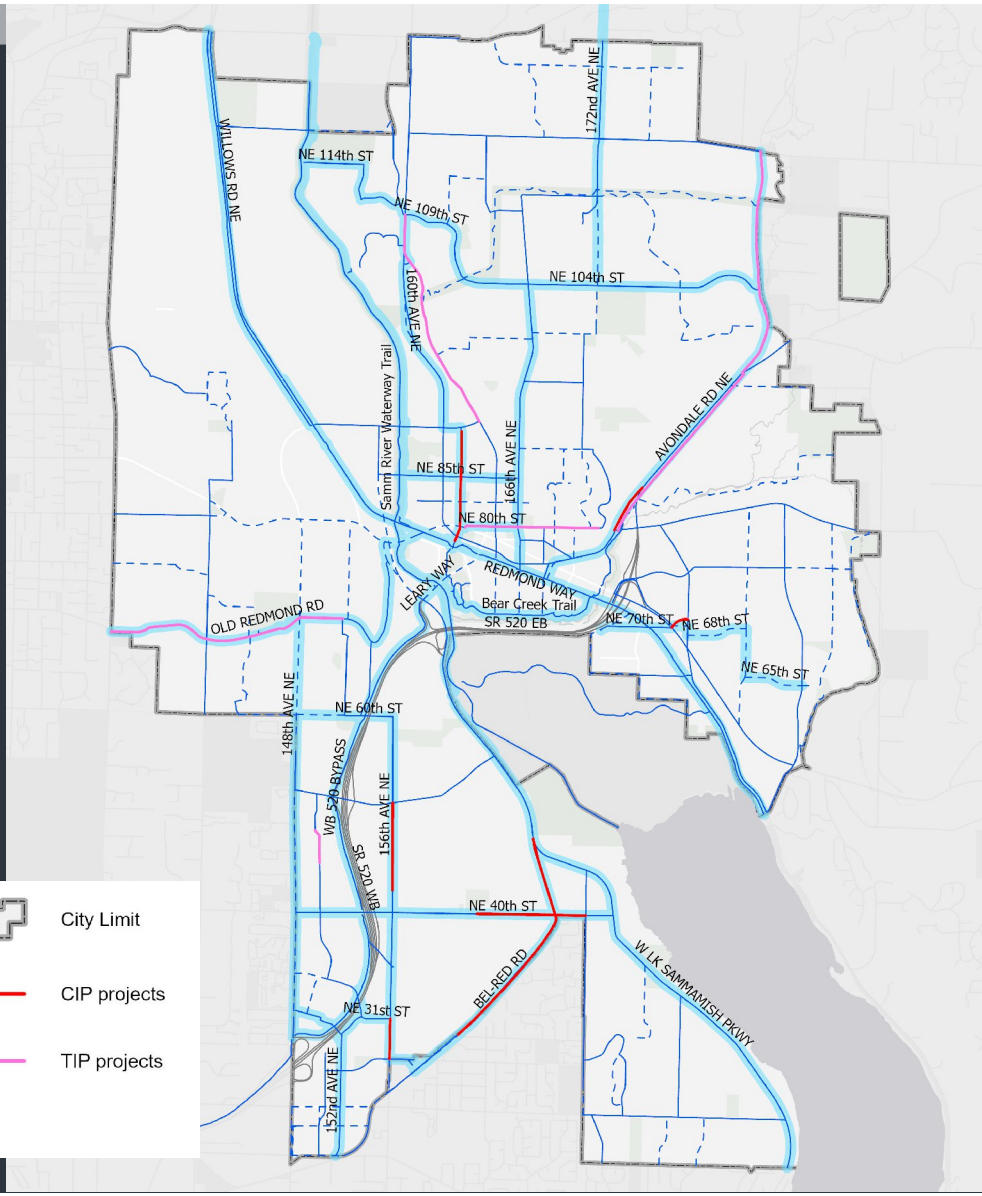
Cohesive

Safe & Comfortable

Multimodal

Draft Bike Network



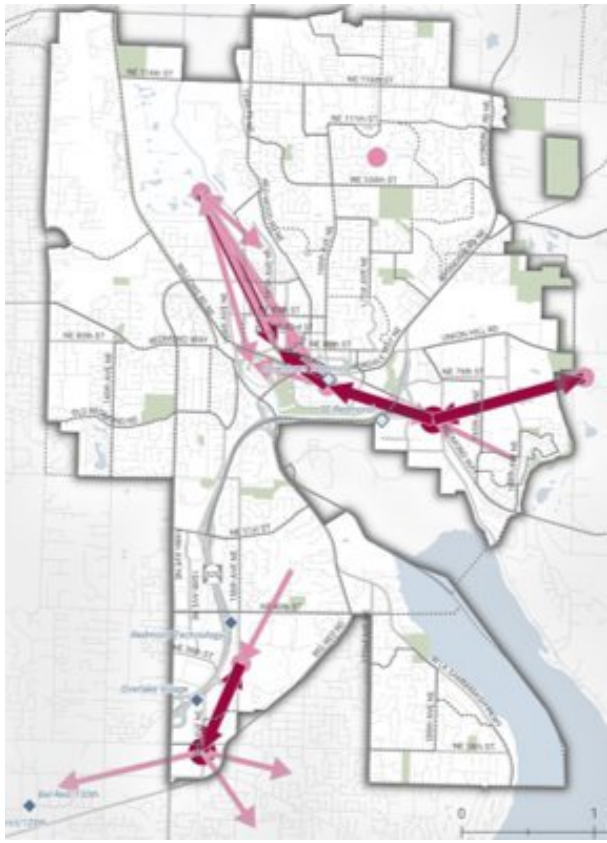


Bikeway Segment Prioritization Framework

- Safety
- Equity
- Proximity to Key Destinations
- Comfort
- Route Connectivity
- Topography
- Spine Network
- Short Trip Density Areas

Key Policies & Strategies

- Convert Short Trips
- Connect to Transit
- Implement Spine and Neighborhood networks
- Balance Modes
- E-Bikes and E-Scooters
- Secure bike parking



Freight & Goods Delivery Key Themes

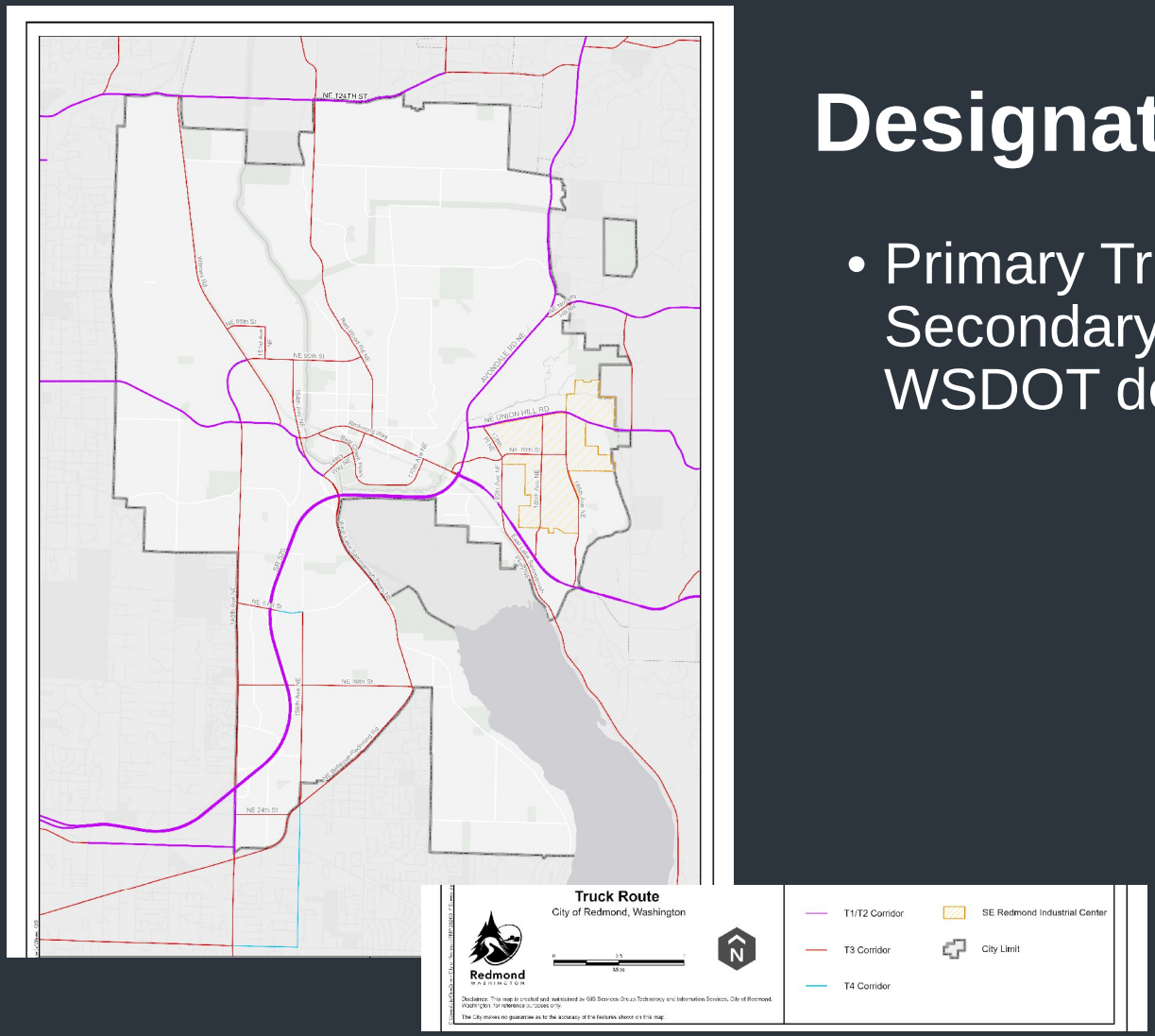
- Identify truck route network
- Address last-mile delivery demands
- New and emerging last-mile delivery technologies

Freight & Goods Delivery Strategies

- Identify a truck route system based on WSDOT Freight and Goods Delivery Transportation System (FGTS)
- Investigate options for improving freight data collection
- Explore innovative strategies to provide for safe and enhanced freight movement, reduced emissions, and application of clean technology (such as dedicated last-mile delivery loading zones, or accommodating autonomous delivery technologies)

Designated Truck Routes

- Primary Truck and Secondary Routes based on WSDOT designations



Next Steps

- Continuing to Develop TMP Content
- Upcoming TMP Study Sessions
  - March 25th
  - May 2025 (Transit Network and Streets Network chapters)
  - July 2025 (Pedestrian Network and Transportation Demand Management chapters, as well as a deeper look at the ongoing feedback from the Community Engagement process)

Questions?

Michael Hintze, mhintze@redmond.gov
Transportation Planning Manager

Redmond
WASHINGTON

Transportation Master Plan Update

Date	Issue	Notes & Recommendations	Next Steps
6/4/24	Would it be possible to get the Staff Report presentation ahead of time so we can have questions ready ahead of the discussion? *(CM Forsythe)*	This Staff Report will be a level set for Councilmembers to get a high-level idea of the variety of transportation plans that are in progress right now and how they relate to each other. This Staff Report will not delve deep into transportation topics but will give an overview of what Council can expect to review in the future. Councilmembers can also review the Redmond 2050 Transportation Element if they want to review Redmond's transportation vision more in-depth.	The Transportation Planning & Engineering team will continue to prepare materials for the Staff Report presentation.
6/4/24	With the opening of the light rail on the Eastside, there has been more community interest in first-last mile connections. Would it be possible to get more information on this during the Staff Report? *(CM Salahuddin)*	Yes, first-last mile connections will be discussed at the staff report.	The Transportation Planning & Engineering team will continue to prepare materials for the Staff Report presentation.
6/4/24	Would it be possible to provide use-case profiles or scenarios of what residents in Overlake, Education Hill, or other neighborhoods might experience in the transportation network? *(CM Fields)*	Yes, this information can be prepared for the Transportation Subcommittee and can be incorporated into the Transportation Master Plan document.	The Transportation Planning & Engineering team will continue to prepare materials for the Staff Report presentation.
6/4/24	Thank you for the work that you continue to do to provide safe facilities particularly for pedestrians and bicyclists. *(CM Nuevacamina)*	Staff will continue to provide updates on active transportation efforts in the Transportation Master Plan, including our bicycle network strategy efforts that will be discussed at the staff report.	The Transportation Planning & Engineering team will continue to prepare materials for the Staff Report presentation.
8/5/24	I've been hearing a lot of safety concerns / requests for a Left turn arrow at the intersection of Bel-Red and West Lake Sammamish Parkway. Currently, there is a bike lane (or space for bikes to move to the front safely) but the turn itself is viewed as unsafe when it is in conjunction with vehicles. The request is for a bike only left-turn arrow *(CM Forsythe)*	The Planning department will pass this information on to the Traffic Operations & Safety Engineering (TOSE) team in Public Works as they manage Redmond's signals. The Safer Streets Action Plan will include opportunities to reduce conflicts between bicycles and vehicles at Redmond intersections.	Further city staff coordination will be required.

Transportation Master Plan Update

Date	Issue	Notes & Recommendations	Next Steps
8/5/24	Will the curbspace chapter include geofencing for Lime scooters and bikes to have proper zones to park vehicles? *(CM Forsythe)*	The TMP curbspace chapter will include strategies for managing on-street parking and will provide guidance for prioritizing active modes on Redmond's roadway corridors. This could also include interfacing with Lime and promoting first-last mile solutions such as the Shared Micromobility program.	Finalize Curbspace chapter.
8/5/24	Will pick up and drop off zones for rideshare programs be included in the curbspace management plan? *(CM Forsythe)*	Policies around curb space priorities, including passenger loading will be included int the curbspace chapter. Specific areas where passenger loading will occur will be identified in the Citywide Right-of-Way Management Plan that will be developed by Public Works in 2025 and will support the strategies outlined in the TMP Curbspace chapter.	Finalize policies and strategies in the curbspace chapter, develop Citywide Right-of-Way Management Plan
8/5/24	Will the TMP provide opportunities to expand flexible transit access with King County Metro programs? Would like to hear more about this at the study session, if possible. *(CM Salahuddin)*	The upcoming August 13, 2024 Study Session will be focused on the development of the Safer Streets Action Plan; however, this topic will be included in the next TMP Staff Report. Promoting transit access and flexible transit options will be included in the transit chapter of the TMP.	Staff will continue to prepare materials for upcoming staff reports and will work with the consultant team assisting on the future transit network included in the TMP.
8/5/24	What parts of the plan will think more comprehensively about parking management (off street in addition to curbspace)? *(CM Kritzer)*	Parking management strategies will be included in the Curbspace chapter of the TMP. In addition, a more detailed parking management analysis will be included in the Urban Centers Parking Management Plans that will be developed for Overlake, Downtown Redmond, and Southeast Redmond/Marymoor.	Staff will integrate updated parking data into the curbspace chapter of the TMPr.
8/5/24	It is part of our obligation as a jurisdiction to have a responsible transportation plan. I would like to see strengthening of incentives and education of the public to work hand in hand with sustainability and tell the story of why we are encouraging people not just to drive everywhere. We want to tie the strategies in the TMP to GHG reductions. *(CM Fields)*	The TMP will include strategies and analysis that supports Redmond's goals for reduction of vehicle miles traveled (VMT) and greenhouse gas emissions (GHG). As sustainability is a Guiding Principle of the 2050 Transportation Vision, these concepts will be incorporated into all aspects of the TMP.	Staff will continue with development of the TMP.

Transportation Master Plan Update

Date	Issue	Notes & Recommendations	Next Steps
11/19/24	If community members want to get in touch with the TMP team, what is the best way they can do that? Do we have any open surveys or questionnaires? *(CM Stuart)*	Community members can go to the open Let's Connect page to give feedback, as questions, and take available questionnaires. Additionally, the Redmond Pedestrian and Bicycle Advisory Committee (PBAC) will discuss various chapters of the TMP and other related topics at ongoing monthly meetings. PBAC meets on the 2nd Monday of every month at 6:30 p.m., both in City Hall and via Microsoft Teams. For more details, email pedbikecommittee@redmond.gov or visit https://www.redmond.gov/pbac	The next Redmond PBAC meeting will be held Monday, January 13, 2025.
1/28/25	How do we continue to see a high turnover of on-street parking for local businesses while still promoting the park once and walk concept? *(CM Nuevacamina)*	Management of parking will be key. Setting right-sized timeframes of on-street parking and looking into the possibility of metered parking to allow for longer parking timeframes in the future will help maintain the turnover needed allow people to find parking. Implementing useful wayfinding and signage will also help people find parking easily and quickly, especially in our urban centers.	The Urban Centers Parking Management Plan will include specific strategies for achieving desired parking turnover and encouraging the park once and walk concept.
1/28/25	Having incoming light rail infrastructure alongside our curbspace management strategies will help bring more solutions on board to manage parking turnover. What is the Parking Benefit District mentioned in the curbspace strategies and what are the ways that this could be explored in Redmond? *(CM Stuart)*	The TMP puts forth strategies for curbspace management, and the forthcoming Urban Centers Parking Management Plan will explore the details of how these strategies will be implemented. A Parking Benefit District is typically created to cover the costs associated with the parking program at a minimum and can be used to for other public improvement projects within the same geographic area. More details on feasibility and how this would be structured will be developed as part of the Urban Centers Parking Management Plan.	The Urban Centers Parking Management Plan will explore this concept further.
1/28/25	What do we think is the right mix of publicly owned EV chargers and privately owned but publicly available chargers? Do we have a sense of the ratio that would be useful for a city of our size? *(CM Stuart)*	Transportation Planning & Engineering staff are working on our EV strategy as part of the E-Mobility chapter of the TMP and collaborating with Jenny Lybeck on sustainability programs as part of this effort.	More information will be shared as part of the E-Mobility chapter of the TMP.

Transportation Master Plan Update

Date	Issue	Notes & Recommendations	Next Steps
1/28/25	It's great to see all the ADA efforts in this chapter and how we're adding more accessible parking. Can you expand on how we are going to phase out the monthly parking permit and what the anticipated timeline on this would be? *(CM Forsythe)*	The specific timeline on phasing out this program would be defined in the Urban Centers Parking Management Plan. We want to be sure to phase this out in a measured approach to give permit holders plenty of advanced warning.	The Urban Centers Parking Management Plan will have a recommendation for phasing out monthly parking permits.
1/28/25	Would we consider implementing a residential parking permit zone as part of phasing out the monthly permit program? *(CM Forsythe)*	More information on this will be shared in the forthcoming Urban Centers Parking Management Plan. A separate presentation will be brought to Council to focus solely on this report.	The Urban Centers Parking Management Plan will have a recommendation for phasing out monthly parking permits.
1/28/25	Have we considered implementing dedicated rideshare pickup and drop off locations as part of our curbspace management strategies? *(CM Forsythe)*	Rideshare would fall under the access category for loading/unloading that is included in the curbspace prioritization categories. The forthcoming Curbspace Management Plan led by the Public Works department will expand on this work in more detail.	The Curbspace Management Plan led by Public Works will determine the appropriate quantity and location of loading zones.
1/28/25	How do we think about the level of detail of strategies that are included in the TMP Curbspace chapter vs. what will be included in future parking plans? I.e. does the strategy that mentions changing the time-limited parking near Anderson Park fit in the TMP? Also, how will we manage parking in spaces with community parks that may not have a dedicated parking lot? *(CM Kritzer)*	The strategy near Anderson Park was cited as an example of an area on the periphery of Downtown that would experience potential additional parking pressure if metered parking is implemented Downtown. Because of this, we would want to look at this area and others on the periphery of Downton as an opportunity to implement time-limited parking to alleviate that additional pressure.	The Urban Centers Parking Management Plan will provide recommendations for parking management within Urban Centers and consider impacts to adjacent areas.
1/28/25	Can you clarify the parking rule about moving your car to a new street in Downtown regarding the 2-hour time limited parking? *(CM Kritzer)*	We want our businesses to feel that these curbspace strategies are supporting their work. This is why we are recommending potentially having paid parking in our time-limited areas. We will also continue to look into the 2-hour limit and if it is appropriate for our time-limited parking areas. More information will be included in the Urban Centers Parking Management Plan. Regarding the current regulations, a vehicle can be parked on the same named street for 2 hours at a time. You cannot move to another part of that same named street later in the day due to the nature of the parking monitoring program. More information can be	Staff will identify code changes and other information that should be shared with public to explain parking regulations as part of the implementation of the Urban Center Parking Implementation Plan.

Transportation Master Plan Update

Date	Issue	Notes & Recommendations	Next Steps
		found at: https://www.redmond.gov/636/Downtown-Parking	
1/28/25	To what extent does paid parking influence the burden on current parking enforcement? *(CM Stuart)*	Paid parking allows for better compliance overall which also allows for fewer resources to be spent on parking enforcement. This is a benefit of implementing a paid parking system.	Parking enforcement is one factor to be evaluated as part of the decision to implement metered parking.
1/28/25	Can we look into the equity considerations of towing fees and the city's approach to towing in the parking or curbspace management plans? *(CM Kritzer)*	Generally, the City does not tow cars for parking violations.	Staff will look into whether or not there are criteria for when vehicles are subject to towing well-defined in city code and recommend criteria if there are currently none.

Transportation Master Plan Update

Chapter Review: Bicycle

Report Structure

1. Executive Summary
2. Introduction
3. Street System
4. Pedestrian
5. Bicycle
6. Transit
7. *Curbspace*
   - *Mayor reviewed Jan. 2025, Council reviewed Jan. 2025*
8. *Freight & Goods Delivery*
   - *Mayor reviewed Feb. 2025, Council review Mar. 2025*
9. Transportation Demand Management (TDM)
10. E-Mobility
11. Technology Forward
12. Maintenance
13. Monitoring Progress (Performance Metrics)
14. Appendices

Key Themes

- Use Level of Traffic Stress (LTS) rating to measure bicyclist comfort on existing and planned facilities, while planning for a high-comfort Spine Network
- Converting short vehicle trips (under 2 miles) to bicycle mode
- Proactively plan for bicycle facility maintenance needs
- Prioritize planned bicycle facilities by focusing on equity, safety, comfort, and proximity to key destinations

Review Timeline

- Director Review: 1/9/2025
- Mayor Review: 2/7/2025
- Planning Commission Presentation: 10/23/2024
- Council Staff Report: 11/19/2024, 3/18/2025
- Council Study Session: 3/25/2025

Bicycle Strategies

1. Convert short trips to bicycle trips
2. Connect to transit
3. Promote e-bikes and e-scooters
4. Implement a high comfort Spine Network
5. Implement the Neighborhood Bikeway Network
6. Balance modes
7. Provide convenient, plentiful, and secure bike parking

By implementing these strategies, Redmond can work toward the following outcomes:

- Bicycle and micromobility (scooter) mode share at 15% of all trips in urban centers by 2035
- Bicycle and micromobility mode share at 5% of all trips within city of Redmond by 2035
- Connect all key destinations with low-stress bicycle facilities

Bicycling in Redmond

TMP Update
March 2025

Bicycle Network Strategy

Introduction

Future of Bicycling in Redmond

Bicycling (and the use of other micromobility devices) will play a key role in creating a more sustainable, equitable, and livable Redmond. The bicycle provides a level of efficiency, affordability, accessibility, and freedom of movement unmatched by other forms of transportation while integrating easily with transit systems. Advancements in electric bike (e-bike) technology, affordability, and accessibility stand to further increase the importance of biking. The keys to unlocking the potential of bicycling in Redmond is to provide a bike network that most people feel safe using and conveniently connects people to where they need to go, and providing secure and convenient bike parking at destinations. By doing so, Redmond can encourage more people to bike more often while driving less.

What is Micromobility?

Micromobility refers to a range of small, lightweight devices operating at speeds typically below 15 mph. Micromobility includes both human-powered and electric scooters, bicycles, skateboards, one-wheels, hoverboards, cargo bikes, trikes and other similar devices. These devices offer flexible mobility and can provide efficient first-last mile connections to transit, and thus are an important component of Redmond's transportation system. In Redmond, micromobility devices are generally expected to operate within bikeways and trails, and not on sidewalks. While this chapter largely discusses bicycles, all network strategies pertain equally to micromobility.

How Bicycling Supports Redmond 2050 Guiding Principles

Equity and Inclusion

The Bicycle Network Strategy presented in this chapter will allow people of all ages and abilities to get from anywhere to everywhere by bicycle, or other micromobility device, safely, directly, and comfortably. In doing so, all Redmond community members will have an affordable, efficient, and healthy transportation option that complements other sustainable travel modes such as walking and transit.

Sustainability and Resilience

Redmond 2050 sets goals of a 50% reduction in per capita vehicle miles traveled (VMT)[1] and 71% reduction in transportation sector greenhouse gasses (GHG)[2] by 2050. The Redmond Environmental Sustainability Action Plan (2020) identifies intermediate targets to help move toward the 2050 goals. Namely, reducing GHG transportation emissions 50% by 2030 and reducing single-occupancy vehicle trips by 30% by 2025. Shifting trips from driving to biking can help Redmond achieve these goals and is a key objective of Redmond's Bicycle Strategy. Promoting new technologies such as the e-bike will create opportunities for increased mode shift away from motor vehicles (both internal

[1] From 2017 levels.
[2] From 2011 levels.

combustion and electric). In addition to reducing VMT and GHG emissions, shifting more trips to active travel and public transportation will offer other benefits like reduced congestion, more community space, improved air quality, and improved public health.

FIGURE 1 MICROMOBILIY SUCH AS E-SCOOTERS ARE A FLEXIBLE TRAVEL OPTION SUPPORTED BY THE BIKEWAY NETWORK. (IMAGE CREDIT: CITY OF REDMOND)

Goals and Performance Measures

Shifting vehicle trips to bicycling and micromobility is one component of a larger strategy to reduce vehicle miles traveled, particularly single occupancy vehicle trips. To shift trips from driving to biking, Redmond must expand and enhance its bikeway network and make biking an attractive choice, especially for short trips. The following outcome goals and related performance measures will be used to track and evaluate Redmond's implementation of this Bicycle Strategy, especially the development and expansion of the bikeway network.

Outcome Goal	Measures
Bicycle and micromobility mode share at 15% of all trips in urban centers by 2035	Bicycle and Micromobility mode share in Downtown Bicycle and Micromobility mode share in Overlake Bicycle and Micromobility mode share in Marymoor Village
Bicycle and micromobility mode share at 5% of all trips within city of Redmond by 2035	Bicycle mode share city wide for all trips
Connect all key destinations along the Spine Network with low stress bikeways by 2035	LTS 1 or 2 bikeways that connect directly to light rail stations, schools, and grocery stores[3]

Bicycling in Redmond Today

Estimates from the 2022 American Community Study and Move Redmond's recent surveys of Redmond employees, suggest that only 2% of work trips are by bicycle. Researchers and practitioners have categorized people based on their confidence interacting with motor vehicle traffic while biking. While the percentage varies by community, a national survey found that about 5 out of every 10 adults in major urban areas, labeled as "Interested but Concerned" riders, would like to ride a bicycle but do not currently do so, primarily due to concerns about traffic safety.[4]

The 2024 Bicycle Friendly Community Public Survey[5] received over 300 responses from Redmond community members about their experiences using Redmond's bicycle network. Of the survey responders, approximately 70% ride a bike in Redmond. Survey respondents use bicycle travel for varying purposes in Redmond, with approximately 35% primarily taking transportation or utilitarian trips (commuting, running errands, etc.), approximately 30% primarily riding a bicycle for recreation or leisure, and approximately 25% primarily riding a bicycle for exercise or fitness.

The City of Redmond's focus for the development of the bicycle network is serving people of all ages and abilities, which means building bikeways that are comfortable for the Interested but Concerned population. This strategy will encourage more bicycle trips, which will advance the City's goals around VMT and GHG reduction, while creating a more equitable transportation system that provides affordable and healthy travel options.

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[3] Destinations should have convenient and secure bicycle parking facilities.
[4] Dill, J, and Nathan McNeil, 2016, Revisiting the Four Types of Cyclists: Findings from a National Survey, Transportation Research Record: Journal of the Transportation Research Board, 2587, Retrieved from https://journals.sagepub.com/doi/10.3141/2587-11
[5] League of American Bicyclists 2024 Bicycle Friendly Community Public Survey

Existing Bike Network

The existing bicycle network is comprised of 98.8 miles of bikeways[6] of varying condition and suitability for people of all ages and abilities. This includes:

- 73.5 miles of bicycle lanes (includes buffered bike lanes)
- 2.5 miles of separated bicycle lanes
- 4.2 miles of shared lanes/bicycle boulevard
- 15.2 miles of paved shared use pathways

In addition to the formal bike network, other streets in Redmond can serve people biking. At low volumes and speeds of traffic, many people feel safe and comfortable sharing the street with traffic or crossing the street in unmarked crossings. As traffic speed and volumes increase, their perception of safety degrades significantly, resulting in a feeling of increased stress and discomfort.

Progress Made

Redmond has made notable progress in implementing important bikeway network connections over the past decade through both its capital investment program and requirements for new development. These investments include two new bridges over SR 520 at the Redmond Technology Center and Overlake Village light stations, substantial completion of the Redmond Central Connector, the striping of miles of bike lanes, and bringing e-bike/scooter share to the city. These accomplishments and others contribute to Redmond being the "Bicycle Capital of Washington", but there is much more work that needs to be done to honestly be able to claim that title. The work that needs to be done is the focus of this chapter.

[6] Includes funded bikeways to be constructed by 2027, including NE 40th St and 156th Ave NE shared use paths.

Level of Traffic Stress

Redmond's existing bikeways were assessed to determine their relative level of comfort using a bicycle Level of Traffic Stress (LTS) analysis, which factors vehicle speeds, vehicle volumes and the degree to which bicyclists are separated from vehicle traffic.[7] Higher vehicle speeds and volumes and less separation between bicyclists and vehicles results in stress and discomfort for bicyclists and according to research and feedback received from the Redmond community.

The results of the LTS analysis based on 2024 conditions show that 79% of existing designated on-street bikeway miles are high stress.[8] That means many of the major bicycle connections in Redmond are LTS 3 or 4. Research and real world examples show that LTS 1 and 2 bikeways are what will get a greater proportion of the population to feel comfortable bicycling.

The updated Redmond Bicycle Facility Design Manual (2023) designates the "Interested but Concerned" bicyclist as the design user. Recent bikeway network investments reflect the City's focus on building out a low-stress network, including separated bicycle lanes recently constructed on 156th Avenue NE and 152nd St Avenue NE, the protected intersection at 152nd Avenue and NE 24th Street, shared use path on NE 40th St, and the pedestrian and bicycle bridge connections to the Overlake Village Light Rail Station and the Redmond Technology Light Rail Station.

What is Level of Traffic Stress?

The Level of Traffic Stress (LTS) analysis, based on a methodology developed by Mekuria, Furth, and Nixon (2012), is a system that rates road segments or crossings based on the level of stress they place on bicyclists, ranging from LTS 1 (minimal stress) to LTS 4 (high stress). LTS 1 and 2 are considered suitable for most bicyclists, including children and Interested but Concerned riders, as they involve minimal interaction with traffic. LTS 3 and 4 are for more confident bicyclists, with LTS 4 being the most stressful, requiring high levels of skill and tolerance for high-speed traffic. The overall LTS for a route is determined by the highest stress level encountered along the route's segments.

[7] Mekuria, Maaza C. , Peter G. Furth, and Hilary Nixon. 2012. "LOW-STRESS BICYCLING and NETWORK CONNECTIVITY." Https://Transweb.sjsu.edu/Sites/Default/Files/1005-Low-Stress-Bicycling-Network-Connectivity.pdf. Mineta Transportation Institute. May 2012.

[8] Includes funded bikeways to be constructed by 2027.

FIGURE 2: SEPARATED BIKE LANES LIKE THIS ONE ON 156TH AVE NE PROVIDE A HIGHER LEVEL OF COMFORT AND SAFETY AND ATTRACT BICYCLISTS OF ALL AGES AND ABILITIES. (IMAGE CREDIT: CITY OF REDMOND)

Opportunities for Shifting Trips from Vehicles to Bicycles and Micromobility

Converting short motor vehicle trips of less than 2 miles to bicycling and micromobility offers a significant opportunity to reduce Vehicle Miles Traveled (VMT) and greenhouse gas (GHG) emissions.

In Redmond, areas with high numbers of short motor vehicle trips have been identified as key locations for targeted policies and infrastructure improvements that can encourage a shift from motor vehicle trips to more sustainable modes of transportation such as bicycling, micromobility, walking, and transit. As shown in Figure 3 the data suggests that Downtown Redmond, Overlake, and Southeast Redmond are the primary destinations for short motor vehicle trips under 2 miles. These areas, and routes connecting to these areas, are ripe for improved bicycle connections to facilitate access to the new light rail stations and other destinations and reduce reliance on motor vehicles.

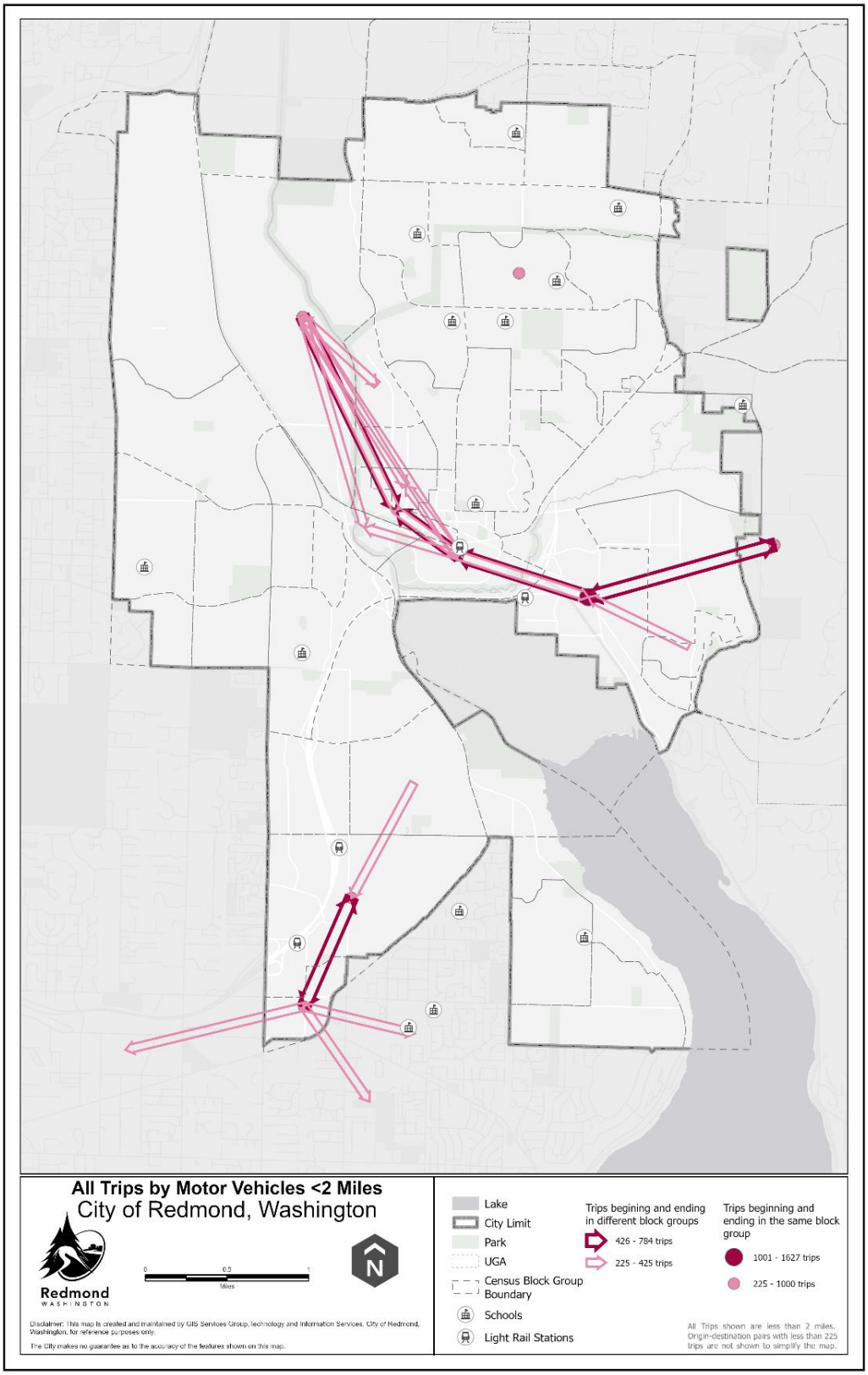

FIGURE 3:AREAS WHERE MOST TRIPS UNDER TWO MILES OCCUR IN REDMOND

Encouraging More People to Bicycle

When people are faced with the choice of whether to bike or take another mode of transportation for a trip, research suggests that there are several major categories of reasons that influence people's choice.[9] These reasons may include:

- Physical ability
- Seeing people biking
- Understanding benefits
- Automobile ownership
- Weather
- Topography
- Trip length
- Bicycle ownership or presence of bikeshare
- Traffic stress along the entire route
- Crashes
- Personal skill level
- Personal security
- Theft
- Access to transit

The relative weight between the above factors will vary by a person's individual needs and abilities. However, the aforementioned research indicates that the Interested but Concerned population (about half of all people) cite **traffic safety concerns as the main barrier to bicycling more**, and cite low-stress infrastructure (LTS 1 or 2) as the types of bikeways they feel comfortable using.[10] This indicates that to increase bicycle mode share among the largest group of potential bicyclists, people need access to safer, lower-stress bicycling facilities.

Peer City Focus:

Palo Alto, CA

The City of Palo Alto is similar to Redmond in terms of demographics, size and having an abundance of tech companies. Palo Alto is a Gold Bicycle Friendly Community and is currently updating its Bicycle and Pedestrian Transportation Plan (BPTP) to be completed in 2025.

Many of Palo Alto's proposed BPTP Update programs align with Redmond's TMP strategies and actions, including: developing a wayfinding plan, conducting an inventory of bike parking and monitoring bike parking usage, and implementing a proactive speed management program to lower speed limits and design speeds on streets within the city's bike network. Additionally, Palo Alto continues to focus on building high-comfort bikeways, especially as first/last mile connections to rapid transit at Caltrain stations. Palo Alto's Traffic Calming Program identifies speed management and multimodal safety measures that can be implemented quickly, and the City is prioritizing the addition of staff to this program who can focus on administering quick-build efforts.

The 2024 Bicycle Friendly Community Public Survey[11] asked respondents what their top priorities would be to make Redmond a better community for bicyclists. Three key themes emerged: providing

[9]Schneider, Robert J. "Theory of Routine Mode Choice Decisions: An Operational Framework to Increase Sustainable Transportation." *Transport Policy*, vol. 25, 2013, pp. 128–137., doi:10.1016/j.tranpol.2012.10.007.
[10] Sanders, Rebecca L., and Belinda Judelman. "Perceived Safety and Separated Bike Lanes in the Midwest: Results from a Roadway Design Survey in Michigan." Transportation Research Record: Journal of the Transportation Research Board, vol. 2672, no. 36, 2018, pp. 1–11., doi:10.1177/0361198118758395.

[11] League of American Bicyclists, 2024 Bicycle Friendly Community Public Survey

more bicycle lanes and bicycle paths, improving existing bicycle lanes to add protection for cyclists, and reducing vehicle speeds. Of the approximately 300 responses, 234 listed additional bike paths or bike lanes as a high priority, 179 listed improving existing bike lane protection, and 77 listed reducing vehicle speeds or providing traffic calming options. This data enforces that increasing bike lane milage and bike lane protection (e.g., making bike lanes more comfortable/less stressful) are high priorities for community members.

Strategic Approach to Increasing the Number of People Bicycling

Cities around the world have achieved their goals to increase the number of bicycling trips (i.e., mode shift) by applying focused strategies to improve bicycle network connectivity and comfort. While some of the examples that are show cased in this section may differ in size or urban form from Redmond, the commonality they all share is they have moved the needle in creating a more connected, high comfort bicycle network or have policies or programs that have increased bicycle ridership. These strategies can be wholly or partially applied in Redmond to significantly increase bicycle ridership.

Action 1: Convert Short Trips to Bicycle Trips

Focusing on providing bicycle infrastructure to serve trips under approximately 2 miles in length can maximize the mode shift return on investment. Short trips between 0.5 – 2 miles is a distance range where bicycling and micromobility can be the preferred mode of transportation, as they can be faster and more flexible than driving or using public transit and more time competitive than walking. Making biking (and micromobility) the most convenient choice for these short trips will encourage more people to bicycle and maximize the City's return on investment of bicycle infrastructure, reduce vehicle trips, and reduce GHG emissions. Complementary land use policies that support mixed use development and neighborhood siting of educational and care- facilities provides residents access to a variety of nearby destinations that are easier to get to by bicycle. Redmond 2050 embraces this "complete neighborhood concept" and
expands mixed-use development opportunities throughout the city.

Recommended Actions

- 1A: Prioritize bike infrastructure investments in areas where most short trips are occurring (Downtown Redmond, Overlake, and Southeast Redmond)
- 1B: Implement Redmond 2050 land use policies that reduce distances between residences and destinations that serve people's every day needs and support:
  - » Higher residential densities
  - » Transit-oriented development
  - » Mixed-use development
  - » Reduced parking requirements

Short Trip Focus

Austin's 2014 and 2023 Bicycle Plans focused on expanding bicycle facilities on routes with high concentrations of short trips in central Austin as well as to destinations such as schools, parks, business, and shopping districts in neighborhoods throughout the city. Protected bicycle lanes to transit stations and secure bicycle parking at these stations support linking shorter bicycle trips with longer trips on transit. Separated bicycle facilities, urban trails, and "quiet streets" with traffic calming devices for motor vehicles and wayfinding signage for bicyclists are key features of Austin's bicycle infrastructure.

- 1C: Support Transportation Demand Management (See Chapter X) and Safe Routes to Schools programs that encourage bicycling and walking, and reduce traffic volumes around schools.[12]

Bicyclist Safety

Building safe bicycle infrastructure and reducing vehicles speeds are the most effective strategies for making bicycling a safe mode of transportation. Good bikeway design and slower vehicle speeds promote safe interactions between bicyclists, micromobility users, pedestrians, and vehicles. Education does have a role to play in bicycle safety and should be focused on basic bicycle handling skills, understanding laws, and familiarizing people with new bicycle infrastructure such as bicycle signals, bike boxes, separated bike lanes, etc. Chapter X – Transportation Demand Management includes actions that address bicycle safety education (also as means of encouraging bicycling) and the Safer Streets Action Plan also includes an action focused bicycle safety.

[12] "City of Austin Bicycle Plan." 2023. https://www.austintexas.gov/sites/default/files/files/Transportation/Adopted%202023%20Bicycle%20Plan_FULL.pdf.

FIGURE 4: BICYCLING AND MICROMOBILITY ARE EASY AND FLEXIBLE WAYS TO ACCESS THE SERVICES AND AMENITIES OFFERED BY MIXED USE DEVELOPMENT (IMAGE CREDIT: CITY OF REDMOND)

Action 2: Connect to Light Rail and Bus

Creating low-stress bikeway connections to bus stops and light rail stations is an impactful "first-last mile" strategy to increase access to transit for both local and regional trips.

The new Overlake Village, Redmond Technology, Downtown Redmond, and Marymoor Village light rail stations are fantastic opportunities to connect bicycling with transit. Projected ridership of the East Link extension is 43,000-52,000 daily riders by 2026[13]. Building bicycle facilities that connect with these stations will expand the catchment area of the stations, help form new habits for light rail passengers to reach the station by bicycle and help grow transit ridership. Bicycle facilities that connect stations to destinations such as grocery stores, daycare centers, and schools will allow for trip chaining *en route* between transit and residences. These facilities are prioritized for implementation as described later in this chapter.

All Sound Transit and King County Metro buses have bicycle racks on which riders connecting by bicycle can place their bikes to have them transported to their destination. Ensuring that bus stops are accessible by the low-stress bikeway network can encourage bike to bus and bus to bike trips, particularly for more regional bus trips.

Recommended Actions

- 2A: Prioritize high-comfort bicycle facilities that connect to light rail and bus stops.
- 2B: Provide sufficient secure bicycle parking at transit centers and mobility hubs (see Transit Chapter).
- 2C: Ensure consistent availability of bike/scooter share at Transit Centers.

Bike to Rail

Integrating bicycles with transit expands the catchment area of stations from the typical ½ mile walking radius to 2-5 miles, a strategy successfully implemented in countries like the Netherlands where approximately 25-30% of urban bicycle trips are made to or from train stations, supported by a dense rail network and high-quality bicycle infrastructure. Extensive secure bicycle parking is offered at stations. This multimodal approach helps improve accessibility and convenience for all transit users.

In the United States, many cities' planned bicycle networks prioritize bikeway connections and wayfinding to transit hubs. Regional examples include the cities of Shoreline, Seattle, and Federal Way.

[13] "Downtown Redmond Link Extension | Project Map and Summary | Sound Transit." Www.soundtransit.org, www.soundtransit.org/system-expansion/downtown-redmond-link-extension.
Kager, Roland. 2022. Review of The Bike+Train Land-Use/Transportation System. Presented at the Planning the Cycling City Summer Course, July 2022.
"Renting the OV-Fiets | Door to Door | NS." n.d. Dutch Railways. https://www.ns.nl/en/door-to-door/ov-fiets.

FIGURE 5: THE NEW REDMOND TECHNOLOGY STATION BRIDGE CONNECTS BIKEWAYS, TRANSIT, AND EMPLOYMENT CENTERS (IMAGE CREDIT: CITY OF REDMOND)

Action 3: Promote E-Bikes and E-Scooters

The growing popularity of electric bikes (e-bikes) can be attributed to their ability to overcome challenging terrain and cover longer distances, making them a viable alternative to motor vehicles. The City of Redmond currently has a contract with a vendor that provides e-scooters and e-bikes for rent throughout the city. This service has proven to be very popular, with over 282,000 rides completed since the pilot program began in 2019. The median distance per trip has increased from 0.5 miles in 2020 to 0.9 miles in 2024, proving that Redmond's Shared Micromobility program is a viable first-last mile transportation mode.

Personal e-bike ownership is rapidly growing in the US and is expected to grow more than 15 percent annually between 2023 and 2030.[14] The rate of e-bike adoption (and its impact on greenhouse gas emissions and vehicle miles traveled) depends on the cost of e-bikes, individual choices, and the provision of infrastructure that is safe and comfortable for e-bike users.

An e-bike lending libraries is a strategy Redmond should explore to provide opportunities for more people to see what it is like to ride an e-bike. Such libraries lend e-bikes for an extended period of time (typically 1 to 3 months) so people can experience an e-bike and have time to use it for a variety of trip purposes to discover how they can effectively integrate an e-bike into their daily travel demands.

E-Bike Incentives

Denver has gained recognition for its successful e-bike incentives. The city launched an e-bike voucher program in April 2022, offering $400 vouchers for all residents and up to $1,200 for income-qualified individuals, with additional funds for e-cargo bikes. Since its launch, Denver has invested $4.7 million, providing vouchers to 4,734 residents.

A survey of recipients suggested notable changes in transportation habits, with participants riding an average of 26 miles per week and replacing 3.4 vehicle trips, collectively reducing vehicle miles traveled by 100,000 miles per week. Lower-income recipients were particularly active, averaging 32 miles per week.

Washington State DOT is launching its own e-bike rebate program in 2025. This program will offer qualifying applicants rebates for either $1,200 or $300 depending on household income. They expect to give out about 8,500 vouchers, an amount far less than expected demand.

[14] U.S. E-bike Market Size, Share & Trends Analysis Report By Propulsion Type, By Drive Type, By Application, By Battery, By End-use (Personal, Commercial), And Segment Forecasts, 2023 - 2030

Another way the City of Redmond can influence e-bike adoption is to provide financial incentives for people to purchase e-bikes. The Rocky Mountain Institute (RMI) developed a calculator that allows users to explore the potential benefits of e-bike incentives of various funding amounts and time horizons. The table below illustrates potential incentive scenarios and anticipated outcomes in terms of reductions in vehicle miles traveled and greenhouse gas emissions.

The RMI calculator estimates that replacing 25% of weekly car trips under 3 miles and 10% of trips under 5 miles with e-bikes over the next 10 years could reduce CO2 emissions and vehicle miles traveled (VMT) by 17% in Redmond. This tool can help Redmond assess the potential impact of various e-bike incentive programs. For example, with an annual $150,000 incentive over 10 years, annual citywide GHG reduction equates to approximately 3%. When annual incentives increase to $500,000 and $1,000,000 over 10 years, GHG reduction increases to 9% and 17%, respectively. More details are included in the appendix of the report.

Recommended Actions

- 3A: Support the establishment of e-bike lending libraries.
- 3B: Offer financial incentives for e-bike purchase at time of purchase.[15]
  - » Prioritize extensive and early outreach about e-bike incentive programs among lower income populations.
  - » Keep the e-bike incentive program application process simple and easy.
  - » Leverage relationships with local bike shops to support e-bike incentive program rollout and promote local purchase of e-bikes.
  - » Make a plan for how to collect data from individuals once they have purchased the e-bike[16]
- 3C: Develop safety and etiquette campaign that targets e-bike users. Bicycle safety education is discussed more in Chapter X – Transportation Demand Management and the Safer Streets Action Plan.

15 If e-cargo bikes receive a different level of incentive, try to make the definition of e-cargo bike as objective as possible.

16 City and County of Denver et al. Review of Denver's 2022 Ebike Incentive Program Results and Recommendations.

FIGURE 6: SHARED E-SCOOTERS AND E-BIKES ARE INCREASINGLY POPULAR IN REDMOND (IMAGE CREDIT: CITY OF REDMOND)

Action 4: Implement a High Comfort, Spine Network

The Spine Network (Figure 14) provides the primary, most direct connections between all of Redmond's neighborhoods and one or more Urban Centers. It is envisioned to be comprised of high comfort bikeways (level of traffic stress 1 and 2), including trails such as the Redmond Central Connector, Sammamish River Trail, and East Lake Sammamish Trail, separated bike lanes such as 156th Ave NE and Bel Red Rd, and bicycle boulevards such as 152nd Ave NE in the Grass Lawn neighborhood.

Implementation of the Spine Network is a high priority as these routes are expected to have the highest return on investment in terms of ridership given their directness to the major destinations people want to connect to. Some corridors on the Spine Network will take longer to implement due to costs while other segments can be more rapidly implemented using low-cost, "quick-build" materials. See Bicycle Network Strategy below.

Bicycle wayfinding and enhanced lighting along bikeways and shared use paths are investments that can increase the appeal of biking. Wayfinding signage helps direct bicyclists to key destinations. Good lighting and visibility at bicycle parking areas, on shared use trails, and at intersections will help enhance safety, personal security, and comfort.

Recommended Actions

- 4A: Complete "Spine Network" to include 100% high comfort bicycle facilities by 2035.
- 4B: Install wayfinding, lighting, and other features such as lean bars, bicycle near-side signals to enhance safety and comfort on the Spine Network.
- 4C: Install traffic diverters and traffic calming interventions on bike boulevards to complete local neighborhood network.
- 4D: Craft tailored messaging with compelling case studies and data to support bike network build out, especially when tradeoffs might be involved.[17]

Quick Build, Funding, and Communication

Jersey City, New Jersey, successfully implemented 10 miles of protected bike lanes in one year using quick-build materials, completing about a quarter of its planned bike network. Seattle used similar techniques for a rapid roll out of separated bike lanes on 2nd and 4th Avenues, with 4th Avenue recently receiving a permanent upgrade.

In 2020, the Cambridge, MA City Council amended its Cycling Safety Ordinance, setting ambitious requirements for 25 miles of separated bike lanes within seven years. Using a "quick build" approach with lightweight materials like flex posts and on-street parking lanes, the City rapidly installed 14.22 miles of separated lanes in four years.

In addition to infrastructure funding, coalition building, and targeted messaging are key to gaining community support for more rapid bike network expansion. The People for Bikes "Final Mile" program illustrates this point.

[17] "The Final Mile." 2022. Peopleforbikes.org. 2022. https://finalmile.peopleforbikes.org/.

- 4E: Deploy quick build and pilot projects.[18]
- 4F: Evaluate quick build and pilot projects, iterate designs as needed.
- 4G: Develop effective maintenance strategies for all bikeways (See Chapter X-Maintenance and Preservation).
- 4H: Update quick build and pilot projects with more durable, permanent infrastructure.
- 1I: Update the Bicycle Wayfinding Design Manual (2015) to align with current best practices and design standards.

[18] Streetfilms®. 2019. "Jersey City Uses Surveys, Rides & Tactical Urbanism to Generate a Bike Master Plan." YouTube. August 15, 2019. https://www.youtube.com/watch?v=G3I1_ud5c94.

FIGURE 7: QUICK BUILD MATERIALS SUCH AS THESE "ARMADILLOS" ON THE 150TH AVE NE BIKE LANE CAN BE USED TO ROLL OUT NEW HIGHER COMFORT BIKEWAYS MORE RAPIDLY (IMAGE CREDIT: CITY OF REDMOND)

Action 5: Implement the Neighborhood Bikeway Network

The Neighborhood Bikeway Network provides local connections between neighborhood destinations such as schools and parks, connects people to the Bicycle Spine Network and provides first-last mile connections to transit. The Neighborhood Bikeway Network is comprised primarily of bike boulevards, bike lanes, and short off-street paved pathway connections. Low vehicle speeds

achieved through traffic calming, wayfinding signage to help people navigate the network, and safe crossings of major streets are important components of the Neighborhood Bikeway Network. Infrastructure investments for the Neighborhood Bikeway Network include traffic calming, signage, pavement markings, and in some cases may require enhanced crossing treatments such as signals, crossing islands, etc. at major street crossings.

FIGURE 8: PATHWAYS SUCH AS THIS ONE CONNECTING TO 161ST COURT NE ENHANCE THE NEIGHBORHOOD BIKEWAY AND PEDESTRIAN NETWORKS BY PROVIDING MORE DIRECT ROUTING AND ACCESS TO SCHOOLS AND OTHER NEIGHBORHOOD DESTINATIONS.

Action 6: Balance Modes

Fulfilling Redmond 2050 goals and policies, and shifting trips from motor vehicles to bicycles requires making bicycling a competitive choice for travel in Redmond. Achieving this requires taking actions to rebalance Redmond's transportation system to strive for modal parity i.e., how Redmond allocates its public right of way and financial investments. It is important to consider how the entire population's

transportation needs are being served, especially those unable to drive and those who choose not to (potentially up to 25 percent of the driving age population[19]).

Balancing modes requires various actions that may reduce the convenience of driving, such as reducing motor vehicle speeds or space allocated to vehicle traffic or parking to create safer and more comfortable conditions for bicycling, as well as enacting various policies to discourage driving, especially for short trips (reducing car parking availability, charging more for parking, etc.).[20],[21]

Recommended Actions

- 6A: Implement traffic calming and traffic diversion measures to create higher comfort conditions for bicyclists of all ages and abilities.
- 6B: Establish parity in transportation funding and street space allocation to achieve mode shift and equity goals. For example, if the goal is to achieve 15 percent bicycle mode share, it would be reasonable to spend at least 15 percent of transportation funding on building a high comfort bike network.
- 6C: Within constrained corridors evaluate the expected costs and benefits of removing vehicle lanes to create space for high comfort bikeways, taking into account safety, vehicle congestion, VMT and GHG reduction.
- 5D: Prioritize high comfort bicycle access over on-street parking (see Chapter X – Curbspace Management).

Action 7: Provide Convenient, Plentiful, and Secure Bike Parking

The bicycle can be a door-to-door travel mode if bicycle parking is sufficient for both short- and long-term needs at neighborhood commercial centers, grocery stores, schools, transit facilities, and multi-family housing. Bike parking should be ubiquitous, easy to use, and free or very low-cost.

Changing Priorities

Portland, Oregon expanded its bike network in the 1990s by leveraging traffic calming and diversion in residential areas, creating a network of 100 miles of neighborhood greenways that are considered the "backbone of the city's Safe Routes to School network" and connect neighborhoods, parks, schools, business districts, and residences.

In addition to its neighborhood greenway program, Portland has a long history of supporting multimodal trips to its downtown central business district when it began limiting motor vehicle parking availability in the 1970s to address air quality issues. From 1975 to 1997, Portland maintained a cap on the total number of parking spaces allowed Downtown, even as the metro area's population increased by 50%.

[19] Nondrivers: Population, Demographics & Analysis, Final Report, January 31st, 2023. nondriversstudyfinalreportsummaryreport.pdf

[20] https://www.portland.gov/Transportation/What-Are-Neighborhood-Greenways.

[21] JAQUISS, NIGEL . 2003. "Lots of Trouble the Turf War over Portland's Parking Spaces Heats Up." Willamette Weekly. June 3, 2003. https://www.wweek.com/portland/article-2124-lots-of-trouble.html#:~:text=From%201975%20until%201997%2C%20Portland,the%20cap%20was%20a%20boon

Recommended Actions

- 7A: Conduct inventory of existing public bike parking and update inventory as new bike parking is installed.
- 7B: Explore partnerships to establish an on-demand secure bike parking system throughout the city with initial focus within Urban Centers.
- 7C: Incentivize existing multi-family housing to retrofit property to include secure bicycle parking inside property or contribute to other secure, sheltered parking facilities in the public right of way adjacent to the property.
- 7D: Retrofit existing public facilities such as parks and schools to provide secure and easy to access bicycle parking.
- 7E: Collaborate with Sound Transit to ensure sufficient secure bicycle parking is provided at light rail stations as bicycle use grows.
- 7F: Create a city program for short-term bicycle parking, for example, providing businesses and organizations bike racks within the adjacent public right-of-way upon request, which could include conversion of an on-street parking spot(s) to a bicycle parking corral where multiple bicycles can be parked[22], [23]

Retrofitting Bike Parking

Portland's Bureau of Transportation (PBOT) offers a bike parking program in commercial districts, allowing property owners to request up to two free bike racks for installation on the sidewalk in front of the property, with additional racks available for $150 each. PBOT also has a program that converts on-street parking spots into bike corrals (groups of 6-12 racks), which can accommodate 12-24 bikes in the space of one or two parking spots. These corrals are prioritized at street corners to increase parking, improve pedestrian crossings, and boost business visibility.

22 22 "Apply to Install Bike Racks on the Sidewalk." 2018. Portland.gov. 2018. https://www.portland.gov/transportation/walking-biking-transit-safety/apply-install-bike-racks-sidewalk.

22 "Apply to Install Bike Racks in the Street." 2024. Portland.gov. 2024. https://www.portland.gov/transportation/walking-biking-transit-safety/apply-install-bike-racks-street.

23 "Bicycle Parking | Ddot." 2022. Dc.gov. 2022. https://ddot.dc.gov/page/bicycle-parking.

FIGURE 9: SECURE BIKE PARKING CONVENIENTLY LOCATED IN THE STREET ENCOURAGES PEOPLE TO USE BICYCLES FOR RUNNING ERRANDS AND ACCESSING SERVICES. (IMAGE CREDIT: CYCLE HOOP)

Bicycle Network Strategy

The bicycle network strategy includes planned new connections and upgrades to existing bikeways to create higher comfort bikeways. The network builds upon the existing bikeways in Redmond and past planning efforts, with the ultimate goal of people of all ages and abilities being able to get from anywhere to everywhere by bike or other micromobility devices. The build out of the Spine Network and a local neighborhood network will support this goal. The prioritized implementation of the bicycle network will maximize the opportunity to convert short driving trips to biking. The bicycle network also includes connections to surrounding communities such as Bellevue, Kirkland, Sammamish, and Woodinville and their bikeways.

The planned bicycle network is grounded in the following principles:

- Connected: It is possible to get from anywhere to everywhere by bicycle. Emphasis is placed on creating a Spine Network and connecting people to light rail, schools, major employment centers, and commercial centers.
- Direct: Going by bicycle offers the most direct route to important destinations.
- Cohesive: Similar designs provide consistency, so bicyclists, pedestrians, and motorists know what to expect when they encounter a bicycle facility.[24]
- Safe and Comfortable: On streets with high motor vehicle traffic volumes and speeds, high comfort, separated bicycle lanes or shared use paths are provided. Protected intersections and other treatments provide safer continuity for bicycle facilities at intersections. Bicycle boulevards provide further comfort on streets with lower traffic volumes and speeds.
- Multimodal: Bicycling is the preferred mode to reach light rail stations and bus stops for trips 0.5 – 3.0 miles in length, with high comfort bicycle facilities provided to all existing and future light rail stations and other mobility hubs. Bicycle racks on buses support connections to transit in areas not connected by light rail.

The Bicycle Spine Network

Figure 14 below shows the foundation of Redmond's planned network of bikeways, a Bicycle Spine Network, which includes key links providing connectivity from and within each of Redmond's neighborhoods to key destinations and activity centers. The Spine Network will consist of high comfort (LTS 1 or LTS 2) bicycle facilities—primarily shared-use pathways, separated bike lanes, and bicycle boulevards. The City of Redmond's goal is to complete the Spine Network by 2035, recognizing that some corridors that have significant physical or environmental constraints and high costs could take longer to implement.

The Neighborhood Bikeway Network

This network will connect people's homes to neighborhood schools, parks, the Bicycle Spine Network, and serve as first-last mile connections to bus routes. It will focus on traffic calming and be comprised primarily of bike boulevards, bike lanes, and short off-street paved pathway connections.

[24] The 2023 updated Bicycle Facility Design Manual will support consistency in the design and construction of future bicycle facilities in Redmond.

Bikeway Types

Figure 15 later in this chapter shows the planned bicycle network, identifying existing bikeways and planned bikeways by bikeway type (e.g., separated bike lane, shared use path, etc.). These bikeway types, their design parameters, and compatibility with various contexts and conditions are explained in the Bicycle Facility Design Manual (2023). Figure 10, Figure 11, Figure 12, and Figure 13 illustrate some examples of existing high comfort bikeways in Redmond.

FIGURE 10: SEPARATED BIKE LANE ON 152ND AVENUE NE (IMAGE CREDIT: CITY OF REDMOND)

FIGURE 11: TRAFFIC CALMED BICYCLE BOULEVARDS SUCH AS THIS ONE ON 152ND AVENUE NE IN REDMOND PROVIDE IMPORTANT CONNECTIONS BETWEEN HOMES AND NEIGHBORHOOD DESTINATIONS LIKE SCHOOLS AND PARKS (IMAGE CREDIT: TOOLE DESIGN)

FIGURE 12: REDMOND'S SHARED USE PATHS (REDMOND CENTRAL CONNECTOR TRAIL SHOWN HERE) ARE POPULAR TRANSPORTATION AND RECREATIONAL FACILITIES (IMAGE CREDIT: CITY OF REDMOND)

FIGURE 13: WAYFINDING SIGNAGE HELPS BICYCLISTS NAVIGATE THE NETWORK AND CONNECT TO THEIR FINAL DESTINATION. (IMAGE CREDIT: CITY OF REDMOND)

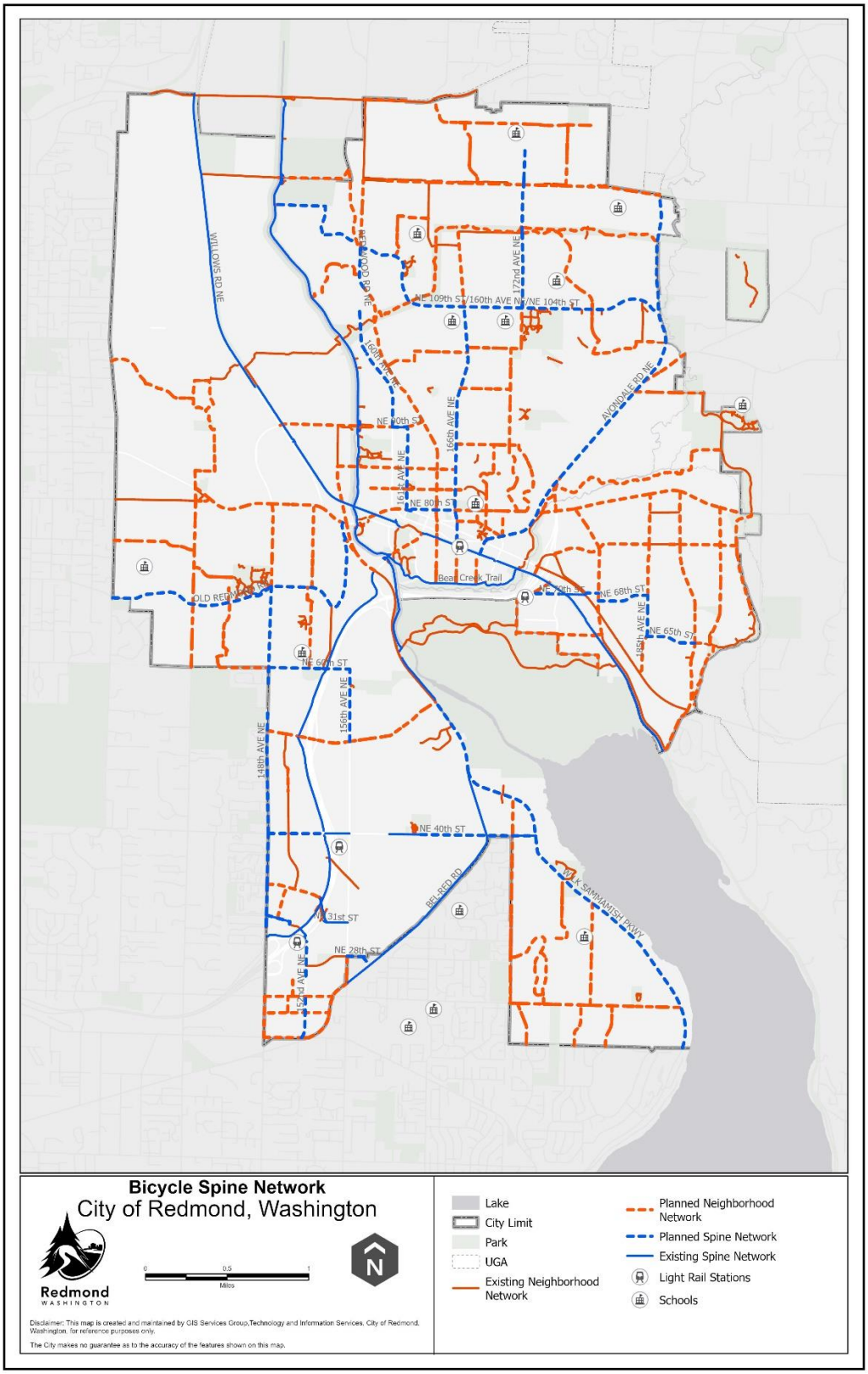

FIGURE 14:SPINE NETWORK

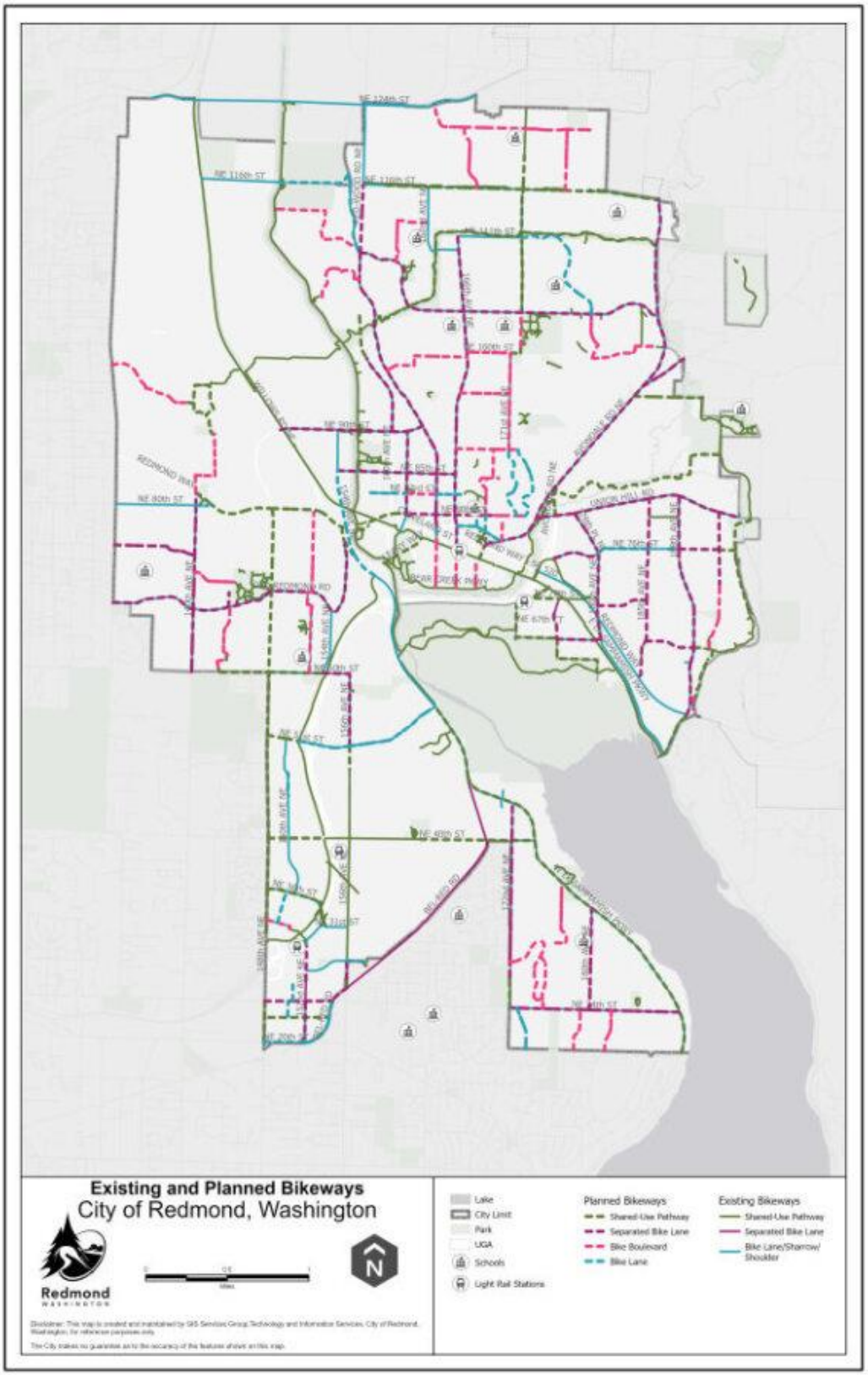

FIGURE 15: EXISTING AND PLANNED BICYCLE FACILITIES

Implementation

The City of Redmond will focus on implementing the Spine Network and other high priority projects identified in Figure 16 below. However, the City will also consider other factors when deciding what to build each year, such as the feasibility and cost of each project; opportunities to "piggyback" on other capital projects (e.g., stormwater); and time needed to plan, apply for grant funding, and conduct engineering and design.

Near-term vs. Long-term Implementation

To maximize bicycle and micromobility ridership the City of Redmond needs to implement a connected network of low-stress bikeways that connect people to destinations and allow them to meet their everyday needs, including schools, transit, parks, shopping, and services. Communities that have had the most success in significantly increasing the number of people bicycling have strategically invested in building out their bike networks and doing so quickly. Often these cities have relied on so called rapid implementation with a focus on using lower- cost quick build materials. While some critical connections in the planned bicycle network can be accomplished in the near-term (0-5 years) using rapid implementation methods, others will be longer-term (5-10 years or more) due to physical or environmental constraints and associated high costs.

Implementation Through Capital Projects

Typically, bikeway projects such as separated bike lanes, shared use paths, and bicycle boulevards are implemented through the City's capital improvement program, which dedicates City funds to implement capital projects (i.e., major infrastructure projects). These types of projects tend to have longer implementation timeframes as it may take time to allocate sufficient City funds to cover the total project costs given many other competing capital project funding needs and/or secure grant funding. Examples of bikeways that have been implemented in this way include the Bel-Red buffered bike lanes and Redmond Central Connector Trail.

Implementation Through Development

Redmond has been fortunate to have had a high level of commercial and residential development. Any development must pay transportation impact fees and may also be required to build infrastructure that has been identified in the City's Transportation Facilities Plan or determined to be necessary to mitigate impacts to the transportation system. The implementation timeline for these projects tends to be longer as it depends on new development occurring and often new development projects can take several years to construct from the time of initial application. Several key segments of Redmond's Bicycle Spine Network have been built by development, including shared use paths on NE 40th St and 156th Ave NE and separated bike lanes on 152nd Ave NE. As Redmond continues to grow there will be more opportunities to leverage this growth to build the planned bikeway network.

Rapid Implementation

More rapid implementation of bikeways is possible, in some cases. Such projects use lower cost quick build materials (e.g., flexible posts, c-curb) to separate bicyclists from motor vehicles. Projects that do not require modifications to other infrastructure such as traffic signals, drainage, etc., and that can be designed and implemented by City staff are typically the best candidates for rapid implementation. Many parts of the Neighborhood Bikeway Network are good candidates for more rapid implementation, however it is necessary to prioritize these connections given the extensiveness of the network and budget limitations. The City will look for these rapid implementation opportunities to close priority gaps in the bikeway network in the nearer-term until funding can be secured for longer-term, more permanent solutions.

Prioritization Framework

Planned bicycle facilities have been prioritized using a framework that reflects the goals and strategies outlined earlier in this chapter. Specifically, the following metrics were used to prioritize segments of the bicycle network for implementation:

- Safety: Locations with high density of fatal and serious injury (FSI) crashes received higher priority
- Equity: This metric prioritized projects that would serve people with greater needs for active transportation, based on the City of Redmond's Equity Analysis tool
- Proximity to key destinations (transit, schools, daycare centers, parks, and grocery stores): Prioritizes projects close to clusters of pedestrian and bicycle activity centers
- Comfort: Facilities designed to serve All Ages and Abilities provide a higher level of comfort and may attract more users. On steep streets, providing higher comfort is even more important to serve all users.
- Route Connectivity: Connection to one or more existing bikeways or modal corridors serves to extend the bike network and increase the ability for people to use the network to access destinations.
- Topography: Factors hilly routes into the prioritization of bicycle facility projects
- Spine Network: Projects along the Spine Network receive additional priority
- Short trip density areas: Locations where the highest density of short trips occur have the greatest potential for mode shift to reduce VMT and GHG emissions. Facilities in hilly areas with high short trip density may receive higher priority because if an area is flat, we may see more trip conversion from vehicle to bikes.

Table 1 below provides a summary of the planned bicycle facility mileage by bikeway type and priority level. The planned bikeway network includes 72.8 miles total of planned bikeways, including 22.4 miles of shared-use pathways and 29.3 miles of separated bike lanes. The planned Spine Network includes 24.7 miles of bikeways.

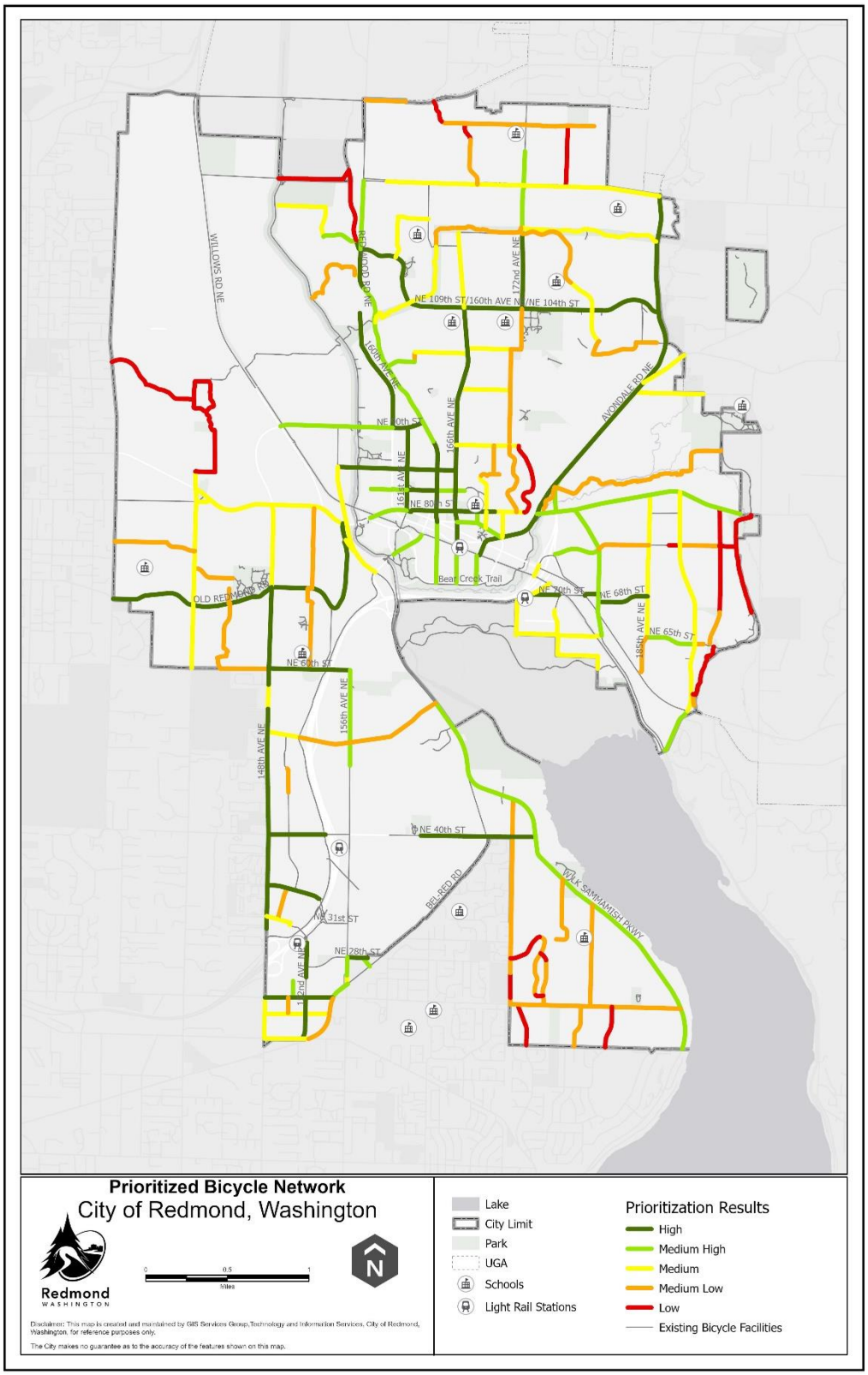

FIGURE 16: PRIORITIZED BICYCLE NETWORK

TABLE 1: PLANNED BICYCLE NETWORK MILEAGE BY BIKEWAY TYPE AND PRIORITY LEVEL

Priority Level → **Bikeway Type** ↓	High No. Miles	Medium High No. Miles	Medium No. Miles	Medium Low No. Miles	Low No. Miles	Total No. Miles by **Bikeway** Type
Shared-Use Pathway	8.3	1.8	7.6	3.2	1.6	**22.4**
Separated Bike Lane	15.9	4.7	4.7	3.6	0.4	**29.3**
Bicycle Boulevard	0.2	1.1	3.2	6.8	1.9	**13.3**
Bike Lane	0.6	0.6	1.4	3.3	1.7	**7.5**
Total No. Miles by Priority	**24.9**	**8.1**	**17.2**	**16.9**	**5.6**	**72.8** Total Miles Planned Bikeways
Spine Network	21.9	1.7	1.0	0.0	0.0	**24.7** Total Miles Spine Network

Spine Network

The Spine Network consists of separated bike lanes, shared use paths, and bicycle boulevards on low-speed, low-volume neighborhood streets. Table 2 below summarizes the remaining segments of the Spine Network and the anticipated timeframe (Near-term, or 0-5 years and Long-term, or 5-10 years) for their implementation. Some segments with near-term implementation timeframes may be good candidates for more rapid implementation (0 – 2 years), which will be determined by staff capacity, street work capabilities, and whether or not there are major costs items related to drainage, signals, etc.

TABLE 2: SPINE NETWORK IMPLEMENTATION TIMEFRAME

Street Name	From	To	Planned Bikeway	Status	Timeframe
148th AVE NE	Old Redmond Rd	NE 60th ST	Shared-Use Path	Planned	5-10 years
148th AVE NE	NE 51st ST	NE 40th ST	Shared-Use Path	Planned	5-10 years
148th AVE NE	NE 40th ST	NE 31st ST	Shared-Use Path	Planned	0-5 years
152nd AVE NE	NE Hopper Wy	Da Vinci NE	Separated Bike Lane	Planned	0-5 years
160th AVE NE	NE 90th St	Road End	Separated Bike Lane	Planned	0-5 years
161st AVE NE	NE 90th ST	Redmond Way	Separated Bike Lane	Planned	0-5 years

NE 28th Ave NE	156th Ave NE	Shared-Use Path between Bel-Red Road and NE 28th St	Bike Lane	Planned	0-5 years
NE 36th ST	148th AVE NE	SR 520	Shared-Use Path	Planned	0-5 years
NE 60th St	154th Ave NE	156th Ave NE	Shared-Use Path	Planned	0-5 years
OLD REDMOND RD	W Lake Sammamish Pkwy NE	132nd AVE NE	Separated Bike Lane	Planned	0-5 years
W LK SAMMAMISH PKWY	Bel-Red RD	NE 51st ST	Shared-Use Path	Planned	0-5 years
152nd AVE NE	NE 20th ST	NE 24th ST	Separated Bike Lane	Planned	5-10 years
160th AVE NE	Road End	NE 102nd Way	Shared-Use Path	Planned	5-10 years
166th AVE NE	Cleveland ST	NE 91st ST	Separated Bike Lane	Planned	5-10 years
166th AVE NE	NE 104th ST	NE 111th ST	Separated Bike Lane	Planned	5-10 years
AVONDALE RD NE	Redmond Way	NE Novelty Hill RD	Separated Bike Lane	Planned	5-10 years
AVONDALE RD NE	NE Novelty Hill RD	NE 116th St	Separated Bike Lane	Planned	5-10 years
NE 109th ST/160th AVE NE/NE 104th ST	Red-Wood Rd NE	Avondale RD NE	Separated Bike Lane	Planned	5-10 years
NE 40th ST	148th AVE NE	SR 520	Shared-Use Path	Planned	5-10 years
W LK SAMMAMISH PKWY	Southern City Limit	Bel-Red	Shared-Use Path	Planned	5-10 years
NE 40th ST	163rd AVe NE	172nd Ave	Shared-Use Path	Constructed by 2028	0-5 years
NE 85th ST	166th Ave NE	Sammamish River Trail	Separated Bike Lane	Constructed by 2027	0-5 years
NE 70th ST to 180th AVE NE Connector	Redmond Way	180th Ave NE	Shared-Use Path	Constructed by 2026	0-5 years
148th AVE NE	NE 40th ST	NE 36th ST	Shared-Use Path	Design	5-10 years
148th AVE NE	NE 36th ST	NE 31st ST	Shared-Use Path	Design	5-10 years
NE 90th ST	160th Ave NE	161st Ave NE	Separated Bike Lane	Planned	5-10 years
RED-WOOD RD NE	NE 106th ST	NE 109th ST	Separated Bike Lane	Planned	5-10 years

Related Plans, Policies, and Programs

The Bicycle Network implementation is supported by several complementary plans, policies, and programs, including:

- Bicycle Facility Design Manual (2023): The recently updated manual provides design guidance for bikeways to ensure consistent design of new bikeways in Redmond. Notably, the design user for the Manual is the "Interested but Concerned" bicyclist, someone who is not comfortable with bike lanes and

may bike on sidewalks if bike lanes are provided. These bicyclists prefer LTS 1 or 2, off-street or separate bikeways or quiet traffic-calmed residential streets.

- City of Redmond Municipal Code: 12.06 Complete the Streets: Code requiring all transportation projects to provide appropriate accommodation for persons of all ages and all abilities, including bicyclists, pedestrians, transit users, as well as automobiles, freight and buses, in comprehensive and connected networks defined in the City's Transportation Master Plan.
- City of Redmond Municipal Code: 21.52.010 Transportation Concurrency: All proposed new developments are required to analyze its impacts to the transportation system. If the new development is located in an area identified in the Transportation Facilities Plan for an improvement, such as a planned bikeway or sidewalk, the developer would be required to incorporate this as part of the project or pay impact fees to the City for its implementation. Many of Redmond's existing bikeways have been constructed as part of new development through the Transportation Concurrency program.
- City of Redmond Municipal Code: 21.52.020 Mobility Management Program: Requires building owners to implement a mobility management program to reduce the level of traffic generation during the a.m. and p.m. peak hours. Requires all development applications that warrant transportation mitigation to comply with this code's requirements.
- City of Redmond Municipal Code 21.40.020 Bicycle Parking Requirements and Standards: Purpose is to (1) Promote bicycling as an important and integral mode of transportation which enables healthy lifestyles, is affordable, and reduces greenhouse gas emissions; (2) Provide requirements and standards efficient and safe bicycling parking meeting the parking needs of specific uses; and (3) Provide the necessary bicycle parking facilities for a bicycle-friendly community.
- Safer Streets Action Plan (2025): This plan provides a roadmap for achieving zero fatal and serious injury crashes in Redmond. Grounded in the Safe System approach, it identifies policy, programmatic, a high risk network where safety improvements should be prioritized, and provides details on infrastructure improvements that should be made on specific corridors.
- Redmond School Pool Program: City of Redmond active travel to school encouragement program that works with Lake Washington School District schools located in Redmond to provide marketing materials, education on alternative commuting safety topics, and ideas for events like Walk to School Days to encourage a reduction in drive alone trips to school and Bike Rodeos to learn about road safety and bike handling.
- Parks, Arts, Recreation, Culture, and Conservation (PARCC) Plan: This plan identified completing and expanding trail system connections as one of the highest capital project priorities during the community engagement process, and walking was the top activity for Redmond residents. The plan supports improving trail access for transportation options as essential to maintaining a healthy and livable community and promoting alternatives to motor vehicle use.
- Stormwater and Surface Water System Plan: The City of Redmond Stormwater and Surface Water Systems Plan (SSWSP) guides actions to reduce and prevent flooding, protect and restore natural habitat, keep pollutants away from fish and wildlife, protect our drinking water aquifer, and keep our lake, river, and streams healthy for everyone to enjoy. The SSWSP identifies where stormwater and water system infrastructure needs be built or replaced, which can present opportunities to make modifications to the street, including construction of bikeways. Capital transportation projects are also opportunities to upgrade stormwater and water system facilities.
- Transportation Facilities Plan: The Transportation Facilities Plan (TFP) guides transportation investments that the City of Redmond expects to deliver by 2050.

- Six-Year Transportation Improvement Program: The six-year Transportation Improvement Program (TIP) is an annual planning document that outlines Redmond's transportation projects and programs for the next six years, based on the city's Comprehensive Plan and Transportation Facility Plan. It includes a list of projects with secured or expected funding, with the first three years typically fully funded, and the last three years often partially or completely unfunded.

Planning for Maintenance of Redmond's Bikeway Network

As Redmond plans and builds new bikeways, there will be a need for additional maintenance, potentially requiring increased staffing levels, additional funding, and/or the development of new maintenance protocols to maintain a level of service that supports safe and comfortable operation. This is particularly true for separated bike lanes that may require more frequent seasonal maintenance, specialized equipment, and have more pavement markings and other features requiring periodic maintenance and replacement. It is important for the City to proactively plan and account for these needs. Chapter X – System Maintenance and Preservation provides more discussion on maintenance of the bikeway network.

Transportation Master Plan Update

Chapter Review: Freight & Goods Delivery

Report Structure

1. Executive Summary
2. Introduction
3. Street System
4. Pedestrian
5. Bicycle
6. Transit
7. *Curbspace*
   - *Mayor reviewed Jan. 2025, Council reviewed Jan. 2025*
8. **Freight & Goods Delivery**
9. Transportation Demand Management (TDM)
10. E-Mobility
11. Technology Forward
12. Maintenance
13. Monitoring Progress (Performance Metrics)
14. Appendices

Key Themes

- Identify Redmond's designated freight route network
- Last-mile delivery
- Adapt to new and emerging last-mile delivery technologies

Review Timeline

- Director Review: 1/29/2025
- Mayor Review: 2/7/2025
- Planning Commission Presentation: likely June 2025
- Council Staff Report: 3/18/2025
- Council Study Session: 3/25/2025

Freight & Goods Delivery Strategies

- Maintain designated freight routes, including a three-tiered route system based on the size of truck and cargo tonnage.
- Investigate options for improving freight data collection
- Consider adoption of innovative strategies to provide for safe and enhanced freight movement, reduced emissions, and application of clean technology (such as dedicated last-mile delivery loading zones, or accommodating autonomous delivery technologies)

FREIGHT AND GOODS DELIVERY PLAN (DRAFT)

1. Introduction

The movement of goods and services is a critical component of Redmond's transportation system. Between long-haul arrivals and last-mile deliveries, Redmond's entire street system is used in the movement of goods and services. The Southeast Redmond Industrial Center is an important freight hub for the Eastside, where long-haul trucks arrive with goods that are then sent to destinations across the Eastside in smaller vehicles. E-commerce is expected to have sustained growth resulting in more package deliveries to residents. Between 2017 and 2050, the Puget Sound Regional Council forecasts that freight transported within Washington state will increase by more than 40%, and that imports and exports will grow by more than 50%. These trends point to a need to maintain Redmond's designated truck routes to ensure timely and reliable movement of goods and to be forward thinking in terms of new approaches and technologies last-mile delivery solutions.

Supporting the Redmond 2050 Comprehensive Plan

This chapter contains strategies for ensuring safe and efficient movement of goods and services to, from and within Redmond. Strategies consider the needs of freight operators, businesses, residents, and consumers (TR-28).

Supporting Redmond 2050 Guiding Principles of Sustainability, Equity & Inclusion, and Resiliency

Equity and Inclusion: Making sure freight delivery access is available to all Redmond residents and businesses.

Sustainability: Reducing overall GHG emissions by implementing electric or low emissions delivery and pick up systems.

Resiliency: Promoting freight delivery strategies that minimize energy use and impacts to the surface transportation network and livable Urban Centers.

2. Existing Conditions

Overview of Current Infrastructure:

Redmond's freight route network consists of truck routes that connect to regional truck routes and provide local access to industrial areas such as the Southeast Redmond Industrial Center. Lacking direct rail and port access, Redmond's freight network is completely road-based.

The Redmond truck route system is based on the Washington State Department of Transportation's Freight and Goods Transportation System (FGTS). The FGTS features a ranking system of truck routes based on volume data and estimated tonnage. T-1 and T-2 class routes, or primary truck routes, are recognized as the highest volume and tonnage truck routes in the State, carrying at least four million tons of gross truck tonnage per year. Secondary truck routes are made up of T-3 and T-4 truck routes. T-3 class truck routes carry between 300,000 to 4 million tons per year. T-4 class truck routes carry at least 100,000 to 300,000 tons per year.

Redmond maintains a 39.7-mile four-tiered freight route system that includes local arterials. The 7.3-mile section of SR 520 freeway within the city limits is maintained by WSDOT and included as part of the

City's freight route network. These routes currently have higher volumes of trucks and are predicted to have higher volumes of trucks in the future. Truck routes also connect the major industrial and commercial area in the Southeast Redmond neighborhood and support the movement of goods between manufacturing companies and regional truck routes, which are important to the economic vitality of manufacturing and freight distribution companies in Redmond. All truck routes are built to a standard that accommodates heavy truck loads and may be designed to also provide safe access for people walking, biking and taking transit as is discussed in Chapter X- Street System Plan.

It should be noted that two FGTS-designated T-3 truck routes are not included in the City's truck route network. These are West Lake Sammamish Parkway, from the Bellevue City Limits to Bel-Red Road and NE 116th Street, from Avondale Road NE to SR 202. The reason for excluding these two routes is that they operate in heavily residential neighborhoods and there are alternative truck routes. These are corridors where the city will take future action to discourage through truck traffic.

Figure 1-1 below shows a map of the Redmond truck route system. Table 1-1 below summarizes Redmond's truck route system miles by truck route classification.

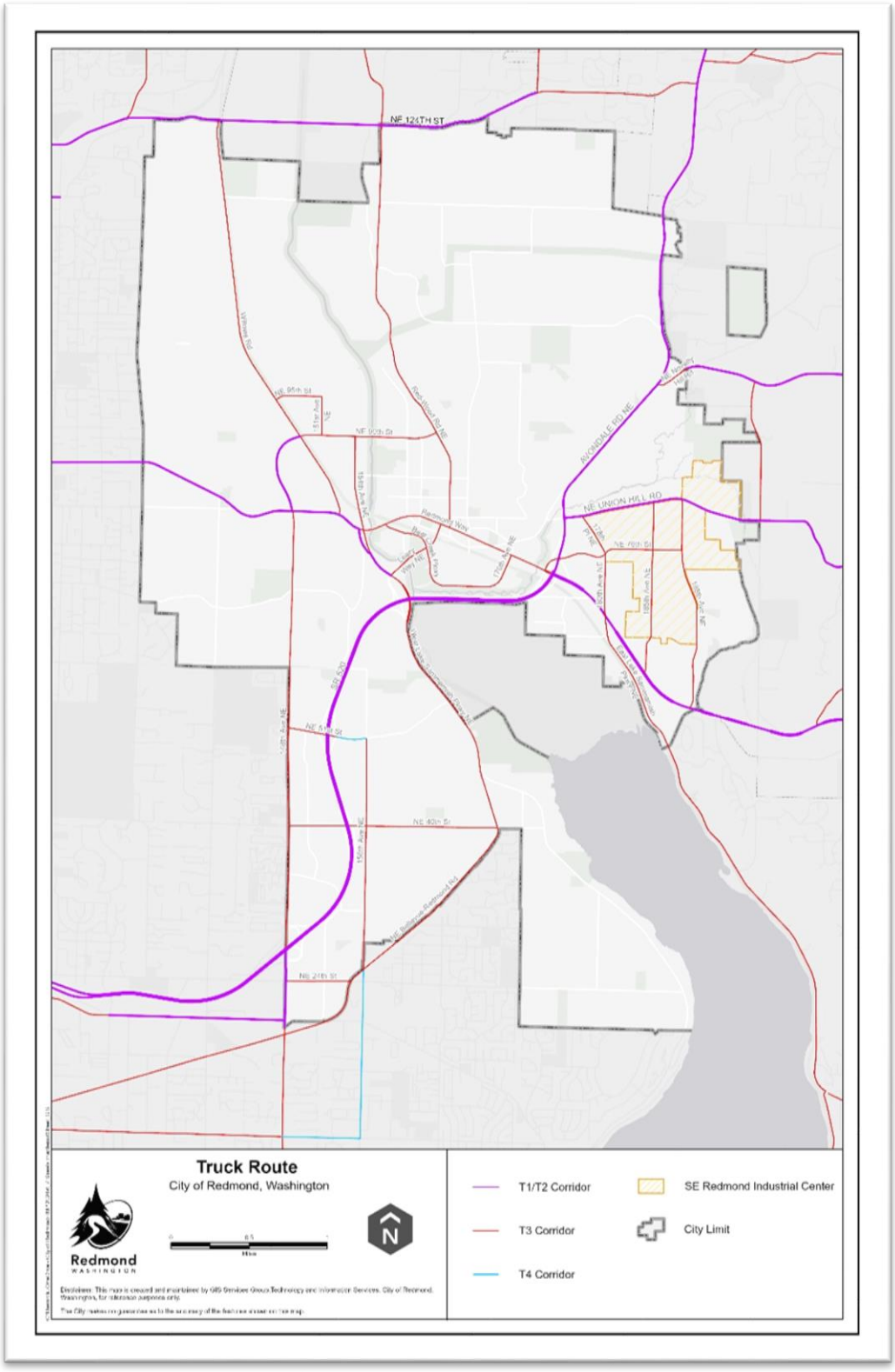

FIGURE 1-1: REDMOND TRUCK ROUTES

TABLE 1-1: REDMOND TRUCK ROUTE SYSTEM

Truck Route Classification	Centerline Miles
(Primary) T1/T2 Truck Route	17.9 (including 7.3 miles of SR 520)
(Secondary) T3 Truck Route	28.9
(Secondary) T4 Truck Route	0.2
	Total Miles: 47.0

Primary Truck Routes (T-1 and T-2) include:

- 148th Ave NE, from south city limits to SR 520
- 148th Avenue NE, from Redmond Way to Willows Road
- West Lake Sammamish Parkway NE, from Leary Way NE to Redmond Way
- Avondale Road, from NE Union Hill Road to north city limits
- NE Union Hill Road, from Avondale Road NE to east city limits
- Redmond Way, from 132nd Avenue NE to West Lake Sammamish Parkway NE

Secondary Truck Routes (T3 and T-4) include:

- 148th Avenue NE, from SR 520 to Redmond Way
- NE 90th Street, from Willows Road to SR 202 (Redmond-Woodinville Rd NE)
- 151st Avenue NE, from NE 90th Street to NE 95th Street
- NE 95th Street from 151st Ave NE to Willows Road
- West Lake Sammamish Parkway NE, Bel-Red Road to Leary Way NE
- 154th Avenue NE, from West Lake Sammamish Parkway NE to NE 90th Street
- 156th Avenue NE, from NE 28th Street to NE 40th Street
- 156th Avenue NE, from NE 40th Street to NE 51st Street
- Bear Creek Parkway, from Redmond Way to 168th Ave NE PVT
- 170th Avenue NE, from 168th Ave NE to SR 202 (Redmond Way)
- East Lake Sammamish Parkway NE, from South City Limits to SR 202 (Redmond Way)
- 180th Avenue NE from SR 202 (Redmond Way) to NE 76th Street
- 178th Place NE, from NE 76th Street to NE Union Hill Road
- 185th Avenue Northeast from SR 202 (Redmond Way) to NE Union Hill Road
- 188th Place NE, from SR 202 (Redmond Way) to NE Union Hill Road
- Bel-Red Road from NE 20th Street (City Limits) to NE 24th St (City Limits)
- Bel-Red Road, from 3200 Block (City Limits) to NE 40th Street
- Bel-Red Road, from NE 40th St, West Lake Sammamish Parkway NE
- Leary Way NE, from West Lake Sammamish Parkway, Redmond Way
- NE 124th Street, from SR 202 (W C/L), East City Limits
- NE 24th Street, from 148th Avenue NE (C/L), Bellevue-Redmond Rd (C/L)
- NE 40th Street, from 148th Avenue NE, SR 520

- NE 40th Street, from SR 520, Bel-Red Road
- NE 51st Street, from 148th Avenue NE, SR 520
- NE 76th Street, from SR 202 (Redmond Way) to 180th Ave NE
- NE 76th Street, from 180th Ave NE to 188th Ave NE
- NE Novelty Hill Road, from Avondale Road NE to East City Limits
- Redmond Way from West Lake Sammamish Parkway NE to SR 202 (164th Avenue NE)
- Willows Road from Redmond Way to NE 124th Street (Kirkland City Limits)
- NE 51st Street, from SR 520 to 156th Avenue NE

3. Strategies and Actions

3.1 Maintain Designated Primary and Secondary Truck Routes:

Redmond's freight network includes a two-tier street system comprising:

- Primary T-1 and T-2 Truck Routes: Key routes for high truck volumes, directly connecting Redmond with regional highways such as SR 520 and SR 202. These roads are designed for durability with features like strong pavement to support heavy vehicles. A minimum travel lane width of 11 feet is prioritized along these routes to provide more operating space for larger freight vehicles.
- Secondary T-3 and T-4 Truck Routes: These streets will generally operate with lower truck volumes and weight and provide more local access to businesses.

Action 3.1A: Consider efficient and safe truck movement in all street planning and design.

3.2 Restrict or Discourage Truck Traffic Where Incompatible

Whereas all Redmond streets are open to some degree of truck traffic – whether through truck traffic on major roads or last mile delivery on local streets – there may be streets where certain types of truck traffic is incompatible with surrounding land uses or other expected transportation modes.

Action 3.2A: Establish internal policies and procedures for restricting or discouraging truck traffic in corridors where such traffic is deemed incompatible with surrounding land users and/or transportation modes.

3.3. Investigate Options for Improving Freight Data Collection

Redmond uses traditional multi-modal traffic count methods for collecting freight data, which are time consuming, expensive and don't capture the performance of new and emerging freight movement strategies. New technologies, such as using commercial vehicle truck fleet data and other technology sources such as onboard GPS-enabled navigation systems, and cellphone-derived data supplied by third-party vendors for tracking vehicles may provide more efficient ways to collect freight data that can be used to better manage freight vehicle performance, thereby improving mobility on local city streets.

Action 3.3A: Explore and adopt new technologies or data sources to better track freight movement within the City.

3.4 Adopt innovative strategies to provide for safe and enhanced freight movement, reduced emissions, and application of clean technology.

3.4.1 Last-Mile Delivery Solutions

The increasing demand for last-mile delivery in urban areas requires innovative solutions. Strategies to reduce congestion and improve delivery efficiency for local businesses and residents, include:

Action 3.4.1A: Dedicated Loading Zones and Parking Regulations: Reduce congestion in high-demand areas like Downtown through strategically placed loading and unloading zones combined with improved parking regulations ensures smooth freight delivery operations and fair usage of high-demand urban areas.

Action 3.4.1B: Curb Space Delivery Reservations: As Redmond's Urban Centers attract more residents and businesses, demand for curb space will continue to intensify. Efficient, safe, and timely delivery of goods to businesses is critical to supporting thriving businesses and livable Urban Centers. As part of its overall curb space management efforts, the city will explore the use of an app-based curb space delivery reservation system where curb space demands are highest within Urban Centers. Preference within specific zones in Urban Centers could be given to zero-emission delivery vehicles.

Action 3.4.1C: Urban Micro-Consolidation Centers (UMCCs): UMCC's are locations where deliveries within a certain radius are dropped and reconsolidated to be delivered by more sustainable last-leg modes. They may be located within the public right-of-way or off-street sites. The City will work with shipping and logistic providers and support siting of UMCCs within or proximate to its Urban Centers where there are higher concentrations of package deliveries.

Action 3.4.1D: Parcel Lockers and Pickup Points: Explore regulatory or incentive-based approaches to implementation of parcel lockers and/or pickup points in Urban Centers to reduce the number of individual deliveries and resultant congestion and curbspace demand generated by delivery vehicles. Parcel lockers are convenient, centralized locations where consumers retrieve packages, cutting down on individual deliveries. Amazon Locker is an example of a parcel locker service. Pickup points are locations where online orders or parcels can be sent to or dropped off. This service is also known as out-of-home delivery and provides more flexibility than home delivery. Customers can choose the pickup location based on their convenience and schedules. UPS Stores are an example of a pickup point.

3.4.2 Autonomous and Drone Delivery Accommodation

Action 3.4.2A: Explore options and applicable federal and state regulations for future drone and autonomous vehicle zones to support safe, efficient last-mile operations.

Action 3.4.2B: Drone-Compatible Infrastructure: Investigate regulatory framework and infrastructural needs for establishing small landing and pickup areas for future drone delivery services.

- Autonomous Vehicle Types:

- Modular freight vehicles (gas or electric-powered) are one in which substantial components of the vehicle are interchangeable. This modularity is intended to make repairs and maintenance easier, or to allow the vehicle to be reconfigured to suit different functions.
- Shared autonomous vehicles, driverless vehicles that can sense and navigate their environment without human operations.
- Automated guided vehicles are driverless robots used to transport materials in warehouses, distribution centers (DCs), and manufacturing facilities using designated pickup and delivery routines.

3.4.3 Emissions Reduction and Clean Technology

Action 3.4.3A: Support expansion of EV charging infrastructure and explore establishing zero-emission delivery zones inside Urban Centers to promote zero emission last-mile freight and goods delivery.

Action 3.4.3B: Promote the use of small, low- or zero-emission delivery vehicles including electric cargo bikes and tricycles, and electric carts through sensible regulation and bikeway, pathway, and sidewalk design that accommodates such vehicles.

3.5. Consider Application of Freight-and-Bus Only Lanes

In the Puget Sound region, jurisdictions and transit agencies have adopted a strategy to reconfigure travel lanes on congested arterials to allow for special use conditions. One of these strategies are Business and Transit-only Lanes, or BAT lanes, which are curb lanes used only by right-turning vehicles and buses. They help buses move more efficiently through traffic and provide better access to local businesses.

Action 3.5A: Willows Road, a designated Secondary truck route, may present an opportunity for a variation of BAT lanes that would also permit freight vehicles. A northbound freight and bus only lane (FAB lane) would be added by repurposing existing bike lanes (no longer needed with the Redmond Central Connector) north of the 9900 Block to 124th Street and replacing one general purpose lane south of 9900 Block. This type of reconfiguration would remove slower operating transit and freight vehicles from general purpose lanes thereby, improving operations for all vehicles.

4. Related plans or policies

- WSDOT Freight System Plan–Freight Policies
- Puget Sound Regional Council, Regional Transportation Plan, Freight Policies
- King Countywide Planning Policies-Freight

Memorandum

Date: 4/8/2025
Meeting of: City Council Study Session

File No. SS 25-025
Type: Study Session

TO: Members of the City Council
FROM: Mayor Angela Birney
DEPARTMENT DIRECTOR CONTACT(S):

Police	Chief Darrell Lowe	425-556-2521

DEPARTMENT STAFF:

Police	Brian Coats	Deputy Police Chief

TITLE:
Automated Speed Safety Cameras, Amended City Ordinance, and Camera Vendor Service Agreement

OVERVIEW STATEMENT:

The Police Department is seeking Council's approval to proceed with the development of an automated speed safety program in school zones. Additionally, we request approval of the amended Redmond Municipal Code 10.25, which governs the use of automated traffic safety cameras.

We are also seeking approval of the contract with NovoaGlobal**,** the selected camera vendor, to implement this program effectively.

☐ **Additional Background Information/Description of Proposal Attached**

REQUESTED ACTION:

☐ **Receive Information** ☒ **Provide Direction** ☐ **Approve**

REQUEST RATIONALE:

- **Relevant Plans/Policies:**
  RCW 46.63.220
  HSHB 2384
  Safer Streets Action Plan
- **Required:**
  N/A
- **Council Request:**
  N/A
- **Other Key Facts:**
  N/A

OUTCOMES:

State law governing automated traffic safety cameras requires cities to conduct an analysis of proposed camera locations. This analysis must include equity considerations, such as the impact of camera placement on livability, accessibility, economics, education, and environmental health. Additionally, it must demonstrate a clear need for camera placement based on factors such as the presence of vulnerable road users, evidence of speeding, and collision history.

Placing automated safety cameras in school zones will enhance public safety by reducing excessive speeding in areas with high pedestrian and cyclist activity. By ensuring consistent enforcement, these cameras will help create safer environments for students walking or biking to school, families navigating drop-off and pick-up times, and all road users. The expected outcome is a measurable reduction in speeding, fewer near-misses and collisions, and overall improved safety for Redmond's most vulnerable road users.

A recent update to state law recommends that cities with existing speed safety camera ordinances amend them to align with new statutory requirements. Redmond Municipal Code 10.25 was originally adopted to authorize the use of automated traffic safety cameras for enforcing stoplight and school speed zone violations. As part of the ordinance update, language was added to expand the authorized use of automated traffic safety cameras to park zones, should the City consider placing cameras in those locations.

COMMUNITY/STAKEHOLDER OUTREACH AND INVOLVEMENT:

- **Timeline (previous or planned):**
  N/A
- **Outreach Methods and Results:**
  Fall 2024 Redmond Schools Parent/Guardian Questionnaire. 39.4% of respondents said slower vehicle speeds at surrounding schools would make them more comfortable with their child walking or biking to school.

  Another community questionnaire specific to speed safety cameras will be conducted in the spring of 2025. This questionnaire will provide more detailed information about the community's awareness and general acceptance of speed safety cameras.
- **Feedback Summary:**
  N/A

BUDGET IMPACT:

Total Cost:
Money generated from the revenue of this project pays the vendor services.

Approved in current biennial budget: ☐ **Yes** ☐ **No** ☒ **N/A**

Budget Offer Number:
228 Criminal Justice

Budget Priority:
Safe and Resilient

Other budget impacts or additional costs: ☐ **Yes** ☒ **No** ☐ **N/A**

If yes, explain:
N/A

Funding source(s):
Speed enforcement fines

Budget/Funding Constraints:
N/A

☐ **Additional budget details attached**

COUNCIL REVIEW:

Previous Contact(s)

Date	Meeting	Requested Action
9/19/2023	Committee of the Whole - Public Safety and Human Services	Receive Information
9/17/2024	Committee of the Whole - Public Safety and Human Services	Provide Direction
1/28/2025	Study Session	Provide Direction
3/18/2025	Committee of the Whole - Public Safety and Human Services	Provide Direction

Proposed Upcoming Contact(s)

Date	Meeting	Requested Action
N/A	None proposed at this time	N/A

Time Constraints:
None

ANTICIPATED RESULT IF NOT APPROVED:
Automated speed enforcement cameras will not be used as a resource in the City.

ATTACHMENTS:
Attachment A: Amended Redmond Ordinance 10.25
Attachment B: Speed Camera Program Analysis and Recommendations
Attachment C: Service Agreement Between the City of Redmond and NovoaGlobal, Inc.
Attachment D: NovoaGlobal Sole Source Justification.
Attachment E: Automated Speed Safety Camera Program Presentation.

CITY OF REDMOND
ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF REDMOND, WASHINGTON, RELATING TO THE USE OF PARK ZONE SPEED CAMERAS; AUTHORIZING USE OF THESE CAMERAS TO DETECT SPEED ZONE INFRACTIONS IN PARK ZONES; PROVIDING FOR SEVERABILITY AND ESTABLISHING AN EFFECTIVE DATE

WHEREAS, the use of automated traffic safety cameras is authorized to detect stoplight violations at arterial intersections, school speed zone violations, and speeding in park zones or areas identified as high-risk for vulnerable road users; and

WHEREAS, before deploying automated traffic safety cameras at a new location or relocating an existing camera, the City must prepare an analysis of the locations within the jurisdiction where automated traffic safety cameras are proposed to be located before adding traffic safety cameras and such analysis shall include an equity analysis as required by RCW 46.63.220, evaluating the impact on livability, accessibility, economics, education, and environmental health; and

WHEREAS, the safety of pedestrians, cyclists, and motorists in park zones will be enhanced by the use of automated traffic safety cameras placed on streets adjacent to City parks, thereby

promoting a safe environment for residents and park visitors of all ages; and

WHEREAS, the State Legislature has passed a law authorizing local jurisdictions to use automated traffic safety cameras subject to restrictions specified in that legislation; and

WHEREAS, the City Council of Redmond recognizes the value of implementing an automated enforcement program in furtherance of its goals in maintaining a safe traffic/pedestrian environment for its citizenry.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF REDMOND, WASHINGTON, DO ORDAIN AS FOLLOWS:

Section 1. Classification. The amendments to RMC 10.25.010-10.25.070 made in Section 2-7 of this ordinance are of a general and permanent nature and shall become a part of the Redmond Municipal Code.

Section 2. Amendment of Section. RMC 10.25.010 is hereby amended to read as follows:

10.25.010 Use of automated traffic safety cameras authorized.

The use of automated traffic safety cameras is authorized to detect (1) stoplight violations at arterial intersections, (2) school speed zone violations **and (3) park zone violations**, subject to the restrictions specified in state law [~~(CHAPTER 167, LAWS OF 2005, "TRAFFIC SAFETY~~

~~CAMERAS," CODIFIED AT RCW 46.63.170, WITH AN EFFECTIVE DATE OF JULY 24, 2005).~~] **(RCW 46.63.220, effective July 12, 2024)**.

Section 3. Amendment of Section. RMC 10.25.030 is hereby amended to read as follows:

10.25.030 Restrictions on use.

The use of automated traffic safety cameras is subject to the following restrictions:

A. Use of automated traffic safety cameras is restricted to arterial intersections**,** [~~AND~~] school speed zones, **and park speed zones** only.

B. Automated traffic safety cameras may only take pictures of the vehicle and vehicle license plate and only while an infraction is occurring. Pictures taken by automated traffic safety cameras must not reveal the face of the driver or any passenger in the vehicle.

[~~C. THE CITY SHALL CLEARLY MARK EVERY LOCATION WHERE AN AUTOMATED TRAFFIC SAFETY CAMERA IS USED BY PLACING SIGNS IN LOCATIONS THAT CLEARLY INDICATE TO A DRIVER THAT SHE OR HE IS ENTERING A ZONE WHERE TRAFFIC LAWS ARE ENFORCED BY AN AUTOMATED TRAFFIC SAFETY CAMERA. MARKINGS OR SIGNALS SHALL CLEARLY INDICATE WHEN AUTOMATED SAFETY CAMERAS ARE ENFORCING SCHOOL SPEED ZONE LAW.~~]

D. All locations where an automated traffic safety camera is used must be clearly marked with signage installed at least 30 days before the camera becomes operational. The signage must clearly inform drivers that they are entering an area where traffic violations are enforced by an automated traffic safety camera. Additionally, in school speed zones, the signage must explicitly indicate that automated safety cameras are being used to enforce school speed zone laws.

Section 4. Amendment of Section. RMC 10.25.050 is hereby amended to read as follows:

For the purposes of this chapter, "automated traffic safety camera" means a device that uses a vehicle sensor installed to work in conjunction with an intersection traffic control system and a camera synchronized to automatically record one (1) or more sequenced photographs, microphotographs, or electronic images of the rear of a motor vehicle at the time the vehicle fails to stop when facing a steady red traffic control signal or exceeds a speed limit in a school **or park** zone as detected by a speed measuring device.

Section 5. Amendment of Section. RMC 10.25.060(A) is hereby amended to read as follows:

A. In a traffic infraction case involving an infraction detected through the use of an automated traffic

safety camera, as described herein and in RCW 46.63.**220**[~~170~~], proof that the particular vehicle described in the notice of traffic infraction was in violation of RCW 46.61.055 or 46.61.440, together with proof that the person named in the notice of traffic infraction was at the time of the violation the registered owner of the vehicle, constitutes in evidence a prima facie presumption that the registered owner of the vehicle was the person in control of the vehicle at the point where, and for the time during which, the violation occurred.

Section 6. Amendment of Section. RMC 10.25.070 is hereby amended to read as follows:

Infractions detected through the use of automated traffic safety cameras, as described herein and in RCW 46.63.**220**[~~170~~], are not part of the registered owner's driving record under RCW 46.52.101 and 46.52.120. Additionally, infractions generated by the use of automated traffic safety cameras under this chapter shall be processed in the same manner as parking infractions as set forth in RCW 3.46.120, 3.50.100, 3.62.040, 46.16.216 and 46.20.270(3).

Section 7. Amendment of Section. RMC 10.25.080(D) is hereby amended to read as follows:

D. Any money received from penalties for red light**,** [~~AND~~] school speed zone**, and park speed zone** infractions detected

by an automated traffic safety camera shall be used to cover the cost of the automated traffic safety camera program and any money received that exceeds the cost of the program shall only be used for additional traffic safety programs and traffic safety capital improvements within the City.

Section 8. Severability. If any section, sentence, clause or phrase of this ordinance, of the Redmond Municipal Code, shall be held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other section, sentence, clause or phrase of this ordinance.

Section 9. Effective Date. This ordinance shall take effect and be in full force five (5) days after publication of a summary thereof consisting of the title.

ADOPTED by the Redmond City Council this _____ day of _____, 2024.

CITY OF REDMOND

_____
ANGELA BIRNEY, MAYOR

ATTEST:

_____
CHERYL XANTHOS, MMC, CITY CLERK (SEAL)

APPROVED AS TO FORM:

_____
DANIEL KENNY, CITY ATTORNEY

FILED WITH THE CITY CLERK:
PASSED BY THE CITY COUNCIL:
SIGNED BY THE MAYOR:
PUBLISHED:
EFFECTIVE DATE:
ORDINANCE NO.

City of Redmond

SPEED CAMERA PROGRAM ANALYSIS & RECOMMENDATIONS

February 5, 2025

Redmond
WASHINGTON

Brian Coats, Deputy Police Chief, Redmond Police Department and
Michael Hintze, Transportation Planning Manager, City of Redmond

EXECUTIVE SUMMARY

Automated traffic safety cameras have been shown to significantly reduce speeding and collisions, creating safer environments for all road users, particularly in school and park zones where vulnerable populations are most at risk. 2025 speed studies show significant speeding in school and park zones, with up to 62% of vehicles exceeding speed limits and 10 - 12% in certain park areas. Crash data (2019 - 2024) highlights traffic safety concerns, with school zones recording 47 crashes. In park zones there were 155 reported crashes, including one death and 36 injury-related incidents. Automated speed enforcement cameras in school zones will deter speeding and enhance safety for the City's vulnerable road users.

Automated cameras eliminate the potential for bias in enforcement by objectively targeting vehicle speed rather than the individual operating the vehicle. This ensures that all drivers are treated consistently and fairly.

The current proposal is to place automated speed enforcement cameras in school zones at the following locations:

- Redmond High School – 17272 NE 104th Street
- Redmond Middle School – 10055 166th Avenue NE
- Rose Hill Middle School – 13505 NE 75th Street

After implementing automated speed safety cameras in school zones, the Police Department proposes expanding the program to include park zones. Speed surveys have been conducted at the following locations:

- Grass Lawn Park – 7031 148th Avenue NE
- Idylwood Park – 3650 West Lake Sammamish Parkway NE
- Anderson Park - 7802 168th Avenue NE
- Marymoor Park – 6046 West Lake Sammamish Parkway NE
- Sixty Acres Park – 15200 NE 116th Street
- Esterra Park –2718 156th Avenue NE

Equity is a core guiding principle in the City of Redmond; all locations where speed safety cameras are proposed have higher percentages of one or more underserved populations than the city (except for the Idylwood Park area) (Table 1).

Speed safety cameras can potentially impose a financial burden on low-income individuals. To minimize these harms and comply with the RCW, the City of Redmond will coordinate with the Northeast District Court to allow various payment options.

A warning period of approximately 30 days will commence to assess and refine the system before issuing fines.

The Police Department will provide the City Council with an update on this data at least twice annually.

PURPOSE

This Speed Safety Camera Program Analysis and Recommendations report aims to evaluate proposed locations for automated traffic safety cameras within the City of Redmond, as required by RCW 46.63.220(3). This analysis ensures that camera placement decisions are informed by a thorough examination of considerations, including their impact on equity, livability, accessibility, economics, education, and environmental health.

Automated traffic safety cameras have been shown to significantly reduce speeding and collisions, creating safer environments for all road users, particularly in school and park zones where vulnerable populations are most at risk. Unlike traditional enforcement methods that require a uniformed police presence at every location, traffic safety cameras provide a cost-effective and scalable solution to changing driver behavior.

Automated cameras eliminate the potential for bias in enforcement by objectively targeting vehicle speed rather than the individual operating the vehicle. This ensures that all drivers are treated consistently and fairly.

In addition, this report demonstrates the need for traffic cameras in each proposed location through data-driven evidence, such as:

- Travel by vulnerable road users
- Documented speeding incidents
- Rates of collisions
- Near-collision reports
- The ineffectiveness or lack of feasibility of other mitigation measures

The City of Redmond aims to enhance public safety, address community concerns, and ensure a fair, equitable, and transparent approach to implementing automated traffic safety cameras. This report provides an analysis of considerations for the proposed traffic camera locations and examines whether there is a demonstrated need for such cameras. The current proposal is to place automated speed enforcement cameras in school zones at the following locations:

- Redmond High School – 17272 NE 104th Street
- Redmond Middle School – 10055 166th Avenue NE
- Rose Hill Middle School – 13505 NE 75th Street

After implementing automated speed safety cameras in school zones, the Police Department plans to propose expanding the program to include park zones. Speed surveys have been conducted at the following locations:

- Grass Lawn Park – 7031 148th Avenue NE
- Idylwood Park – 3650 West Lake Sammamish Parkway NE
- Anderson Park - 7802 168th Avenue NE
- Marymoor Park – 6046 West Lake Sammamish Parkway NE
- Sixty Acres Park – 15200 NE 116th Street

- Esterra Park –2718 156th Avenue NE

BACKGROUND

The City of Redmond adopted Chapter 10.25 of the Redmond Municipal Code in 2006, authorizing the use of automated traffic safety cameras to enforce traffic laws and enhance public safety. The ordinance specifically allowed the deployment of automated cameras in areas, such as school zones and intersections to address speeding and red-light violations.

In June 2024, Washington state enacted Senate Bill 2384, which revised the legal framework governing automated speed cameras for traffic enforcement. The updated legislation expanded the permissible locations for automated cameras to include school speed zones, school walk zones, public park speed zones, hospital speed zones, and roadway work zones. **Additionally, the law introduced a requirement for cities to conduct an equity analysis before installing cameras. This analysis must evaluate the potential impact of camera placement on the community's livability, accessibility, economics, educational opportunities, and environmental health.**

EQUITY CONSIDERATIONS

Equity is a core guiding principle in the City of Redmond's Comprehensive Plan update (Redmond 2050). From a transportation equity perspective, the City of Redmond prioritizes the safety of vulnerable road users, which includes youth, persons with disabilities, older adults, and low English proficiency populations. The City also considers low income households and car ownership as indicators for populations that may be more dependent on public transit, walking, and biking and more vulnerable to crash risk. Creating safer streets using strategies, such as speed safety cameras aligns with the City's transportation equity goals. Table 1 shows that all locations where speed safety cameras are proposed have higher percentages of one or more underserved populations when compared to the City overall (with the exception of the Idylwood Park area). Economic impacts to under-served populations are discussed below.

Table 1: Percent Under-Resourced Population Within Areas Proposed for Speed Safety Cameras

Location	Household with Seniors (64+)	Youth Population (under 18)	Low-Income (200% of Federal Poverty Threshold)	Minority Population	Disabled Adult Population	Cost-Burden Household	Limited English Proficient Population
Redmond High School	**59%**	16%	4%	26%	**8%**	**55%**	1%
Rosehill Middle School	**31%**	19%	8%	32%	**9%**	19%	6%

Redmond Middle School	**36%**	19%	11%	46%	5%	20%	**12%**
Redmond Elementary School	19%	32%	5%	67%	5%	5%	**6%**
Grass Lawn Park	**28%**	16%	6%	47%	**9%**	**39%**	**14%**
Idylwood Park	18%	20%	1%	47%	7%	14%	9%
Anderson Park	5%	5%	**21%**	48%	5%	**48%**	8%
Marymoor Park	**31%**	13%	**18%**	42%	7%	**41%**	11%
City-wide	22%	22%	11%	49%	7%	25%	11%

1

2

Livability

A livable community is one that is safe and secure, has affordable and appropriate housing and transportation options, and has supportive community features and services. Redmond's Speed Safety Camera Program supports livability as it is intended to slow vehicle traffic in school and park zones, making it safer for all community members, and reducing noise generated by vehicles traveling at higher speeds. Residents and visitors in the specific neighborhoods where cameras are being deployed will benefit most. The City will monitor for any unintended consequences, such as traffic diverting to avoid cameras through its annual traffic volume count program and Q-Alert system, which allows community members to submit requests and concerns. In addition, traffic collisions and speed data will continue to be collected and analyzed to ensure livability benefits are fully realized.

Accessibility

Accessibility, or the ability for a person to access their destinations directly and without barriers, will be enhanced by the deployment of speed safety cameras. Crossing the street can be a significant barrier to pedestrians, particularly children, and is often a major concern for parents and guardians who are considering allowing their children to walk, bike, or roll to school. Speed safety cameras will encourage slower vehicle speeds, which will improve drivers yielding to pedestrians and bicyclists who are crossing the street.

Economics

While the road users most likely to incur fines are drivers of personal vehicles, there is potential for speed safety cameras to impose a financial burden on low-income individuals. To minimize these

[1] Blue number represents that the average of the neighborhood is higher than the citywide average.

[2] The analysis unit is Census block group.

harms on low-income individuals and comply with the RCW, the City of Redmond will coordinate with Northeast District Court to allow for options to enter into a payment plan, or for first time offenders, seek automatic relief in the form of a 50% reduction in the fine if they meet established criteria.[3] A form for fine reduction would be included with the citation.

Education

Transparency is critical for a Speed Safety Camera Program. The City of Redmond will ensure that the community is aware of speed safety camera installations, why they are being installed, when cameras will be active, how they work, fine amounts, and provide clear answers to frequently asked questions. The City of Redmond will use a variety of channels to educate the community such as, social media, earned media, and the City's website. When the program is fully operational, a warning period of approximately 30 days will commence to assess and refine the system before fines are issued.

Environmental Health

Speed safety cameras are expected to contribute positively to environmental health by promoting safer and more efficient traffic flow. These cameras encourage compliance with speed limits and reduce instances of aggressive driving, which in turn minimizes sudden acceleration and braking, both of which contribute to increased fuel consumption and emissions. Additionally, speed safety cameras may positively impact environmental health by reducing vehicle speeds, leading to lower noise pollution and a decreased risk of traffic collisions, which can have environmental consequences.

DEMONSTRATED NEED FOR AUTOMATED SPEED CAMERAS

School Zone Speed Studies

Speed survey data collected at Redmond High School, Rose Hill Middle School, and Redmond Middle School in January 2025 highlights a consistent pattern of speeding in school zones during peak commute hours, posing significant safety risks to vulnerable road users on foot, bicycle, and other modes of transportation. As illustrated below, the data shows that every day about 20% of the total vehicles were traveling at least 6 mph over the posted limit at Redmond High School and Redmond Middle School, and over 50% of the total vehicles were traveling at least 6 mph over the limit at Rose Hill Middle School. See Table 2.

Table 2a: Redmond High School (NE 104th Street) – 20 MPH AM and PM School Zone

	Wednesday, Jan. 22, 2025	Thursday, Jan. 23, 2025	Friday, Jan. 24, 2025
Total Vehicle Count	2,098	2,138	2,061
6+ Over the Limit	414	424	404

[3] This mechanism is not available to individuals who have had a similar citation within the previous three weeks.

Percent	19.7%	19.8%	19.6%

Highest recorded speed: **43 MPH**

Table 2b: Redmond Middle School (166th Avenue NE) – 20 MPH School Zone

	Wednesday, Jan. 22, 2025	Thursday, Jan. 23, 2025	Friday, Jan. 24, 2025
Total Vehicle Count	2,697	2,928	2,784
6+ Over the Limit	504	595	601
Percent	18.7%	20.3%	21.6%

Highest recorded speed: **62 MPH**

2c: Rose Hill Middle School (140th Avenue NE) – 20 MPH School Zone

	Wednesday, Jan. 22, 2025	Thursday, Jan. 23, 2025	Friday, Jan. 24, 2025
Total Vehicle Count	655	670	672
6+ Over the Limit	381	401	419
Percent	58%	59.9%	62.4%

Highest recorded speed: **54 MPH**

School Zone Safety Data

An analysis of five years of crash data (2019 - 2024) shows that there have been no fatal crashes and a total of four injury crashes among the three school zones with no crashes in the Rose Hill Middle School zone.

Table 3: Crash Data for School Zones (2019 - 2024)

Location	Boundary	Number of Crashes	Fatal	Injury	Property Damage
Redmond High School	NE 104th St from 170th Ave NE to 179th Ave NE	5	0	1	4
Rose Hill Middle School	NE 75th St from 134th Ave NE to 140th Ave NE	0	0	0	0
Redmond Middle School	166th Ave NE from NE 98th St to NE 107th St; NE 104th St from 163rd Ave NE to 168th Ave NE	11	0	3	8

PARK ZONES

Park Zone Speed Data

Speed surveys conducted at Grass Lawn, Idylwood, Marymoor, Anderson, Sixty Acres, and Esterra parks highlight a consistent and significant issue with speeding during park hours, posing a danger to pedestrians, cyclists, and other park visitors. See Table 4:

Table 4a: Grass Lawn Park (Old Redmond Road) 30 MPH Speed Limit

	Sunday, Dec. 31, 2023	Monday, Jan. 1, 2024	Tuesday, Jan. 2, 2024	Wednesday, Jan. 3, 2024	Thursday, Jan. 4, 2024
Total Vehicle Count	4,588	3,562	7,845	8,410	8,132
11+ Over	203	189	279	306	301
Percent	4.4%	5.2%	3.6%	3.6%	3.7%

Table 4b: Idylwood Park (West Lake Sammamish Parkway NE) 35 MPH Speed Limit

	Sunday, Dec. 31, 2023	Monday, Jan. 1, 2024	Tuesday, Jan. 2, 2024	Wednesday, Jan. 3, 2024	Thursday, Jan. 4, 2024
Total Vehicle Count	2,990	2,586	5,053	5,504	5,481
11+ Over	72	74	86	124	101
Percent	2.4%	2.9%	1.7%	2.3%	1.8%

Table 4c: Marymoor Park (West Lake Sammamish Parkway NE) 35 MPH Speed Limit

	Sunday, Dec. 31, 2023	Monday, Jan. 1, 2024	Tuesday, Jan. 2, 2024	Wednesday, Jan. 3, 2024	Thursday, Jan. 4, 2024
Total Vehicle Count	6,056	4,555	8,068	8,727	8,625
11+ Over	663	586	823	895	825
Percent	10.9%	12.9%	10.2%	10.3%	9.6%

Table 4d: Anderson Park (NE 79th Street) 25 MPH Speed Limit

	Wednesday, July 17, 2024	Thursday, July 18, 2024	Friday, July 19, 2024	Saturday, July 20, 2024	Sunday, July 21, 2024
Total Vehicle Count	7,366	7,236	6,514	5,424	4,951
11+ Over	83	92	88	70	57
Percent	1.1%	1.3%	1.4%	1.3%	1.2%

Table 4e: Sixty Acres Park (NE 116th Street) 35 MPH Speed Limit

	Thursday, July 25, 2024	Friday, July 26, 2024	Saturday, July 27, 2024	Sunday, July 28, 2024	Monday, July 29, 2024
Total Vehicle Count	1,403	4,415	5,035	4,928	1,045
11+ Over	81	7	12	9	79
Percent	5.8%	.16%	.24%	.18%	7.6%

Table 4f: Esterra Park (Turing Street) 25 MPH Speed Limit

	Thursday, July 25, 2024	Friday, July 26, 2024	Saturday, July 27, 2024	Sunday, July 28, 2024	Monday, July 29, 2024
Total Vehicle Count	4,918	4,346	3,319	2,939	4,208
11+ Over	142	110	82	82	126
Percent	2.9%	2.5%	2.5%	2.8%	3%

The speed survey data across all three schools and identified park zones demonstrates a consistent and significant need for enhanced speed enforcement. Excessive speeds in these areas create an unsafe environment for vulnerable road users, particularly during times when pedestrian, cyclist, and vehicle traffic are at their highest. School zones see high volumes of students walking, biking, or rolling to school, as well as families dropping off or picking up children, intensifying the risk of collisions and near-misses caused by speeding vehicles.

Similarly, parks are frequented by families, children, and recreational users who rely on safe crossings and streets with traffic calming measures to access these community spaces. High volumes of pedestrians and cyclists in park zones further underscore the need for speed control measures to protect vulnerable road users from the dangers of speeding vehicles. Parks serve as vital hubs for recreation and community engagement, and ensuring safe access to these spaces is critical to the livability of the City of Redmond.

The installation of automated speed enforcement cameras in both school and park zones would serve as a critical deterrent to speeding, significantly improve compliance with posted speed limits, and enhance safety for all road users. By reducing vehicle speeds, these cameras would not only mitigate the

heightened risk of collisions, but also create a safer and more accessible environment for students, families, and community members navigating these high-risk areas.

Park Zone Safety Data

Crash data from 2019 to 2024 underscores the ongoing traffic safety concerns in Redmond's park zones, where a total of 155 crashes have occurred, resulting in **one death and 36 injury-related incidents**. Anderson Park alone accounted for **122 crashes,** highlighting the risks in high-traffic recreational areas. Even in smaller park zones like Grass Lawn, Idylwood, and Marymoor, crashes continue to impact pedestrian and vehicle safety, with the majority resulting in property damage.

These numbers emphasize the need for enhanced traffic enforcement measures, such as automated safety cameras, to reduce speeding and improve overall safety in park zones. By addressing these concerns proactively, the City can better protect its residents, visitors, and vulnerable road users enjoying our parks.

Table 5: Crash Data for Park Zones (2019 - 2024)

Location	Boundary	Number of Crashes	Fatal	Injury	Property Damage
Grass Lawn Park	148th Ave NE from NE 68th St to NE 74th St; Old Redmond Way from 141st Ave NE to 149th Ave NE	19	1	4	14
Idylwood Park	West Lake Sammamish Pkwy NE from 180th Ave NE to NE 39th Ct	5	0	1	4
Anderson Park	Redmond Way from 166th Ave NE to 170th Ave NE; NE 79th St from 166th Ave NE to Avondale Way	122	0	27	95
Marymoor Park	East Lake Sammamish PKWY NE from NE 53rd Ct to NE 65th St	9	0	4	5

SPEED CAMERA DEPLOYMENT PLAN

The following steps are required or encouraged either by Washington state law, city ordinance, or best practices.

- **Signage:** As required by RCW 46.63.220(7), signs notifying drivers they are within an area where automated traffic safety cameras are authorized or entering an area where violations are enforced by an automated traffic safety camera must be placed **30 days prior** to the activation of cameras.

- **School Zone Beacons:** School zone speeding violations will only be issued during designated school hours when amber beacons are flashing. These designated hours typically include 30 minutes before the start of school and after school until 5 p.m. to account for extracurricular activities when children are present. Enforcement of school zone speeding violations will be closely aligned with the school's schedule to ensure accuracy and fairness.

- **Speeding Enforcement Threshold:** The National Highway Traffic Safety Association (NHTSA) recommends a threshold of no less than 6 mph above the speed limit in school zones and a threshold of up to 11 mph on most roads.[4]

- **Fines:** Per RCW 46.63.220(16), the amount of fine issued using an automated traffic safety camera may not exceed $145* on public roads and may be doubled to $290* in school zones.

- **Warnings:** When the program is fully operational, a warning period of approximately 30 days will commence to assess the system and correct problems before fines are issued. The program does not have a system for issuing warning notices for first-time violators.

- **Objective Enforcement:** Per RCW 46.63.220(8), automated traffic safety cameras are limited to recording images of the vehicle and its license plate, and only during the occurrence of a violation. These cameras are specifically designed to ensure privacy by not capturing images that reveal the faces of the driver or passengers. Additionally, data is not shared between automated traffic safety cameras and fixed automated license plate reading cameras.

- **Due Process:** A notice of infraction must be mailed to the registered owner of the vehicle within 14 days of the violation. The registered owner of the vehicle is responsible for an infraction, unless they state under oath the vehicle was stolen or in control by a person other than the registered owner. A person receiving an infraction notice based on evidence detected by an automated traffic safety camera may respond to the notice by mail. All notices are reviewed and approved by police staff.

- **Vendor Services:** The automated traffic safety camera vendor is compensated solely for the value of the equipment and administrative services. The vendor's fees may not be based on a portion of the fine revenue generated by the equipment.

*Fine amounts are adjusted by inflation every 5 years

Reduced Penalties for Eligible Recipients

Per RCW 46.63.210-260, registered vehicle owners who receive notices for infractions enforced by automated traffic safety cameras and are recipients of public assistance or participants in the

[4] NHTSA Speed Enforcement Camera Systems Operational Guidelines Microsoft Word - Job 4660 Speed Enforcement Camera Systems Operational Guidelines April 15 2008.doc

Washington Women, Infants, and Children (WIC) Program are eligible for a 50% reduction in penalties upon request.

Mandatory Reporting

The statute governing automated speed safety cameras requires cities to post an annual report on the City's website detailing the number of collisions that occurred at each location where an automated safety camera is located, as well as the number of infractions issued for each camera. Additionally, the Police Department will provide City Council with an update on this data at least twice annually.

Community Engagement

The Fall 2024 Redmond Schools Parent/Guardian Transportation Questionnaire was open in October 2024 and was sent out to parents and guardians at the elementary and middle schools. Some of the questions asked pertained to safety around schools.

41/104 (39.4%) respondents said that slower vehicle speeds surrounding schools would make them feel more comfortable with their child walking or biking to school.

In a free response question asking if there are any specific improvements that would make them feel more comfortable with their children walking or biking to school, 10/42 (23.8%) respondents shared that drivers are ignoring speed limits, driving too fast, or otherwise speeding through school zones and it is making their children unsafe.

Another community questionnaire specific to speed safety cameras will be conducted in the spring of 2025. This questionnaire will provide more detailed information about the community's awareness and general acceptance of speed safety cameras as a traffic safety tool.

Police staff have engaged City Council in conversations about the automated traffic safety programs during committee meetings on Sept. 19, 2023, Sept. 17, 2024 and most recently discussed this topic during the Jan. 28, 2025 Council study session.

Automated traffic safety cameras were discussed with the Chief's Community Equity Action Team (CEAT) on Jan. 22, 2025. We received no comments, questions, or concerns from the team.

City and Court Staffing

If the proposed implementation of an automated traffic safety program is approved by the City Council, it will significantly increase the volume of infractions and the time required for court staff to process and adjudicate them. Northeast District Court staff, who already manage infractions from automated cameras in other jurisdictions within their purview, have expressed confidence that their current staffing levels are sufficient to handle the anticipated increase.

The City's Finance Department will need to establish a financial remittance process to ensure all revenue generated by automated safety cameras is allocated to cover the costs of additional traffic safety programs and traffic safety capital improvement projects.

SUMMARY

The City of Redmond is planning to implement new traffic safety cameras to enhance public safety by reducing speeding in key areas. The placement and deployment of these cameras are guided by best practices in equitable traffic management, using both national research and local data. By taking these steps, we are addressing safety concerns, promoting fairness, and improving the overall quality of life for everyone in Redmond.

This report evaluates the placement of automated traffic safety cameras in Redmond, ensuring equitable and data-driven decision-making. Automated cameras are a cost-effective way to reduce speeding and collisions, particularly in school and park zones, protecting vulnerable road users such as children, seniors, and pedestrians. The report examines the impact on equity, including livability, accessibility, economic considerations, education, and environmental health.

Speed studies show significant speeding in school and park zones, with up to 62% of vehicles exceeding speed limits in school zones and 10 - 12% in certain park areas. Crash data (2019 - 2024) highlights traffic safety concerns, with school zones recording 47 crashes and park zones reporting 155 crashes, including one death and 36 injury-related incidents. Automated speed enforcement cameras in school zones will deter speeding and enhance safety for the City's vulnerable road users.

SERVICES AGREEMENT
BETWEEN THE CITY OF REDMOND, WASHINGTON
AND NOVOAGLOBAL, INC. FOR
TRAFFIC INFRACTION DETECTION & ENFORCEMENT PROGRAM

This **AGREEMENT** (the "**Agreement**") made this ____ day of _____, 2025, by and between NovoaGlobal, Inc., a Delaware corporation having a place of business at 8018 Sunport Drive, Suite 203, Orlando, Florida 32809 ("**NG**"), and the City of Redmond, a municipal corporation of the State of Washington, having an address at 15670 NE 85th St, Redmond, WA 98052 (the "**Customer**" and together with NG, the "**Parties**" and each singularly a "**Party**").

WITNESSETH:

WHEREAS, pursuant to the Chapter 10.25 of the Redmond Municipal Code as currently enacted or hereafter amended, the Customer may implement an automated photo enforcement program; and

WHEREAS, NG has the knowledge, possession, and ownership of certain equipment, licenses and processes, referred to collectively as the NG Safety System (the "**System(s)**"); and

WHEREAS, the Customer desires to use the Systems to monitor and enforce school speed zone violations. Future uses could include park zone speed enforcement and red-light violations in accordance with applicable laws and ordinances; and

WHEREAS, the Parties desire to enter into this Agreement, whereby NG will (i) install and assist the Customer in the administration and operation of the Systems, as described in more detail on ***Exhibit A*** to this Agreement at the locations within the Customer's jurisdiction, and provide to the Customer the services (the "**Services**"), all as more fully described on ***Exhibit A***;

NOW, **THEREFORE**, in consideration of the mutual terms, covenants, and conditions contained herein, and other good and valuable considerations, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, agree as follows:

1. **RECITALS AND EXHIBITS**. The foregoing recitals are true and correct and are hereby incorporated in *haec verba*. All exhibits attached to this Agreement contain additional terms of this Agreement and are hereby incorporated in *haec verba*.

2. **SERVICES**

2.1. NG agrees to use commercially reasonable efforts to install and provide to the Customer for the Term the Systems and Services including the equipment (the "**Equipment**") and software (the "**Software**") to be supplied and installed by NG in accordance with ***Exhibit A*** (including the provision of all construction drawings, permit applications and other documents required by applicable law for the

installation and operation of the System(s)). In addition, if and to the extent set forth in ***Exhibits A*** *and* ***B*** NG shall also supply to the Customer:

2.1.1. infraction preparation processes that assist the Customer in complying with current applicable law;

2.1.2. training of personnel designated by the Customer involved with the operation of the Systems and/or the enforcement and disposition of infractions;

2.1.3. expert witness testimony regarding the operation and functionality of the System; and

2.1.4. other support services for the System as set forth in ***Exhibit A***.

2.2. The Customer understands and agrees that (i) NG may, subject to the prior approval of the Customer, which approval shall not be unreasonably delayed, conditioned or withheld, subcontract with third parties for the provision or installation of part or parts of the Systems or Services and (ii) installation of the Systems requires the Customer's cooperation and compliance with NG's reasonable instructions (including but not limited to Customer's provision of the personnel, equipment, engineering plans, and other resources as described in ***Exhibit A*** or as otherwise reasonably requested by NG) and reasonable access by NG (or such third parties) to Customer premises and systems and the Customer agrees to provide all of the foregoing to NG.

2.3. The Customer understands and agrees that the Systems will be owned by NG (or its designees). The Customer shall use its best efforts to assist NG to identify any third-party who is responsible for damage to the Systems or any part thereof.

2.4. NG shall coordinate its work with the Customer's police, public works and engineering departments and, as necessary or required, with the Department of Transportation.

3. LICENSE/RESERVATION OF RIGHTS

3.1. LICENSE. Subject to the terms and conditions of this Agreement, NG hereby grants the Customer during the Term, and the Customer hereby accepts from NG upon the terms and conditions herein specified, a non-exclusive, non-transferable license during the Term of this Agreement to: (a) solely within the Customer, access and use the NG System (including any hardware and software provided or given access to the customer) for the sole purpose of reviewing Potential Violations and authorizing the issuance of NOIs pursuant to the terms of this Agreement, and to print copies of any content posted on the NG System in connection therewith, (b)

disclose to the public (including outside of the Customer) that NG is providing services to the Customer in connection with Photo Enforcement Program pursuant to the terms of this Agreement, and (c) use and display the NG Marks on or in marketing, public awareness or education, or other publications or materials relating to the Photo Enforcement Program, so long as any and all such publications or materials are approved in advance by NG. Except as provided in Section 22 the license rights granted to Customer in the Section shall terminate at the expiration or termination of the Agreement.

3.2. RESERVATIONS OF RIGHTS. The Customer hereby acknowledges and agrees that: (a) NG is the sole and exclusive owner of the NG System, the NG Marks, all Intellectual Property arising from or relating to the NG System, and any and all related Equipment, (b) the Customer neither has nor makes any claim to any right, title or interest in any of the foregoing, except as specifically granted or authorized under this Agreement, and (c) by reason of the exercise of any such rights or interests of Customer pursuant to this Agreement, the Customer shall gain no additional right, title or interest therein.

3.3. RESTRICT USE. The Customer hereby covenants and agrees that it shall not (a) make any modifications to the NG System, including but not limited to any Equipment, (b) alter, remove or tamper with any NG Marks, (c) use any of the NG Marks in any way which might prejudice their distinctiveness, validity or the goodwill of NG therein, (d) use any trademarks or other marks other than the NG Marks in connection with the Customer's use of the NG System pursuant to the terms of this Agreement without first obtaining the prior consent of NG, or (e) disassemble, de-compile or otherwise perform any type of reverse engineering to the NG System, the NG System, including but not limited to any Equipment, or to any, Intellectual Property or Proprietary Property of NG, or cause any other Person to do any of the foregoing.

3.4. PROTECTION OF RIGHTS. NG shall have the right to take whatever action it deems necessary or desirable to remedy or prevent the infringement of any Intellectual Property of NG, including without limitation the filing of applications to register as trademarks in any jurisdiction any of the NG Marks, the filing of patent application for any of the Intellectual Property of NG, and making any other applications or filings with appropriate Governmental Authorities. The Customer shall not take any action to remedy or prevent such infringing activities, and shall not in its own name make any registrations or filings with respect to any of the NG Marks or the Intellectual Property of NG without the prior written consent of NG.

3.5. INFRINGEMENT. The Customer shall use its reasonable best efforts to give NG prompt notice of any activities or threatened activities of any Person of which it

becomes aware that infringes or violates the NG Marks or any of NG's Intellectual Property or that constitute a misappropriation of trade secrets or act of unfair competition that might dilute, damage or destroy any of the NG Marks or any other Intellectual Property of NG. NG shall have the exclusive right, but not the obligation, to take action to enforce such rights and to make settlements with respect thereto. In the event that NG commences any enforcement action under this Section 3.5, then the Customer shall render to NG such reasonable cooperation and assistance as is reasonably requested by NG, and NG shall be entitled to any damages or other monetary amount that might be awarded after deduction of actual costs; provided, that NG shall reimburse the Customer for any reasonable costs incurred in providing such cooperation and assistance.

3.6. INFRINGEMENT USE. The Customer shall give NG prompt written notice of any action or claim action or claim, whether threatened or pending, against the Customer alleging that the NG Marks, or any other Intellectual Property of NG, infringes or violates any patent, trademark, copyright, trade secret or other Intellectual Property of any other Person, and the Customer shall render to NG such reasonable cooperation and assistance as is reasonably requested by NG in the defense thereof; provided, that NG shall reimburse the Customer for any reasonable costs incurred in providing such cooperation and assistance. If such a claim is made and NG determines, in the exercise of its sole discretion, that an infringement may exist, NG shall have the right, but not the obligation, to procure for the Customer the right to keep using the allegedly infringing items, modify them to avoid the alleged infringement or replace them with non-infringing items.

4. TERM

4.1. The effective date of this Agreement shall be the date first written above (the "**Effective Date**"). The initial term (the "**Initial Term**") of this Agreement, shall begin upon the Effective Date, following full execution of the Agreement by the Parties, and shall continue until the fifth (5th) annual anniversary of the Installation Date (the "**Installation Date**"). The "Installation Date" shall be the latest date that a System becomes installed and operational (issue payable violations).

4.2. The terms of this Agreement shall be automatically extended for two (2) additional terms of five (5) years (each, a "**Renewal Term**"), on the same terms and conditions specified herein except that the amounts due pursuant to Section 6 hereof shall be adjusted in accordance with the lesser of the change in the Consumer Price Index – All Urban Consumers – U.S. City Average ("**CPI**") or four (4) percent and by multiplying said amounts by the percentage change in the CPI (or four (4) percent, as applicable) from the beginning of the immediately preceding term to the

end of the immediately preceding Term. (Each Renewal Term, if any, together with the Initial Term, the "**Term**").

5. TERMINATION AND EXPIRATION

5.1. This Agreement may be terminated by mutual written consent of the Parties.

5.2. This Agreement may be terminated for cause, by either Party if the other Party fails in any material way to perform its obligations under the Agreement or otherwise defaults in the performance of any obligation under this Agreement and such failure or default continues for more than forty-five (45) days after written notice thereof to the defaulting Party.

5.3. NG may terminate this Agreement, without liability, on thirty (30) days advance written notice if NG concludes in its reasonable discretion that (i) potential or actual liability of NG to third parties (other than persons claiming to own Intellectual Property required for the operation of the System) arising out of or in connection with the System makes the program impractical, uneconomical or impossible to continue.

5.4. The Customer may terminate this Agreement on thirty (30) days advance written notice if the Customer concludes in its reasonable discretion that (i) potential or actual liability of the Customer to third parties arising out of or in connection with the System makes the program impractical, uneconomical, legally contested or impossible to continue; and/or (ii) the Systems cannot be installed. Violation of the Customer's ethics code would constitute cause to terminate this agreement.

5.5. The Customer may terminate this Agreement on thirty (30) days advance written notice if state statutes are amended to prohibit or substantially change the operation of the Systems, or a court having jurisdiction over the City rules, or state or federal statute declares, that infractions generated from the Systems are inadmissible in evidence.

5.6. Upon termination or expiration of this Agreement, the Parties recognize that the Customer will have to process violations in the "pipeline," and that NG accordingly must assist the Customer in this accord. Accordingly, the Parties shall take the following actions during the wind-down period, and shall have the following obligations, outlined in Sections 5.7 and 5.8 below, which obligations shall survive termination or expiration of the Agreement:

5.7. The Customer shall cease using the Software and Equipment in its possession, custody or control and shall (a) immediately allow NG a reasonable opportunity to remove such Equipment not to exceed sixty (60) days and (b) (i) immediately

deliver to NG or irretrievably destroy, or cause to be so delivered or destroyed, any and all copies of such Software in whatever form and any written or other materials relating to such Software in the Customer's possession, custody or control and within thirty (30) days deliver to NG a certification thereof or (ii) allow NG reasonable access to the System(s) on which such Software is loaded and permission to NG to remove such Software and documentation.

5.8. Unless directed by the Customer not to do so, NG shall continue to process all images taken by the Customer before termination and provide all Services associated with processing in accordance with this Agreement, and shall be entitled to the fees specified in the Agreement as if the Agreement were still in effect.

6. FEES AND PAYMENT

The Customer agrees to pay NG a monthly fee as follows (the "**Monthly Fees**"):

6.1. **Monthly Fees** (pro-rated for any partial month) as described in ***Exhibit B*** (Compensation & Pricing) in arrears with respect to each approach at which a System has been installed. The Monthly Fee shall commence on the first business day of the month following Commencement of Operations of each System and shall continue on the first business day of each month for the Term or until this Agreement is sooner terminated or such payment is modified in accordance with Section 4.2. For purposes of this Agreement, "**Commencement of Operations**" shall mean the first full day that the System captures events for processing and issuance of notices of violation.

6.2. **The Customer, being a Municipal Corporation, is not generally exempt from sales tax per WAC 458-20-189. Accordingly, NG shall add sales tax to the invoices provided to the Customer in compliance with Washington State Law; provided, if Customer obtains a ruling from the Washington State Department of Revenue that the fees paid by the Customer to NG under this Agreement are exempt from sales tax, then NG shall not add sales tax to invoices.**

6.3. In the event that the United States Postal Service increases applicable First-Class Mail and/or Certified Mail postage from the rates in effect at the time of Commencement of Operation, NG may invoice the Customer for the increased postage actually paid by NG in connection with this Agreement. For example, if First Class Mail postage were increased by $0.02, and NG mailed 1,000 notices, NG would invoice the Customer $20.00. All such charges to Customer shall be included in the cost-neutrality calculation.

6.4. Payment of all undisputed fees and undisputed other charges owed pursuant to this Agreement is due as set forth above, and, to the extent invoice is required, within

thirty (30) days after receipt of the invoice. Invoices will be sent to the Customer at:

AccountsPayable@redmond.gov

6.5. Notwithstanding anything in this Agreement to the contrary, if amounts due to NG pursuant to Section 6.1 in any month during the Term plus any amounts due to NG pursuant to this Section 6.4 ("**Monthly Photo Enforcement Fees**") exceed the revenue generated by operation of the Systems and actually received by the Customer during that same month ("**Monthly Photo Enforcement Revenue**") then the Customer shall have the option to either pay the Monthly Photo Enforcement Fees or pay to NG for such month only the amount of Monthly Photo Enforcement Revenue. In such case, the difference between Monthly Photo Enforcement Fees and Monthly Photo Enforcement Revenue (a "**Payment Shortfall**") shall be accumulated and added to the Monthly Photo Enforcement Fees for the following month. Payment Shortfalls, if any, shall accumulate from month-to-month until paid in full, provided that under no circumstances shall the Customer ever be required to make a payment of Monthly Photo Enforcement Fees to NG except from Monthly Photo Enforcement Revenue. At the final expiration of this Agreement (last day of validity of the agreement including any extensions) any accumulated Payment Shortfalls shall be forfeited.

7. RESPONSIBILITIES OF THE CUSTOMER

7.1. The Customer shall provide NG with any "as built" drawings in electronic format (AutoCad) that are available at no cost to the Customer and shall consider for approval NG's engineering drawings without unusual or unreasonable cost or delay.

7.2. The Customer shall not levy any fees on NG for the installation of Systems. However, if municipal ordinance requires the assessment of fees for the installation of Systems, said fees shall be limited to permit fees as required by the Customer's Municipal code and the Customer's Public Utilities electrical permits for service.

7.3. The Customer shall diligently prosecute infractions in court at its own expense. NG shall, at its own expense, participate in any proceeding challenging the use of the System or validity of its results and/or use of the U.S. Mails to deliver the infraction.

7.4. The Customer will cooperate with NG in obtaining electrical connections at the roadside and NG shall pay all costs associated with such connection and shall pay for all power required by the System.

7.5. To allow for proper operation of the System, when known to the Customer, the Customer shall provide NG with advance written notice of any modifications proposed to intersections or portions of the roadway, including traffic signal operations, that will likely affect operation of a System after its installation. In the event any such intersection or roadway modification requires a material change to the System, the Customer shall pay the costs reasonably incurred by NG to adapt the affected video monitoring system(s) or fixed speed enforcement unit(s) to make such video monitoring system(s) or fixed speed enforcement unit(s) compatible therewith. Notwithstanding the above, NG makes no guarantee that it will be able to make any such adaptation. In the event that NG is unable to adapt the affected System, then both parties shall be relieved of any further obligations under this Agreement with respect only to the affected System. In addition, NG does not, and will not, make recommendations or otherwise manage the configuration or operation of the intersection traffic light system.

7.6. During the Term, except as expressly permitted by this Agreement the Customer shall not use the System, or allow the System's use by a third party, without the prior written permission of NG.

8. LIMITED WARRANTY AND LIMITATION ON DAMAGES

8.1. NG warrants that the System's functionality will conform in all material respects to the description of the System set forth on ***Exhibit A***.

8.2. EXCEPT AS SPECIFICALLY PROVIDED HEREIN, NG HEREBY DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, ORAL OR WRITTEN, WITH RESPECT TO THE SERVICES AND SYSTEM, INCLUDING, WITHOUT LIMITATION, ALL IMPLIED WARRANTIES OF TITLE, NON-INFRINGEMENT, NON-INTERFERENCE WITH ENJOYMENT, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE AND ALL WARRANTIES IMPLIED FROM ANY COURSE OF DEALING OR USAGE OF TRADE. THE CUSTOMER ACKNOWLEDGES THAT EXCEPT AS EXPRESSLY PROVIDED HEREIN NO OTHER WARRANTIES HAVE BEEN MADE TO MUNICIPALITY BY OR ON BEHALF OF NG OR OTHERWISE FORM THE BASIS FOR THE BARGAIN BETWEEN THE PARTIES.

8.3. The Customer acknowledges and agrees that:

8.3.1. The Systems may not detect every violation;

8.3.2. Since the System may flag as a violation conduct that is in fact not a violation, the output of the System will require review, analysis and

approval by personnel appropriately qualified and authorized by the Customer under applicable law prior to the issuance of any infraction;

8.3.3. The System has no control over, and relies on the proper functioning of equipment for signal light changes, which equipment is provided by entities other than NG;

8.3.4. The proper functioning of the System requires the Customer's full and complete compliance with the Systems' operating instructions, which it hereby agrees to do; and

8.3.5. NG shall not be responsible for the configuration and/or operation of any intersection traffic light systems and NG shall have no liability or obligations with respect thereto.

9. INDEMNIFICATION AND INSURANCE

9.1. NG shall at all times comply with all federal, state and local laws, ordinances and regulations and shall comply with the maintenance procedures and manufacturer's recommendations for operation of the Systems which affect this Agreement, and shall indemnify, defend and save harmless the Customer against any claims, arising from NG's violation of any such laws, ordinances and regulations or any claims arising from NG's performance of this Agreement, including as a result of the negligence or willful misconduct of NG, its officers and directors, agents, attorneys, and employees, but excluding any employees or agents of Customer.

9.2. NG agrees to indemnify, defend, and hold harmless the Customer from any claim of damages (including the payment of reasonable attorneys' fees) by a third party arising solely from either (a) a finding that the System infringes any validly issued United States patent or (b) NG's negligence, provided that such claim of damages is not attributable to (i) any act or omission set forth in Section 9.3 or (ii) any third-party software or other third-party products used with, required for use of, or supplied under their own names with or as part of the System. If, as a final result of any litigation of which NG is obligated to indemnify, the use of the System by the Customer is prevented, in whole or in part, by an injunction, NG's sole obligation to the Customer as a result of such injunction shall be, at NG's option, either to (i) replace such part as has been enjoined, or (ii) procure a license for NG or the Customer to use same, or (iii) remove same and terminate this Agreement at no additional cost to the Customer.

9.3. Notwithstanding anything in this Agreement to the contrary, NG assumes no obligation or liability for any claim of damages (including the payment of reasonable attorneys' fees) by a third party arising from or related to (i) any

modification of the System made by the Customer, (ii) the negligence or intentional act of the Customer, (iii) the failure to function properly of any hardware, software or equipment of any kind used by, in or on behalf of the Customer (other than that supplied by NG), (iv) the review and analysis of the System data output by the Customer personnel for infraction preparation, or (v) the Customer's use and/or administration of any traffic signal.

9.4. The rights of the Customer to seek indemnification under this Section 9 shall be conditioned upon (i) the Customer notifying NG promptly upon receipt of the claim or action for which indemnification is sought and (ii) the Customer's full cooperation with NG in the settlement or defense of such claim or action at no cost to the Customer. Such cooperation shall include, but not be limited to, the Customer providing access for, and permission to, NG for the purpose of the replacement of such part or parts of Systems as NG may deem necessary or desirable. The Customer may participate in the defense of any indemnified matter through counsel of its own choice and at its own expense provided that NG shall remain in, and responsible for, control of the matter. This Section 9 states the entire liability and obligation and the exclusive remedy of the Customer with respect to any actions or claims (i) of alleged infringement relating to or arising out of the subject matter of this Agreement or (ii) otherwise the subject of this paragraph.

9.5. NG shall maintain the following minimum scope and limits of insurance:

9.5.1. Comprehensive general liability insurance including but not limited to coverage for bodily injury, property damage, premises and operations, products/completed operations, personal and advertising injury, and contractual liability, with a combined single limit of $2,000,000 per occurrence, with an aggregate liability per occurrence of $2 million. Such insurance shall include the Customer, its officers, directors, employees, and elected officials as additional insured for liability arising from Contractor's operation.

9.5.2. Workers Compensation as required by applicable state law; and

9.5.3. Comprehensive Automobile Liability Insurance for all owned, non-owned and hired automobiles and other vehicles used by NG with a minimum $1,000,000 per occurrence combined single limit bodily injury and property damage.

9.6. The Customer shall be named as additional insured on the comprehensive general liability policies provided by NG under this Agreement. NG shall require any subcontractors doing work under this Agreement to provide and maintain the same

insurance, which insurance shall also name the Customer and its officers, employees, and authorized volunteers as additional insured.

9.7. Certificates showing NG is carrying the above described insurance, and evidencing the additional insured status specified above, shall be furnished to the Customer within thirty (30) calendar days after the date on which this Agreement is made. Such certificates shall show that the Customer shall be notified of all cancellations of such insurance policies. NG shall forthwith obtain substitute insurance in the event of a cancellation.

9.8. All insurance required by express provision of this Agreement shall be carried only in responsible insurance companies licensed to do business in the State of Washington and shall name as additional insured the Customer. Insurance shall be placed with insurers with a current A.M. Best rating of not less than A:VII. NG will furnish the Customer with Certificates of Insurance and applicable endorsements for all such policies promptly upon receipt of them. NG may effect for its own account insurance not required under this Agreement.

9.9. NG's maintenance of insurance as required by the Agreement shall not be construed to limit the liability of NG to the coverage provided by such insurance, or otherwise limit the Customer's recourse to any remedy available at law or in equity. NG's Automobile Liability and Commercial General Liability insurance policies are to contain, or be endorsed to contain that they shall be primary insurance as respect the Customer. Any insurance, self-insurance, or self-insured pool coverage maintained by the Customer shall be excess of NG's insurance and shall not contribute with it. If the NG maintains higher insurance limits than the minimums shown above, the Customer shall be insured for the full available limits of Commercial General and Excess or Umbrella liability maintained by the NG, irrespective of whether such limits maintained by NG are greater than those required by this Agreement or whether any certificate of insurance furnished to the Customer evidences limits of liability lower than those maintained by NG.

10. CHANGE ORDERS OR ADDITIONAL SERVICES. Changes to Services and additional Systems may be added to this Agreement by mutual consent of the Parties in writing as an addendum to this Agreement. The Customer and NG agree that should legislation or local ordinance be enacted to enable new photo enforcement solutions within the Customer's jurisdiction, the Customer shall have the option to negotiate services and fees and issue a change order to cover such services.

10.1. Project manager. The Customer will appoint a project manager, which shall be a command staff City of Redmond Police Officer who will have oversight of the

installation and implementation of the NG systems. The project manager has the authority to make daily operational management decisions.

11. CONFIDENTIAL AND PROPRIETARY INFORMATION; PUBLIC RECORDS LAW COMPLIANCE.

11.1. The Parties agree that they shall comply with the public records disclosure provisions of the Revised Code of Washington, Chapter 42.56, Public Records Act and RCW 46.63.220; and further that Customer is obligated to disclose records upon request unless a specific exemption from disclosure exists. Nothing in the Agreement is intended to prevent the Customer's compliance with the Public Records Act, and Customer shall not be liable to NG due to Customer's compliance with any law or court order requiring the release of public records provided that the Customer provides prior written notice of such required disclosure to NG.

11.2. NG agrees that:

11.2.1. All information obtained by NG through operation of the Systems shall be made available to the Customer at any time during NG's normal business hours, excluding Proprietary Information not reasonably necessary for the prosecution of infractions or fulfillment of the Customer's obligations under this Agreement.

11.2.2. NG shall not use any information acquired from the performance of the Services contemplated in this Agreement, including without limitation, information with respect to any violations, violators, information obtained from recorded images or information concerning the Customer's law enforcement activities for any purpose other than for the benefit of the Customer.

11.2.3. No information given by NG to the Customer will be of a confidential nature, unless the information qualifies as Proprietary Information (defined in Section 11.2.4 below), specifically designated in writing as "**Proprietary Information.**".

11.2.4. As used in this Agreement, the term "Proprietary Information" shall mean all trade secrets or confidential or proprietary information designated as such by NG, whether letter or by the use of an appropriate proprietary stamp or legend, prior to or at the time any such trade secret or confidential or proprietary information is disclosed by NG to the Customer. In addition, the term "**Proprietary Information**" shall be

deemed to include any notes, analyses, compilations, studies, interpretations, memoranda or other documents prepared by NG .

11.3. The Customer shall use the Proprietary Information only for the purpose of fulfilling its duties hereunder (the "**Purpose**") and such Proprietary Information shall not be used for any other purpose without the prior written consent of NG. "Purpose" shall be deemed to not include any disclosure of the Proprietary Information to any person or entity. The Customer shall hold in confidence, and shall not disclose to any person or entity, any Proprietary Information nor exploit such Proprietary Information for its own benefit or the benefit of another without the prior written consent of NG.

12. INDEPENDENT CONTRACTOR; NO AGENCY.

12.1. It is understood that NG is an independent contractor and not an agent or employee of the Customer for any purpose including, but not limited to, federal tax and other state and federal law purposes. NG assumes responsibility for payment of all federal, state and local taxes imposed or required of NG under unemployment insurance, Social Security and income tax laws. NG shall be solely responsible for any worker's compensation insurance required by law and shall provide the Customer with proof of insurance upon demand. The parties agree that the Customer shall not:

12.1.1. Pay dues, licenses or membership fees for NG;

12.1.2. Require attendance by NG, except as otherwise specified herein;

12.1.3. Control the method, manner or means of performing Services under this Agreement, except as otherwise specified herein; or

12.1.4. Restrict or prevent NG from working for any other party.

12.2. Neither party has the right or the power to enter into any contract or commitment on behalf of the other party, including entering into agreements with third parties, exercising incidents of ownership with respect to property owned by the Party or executing contracts binding upon the other Party.

12.3. NG is an independent contractor providing services to the Customer and the employees, agents and servants of NG shall in no event be considered to be the employees, agents, or servants of the Customer. Except as expressly provided herein, this Agreement is not intended to create an agency relationship between NG and the Customer.

13. NOTICES.

13.1. Any notices or demands which under the terms of this Agreement or under any statute must or may be given or made by NG or the Customer shall be in writing and shall be given or made by personal service, first class mail, FedEx, or by certified or registered mail to the Parties at the address specified in the preamble to this Agreement.

13.2. Except as otherwise specified, all notices, payments and reports hereunder shall be deemed given and in effect as of the date of mailing or transmission, as the case may be, when sent by next day delivery or courier service, postage pre-paid, or three (3) days after the date of mailing when sent by first class mail, postage pre-paid, addressed in all such cases to the Parties as set forth in the preamble to this Agreement directed in each case to the President of NG at the address in the preamble or the Mayor of the Customer at the address in the preamble, or to such other addresses as the Parties may from time to time give written notice of as herein provided.

14. ASSIGNMENT. Except as specifically provided in this Agreement, neither Party may assign, or delegate performance of its obligations under, this Agreement, without prior express written consent of the other Party, except that NG may assign or otherwise encumber this Agreement for the purpose of obtaining financing; provided, however, that this Agreement may be assigned to any Person that acquires all or substantially all of NG' assets in one transaction.

15. AMENDMENT AND MODIFICATION. This Agreement may be modified or amended from time to time by the Parties, provided, however, that no modification or amendment hereto shall be effective unless it is stated in writing, specifically refers to this Agreement and is executed on behalf of the Party against whom enforcement of such modification or amendment is sought.

16. NON WAIVER. The failure of either Party to require performance of any provision of this Agreement shall not affect the right to subsequently require the performance of such provision or any other provision of this Agreement. The waiver of either Party of a breach of any provision shall not be taken or held to be a waiver of any subsequent breach of that provision or any subsequent breach of any other provision of this Agreement.

17. FORCE MAJEURE. Neither Party shall be liable to the other for failure or delay in meeting any obligations hereunder which arises in whole or in part from causes which are unforeseen by, or beyond the control of, such Party, including without limitation, acts of God or of a public enemy, acts of terrorism, acts of the Government (other than the Customer in the case of the Customer) in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, acts or omissions of (i) non-subcontractor third-parties and (ii) third party equipment, telecommunications and

software suppliers, and unusually severe weather. When any such circumstance(s) exist, NG shall have the right, in its sole discretion, to allocate its available production, deliveries, services, supplies and other resources among any and all buyers (whether or not including the Customer), as well as among departments and affiliates of NG, without any liability to the Customer.

18. DISPUTE RESOLUTION AND REMEDIES.

18.1. All disputes arising out of or in connection with the Agreement shall be attempted to be settled through good-faith negotiation between the Customer's appointed Manager and the President of NG, followed if necessary within thirty (30) calendar days by professionally-assisted mediation. Any mediator so designated must be acceptable to each party and must be a certified mediator in the State of Washington. The mediation will be conducted as specified by the mediator and agreed upon by the Parties. The Parties agree to discuss their differences in good faith and to attempt, with the assistance of the mediator, to reach an amicable resolution of the dispute. The mediation will be treated as a settlement discussion and therefore will be confidential. The mediator may not testify for either party in any later proceeding relating to the dispute. No recording or transcript shall be made of the mediation proceedings. Each party will bear its own costs in the mediation. The fees and expenses of the mediator will be shared equally by the Parties.

18.2. Failing resolution through negotiation or mediation, all actions, disputes, claims and controversies under common law, statutory law or in equity of any type or nature whatsoever, whether arising before or after the date of this Agreement, and whether directly or indirectly relating to: (a) this Agreement and/or any amendments and addenda hereto, or the breach, invalidity or termination hereof; (b) any previous or subsequent agreement between the parties; and/or (c) any other relationship, transaction or dealing between the parties (collectively the "**Disputes**"), will be subject to and resolved by binding arbitration pursuant to the Commercial Arbitration Rules of American Arbitration Association. Any award or order rendered by the arbitrator may be confirmed as a judgment or order in any state or federal court of competent jurisdiction within the federal judicial district which includes the residence of the Party against whom such award or order was entered. The prevailing Party in any arbitration shall be entitled to reasonable attorney fees and costs.

19. GOVERNING LAW; JURISDICTION; VENUE. The parties agree that this Agreement is consummated, entered into, and delivered in King County, Washington. Notwithstanding conflicts of laws provisions, this Agreement has been and is to be governed by, construed, interpreted and enforced in accordance with the laws of the State of Washington. In the

event that any litigation is commenced by either party to enforce this Agreement, the action will be filed and litigated, if necessary, solely and exclusively in a State court of competent jurisdiction located in King County, Washington. The parties waive any and all rights to have this action brought in any place other than King County, Washington, under applicable venue laws. The Parties hereby irrevocably waive any and all rights to have this action brought in any place other those stated herein. The Parties hereby irrevocably waive any claim that any such action has been brought in an inconvenient forum.

20. ATTORNEY'S FEES AND COSTS. In the event litigation is commenced to enforce this Agreement, costs of said suit including reasonable attorney's fees in all proceedings, trials, investigations, appearances, appeals and in any bankruptcy proceeding or administrative proceeding shall be paid to the prevailing Party by the other Party.

21. GENERAL AND MISCELLANEOUS.

21.1. Time shall be of the essence of this Agreement.

21.2. In this Agreement, wherefore the singular and masculine are used, they shall be construed as if the plural or the feminine or the neuter had been used, where the context or the party or parties so requires, and the rest of the sentence shall be construed as if the grammatical and the terminological changes thereby rendered necessary had been made.

21.3. Paragraph headings are provided as an organizational convenience and are not meant to be construed as material provisions of this Agreement.

21.4. Preparation of this Agreement has been a joint effort of the Parties and the resulting document shall not, solely as a member of judicial construction, be construed more severely against one of the parties than the other.

21.5. This Agreement may be executed in counterparts, each constituting a duplicate original, but such counterparts shall constitute one and the same Agreement.

21.6. The burdens of this Agreement shall be binding upon, and the benefits of this Agreement shall inure to, all successors in interest to the Parties to this Agreement from and after the Effective Date.

21.7. Each Party to this Agreement agrees to do, execute, acknowledge, and deliver or cause to be done, executed, acknowledged and delivered, all such further acts, and assurances in a manner and to the degree allowed by law, as shall be reasonably requested by the other party in order to carry out the intent of and give effect to this Agreement. Without in any manner limiting the specific rights and obligations set forth in this Agreement or illegally limiting or infringing upon the governmental authority of the Customer, the Parties declare their intention to cooperate with each

other in effecting the purposes of this Agreement, and to coordinate the performance of their respective obligations under the terms of this Agreement.

21.8. Except as set forth in this Agreement and the Exhibits hereto, no representation, statement, understanding or agreement, whether written or oral, has been made and there has been no reliance on anything done, said or any assumption in law or fact with respect to this Agreement for the duration, termination or renewal of this Agreement other than as expressly set forth in this Agreement and there has been no reliance upon anything so done or said that in any way tends to change or modify the terms or subject matter of this Agreement or to prevent this Agreement from becoming effective.

21.9. This Agreement supersedes any agreements and understandings, whether written or oral, entered into by the Parties hereto prior to the Effective Date of this Agreement.

22. SURVIVABILITY. Termination or expiration of this Agreement shall not relieve either Party of their respective obligations, which are expressly noted to survive termination or expiration or under the following sections which shall survive termination and expiration: Sections 3, 4, 5, 7, 8, 10, 17, 18, 19, 20, and this Section 22.

23. SEVERABILITY. If any covenant or provision of this Agreement is, or is determined to be, invalid, illegal or unenforceable by a court of competent jurisdiction, then such covenant or provision will be ineffective only to the extent of such prohibition or invalidity. All remaining covenants and provisions of this Agreement shall nevertheless remain in full force and effect, and no covenant or provision of this Agreement shall be deemed to be dependent upon any covenant or provision so determined to be invalid, illegal or unenforceable unless otherwise expressly provided for herein. The invalidity of any provision of this Agreement or any covenant herein contained on the part of any party shall not affect the validity of any other provision or covenant hereof or herein contained which shall remain in full force and effect.

24. Each party acknowledges that it has read this Agreement and understands the terms and conditions herein. Further, the parties have caused this Agreement to be executed on its behalf by the authorized officer whose signature appears below under its name, to be effective as of the date written above.

IN WITNESS WHEREOF, the Parties hereto have set their hands by their duly authorized representatives as of the day and year first above written.

City of Redmond, Washington

By: _____
Angela Birney
Mayor

Approved as to form:

_____
XXXXX
City Attorney

NovoaGlobal, Inc.

By: _____
Carlos Lofstedt
President and CEO

EXHIBIT A SERVICES

NG shall provide the Customer with the Systems. In connection with furnishing the Systems, NG shall provide the following, each of which is more fully described below:

1. SITE INSTALLATION PLANNING; DESIGN AND EQUIPMENT INSTALLATION
2. TRAINING AND SUPPORT
3. INFRACTION PREPARATION AND PROCESSING SERVICES
4. MAINTENANCE
5. PUBLIC EDUCATION CAMPAIGN
6. EXPERT WITNESS TESTIMONY AND COURT TRAINING
7. REPORTING

1. SITE INSTALLATION PLANNING, DESIGN AND EQUIPMENT INSTALLATION

1.1. Permits, Franchise, License.

1.1.1. NG shall obtain all necessary and applicable permits from the City, as well as any other regulatory agency, before commencing installation or work related to the Systems.

1.2. *The Systems.*

1.2.1. NG will initially install up to eighteen (18) Systems (which shall remain property of NG), monitoring such locations as the Customer and NG shall mutually agree. Up to twenty (20) additional Systems may be added at the option of the Customer with NG's consent. None of the quantities mentioned under this paragraph shall be interpreted as mandatory quantities. The actual quantities to be installed can only be approved by the City. The installation of any system will require the written approval of the City Mayor or designee. If a System location no longer qualifies for photo enforcement under RCW 46.63.220 (such as permanent school closure), then the System shall be removed and Monthly Photo Enforcement fees for such System shall cease. Each System shall comprise equipment capable of monitoring violations at a single approach to an intersection for up to five lanes of traffic. NG will install new Systems upon mutual agreement of the Parties. School zone fixed speed enforcement systems will conduct enforcement while beacon systems are in an activated state within the identified school zone. NG will ensure School zone fixed speed

enforcement systems are integrated with Customers Public Works school zone flashing beacons.

1.2.2. The Systems, including, but not limited to, technology and accuracy, equipment, cameras, technological support and warranty, shall be as described in Section F of NG's proposal answers to the Customer's RFP, which Section is incorporated herein by reference.

1.2.3. Automated traffic safety cameras may only take pictures of the vehicle and vehicle license plate. The image must not display the face of the driver or of passengers in accordance with RCW 46.63.220.

1.2.4. The Systems shall include all equipment located at each intersection, telecommunications equipment, and Software and shall have the capability of transferring images from the roadside in accordance with RCW 46.63.220 to be accessed at the Customer's Police Department processing facility.

1.2.5. *Substitution, Relocation, Subtraction, or Addition of a Site.* If NG or the Customer reasonably determines that one or more Sites selected for installation of a System is not for any reason appropriate for the System (and such determination is made at least fifteen (15) days prior to the commencement of installation of the System at any such intersection), then alternate intersection(s) may be substituted by written consent of the Parties. If the average monthly violation collected from any individual system does not meet the level required for the individual system to be cost neutral for a period of twelve (12) consecutive months, the Customer's Police Department shall have the right to request relocation of the system to a more effective location. This request must be in writing and before twenty four (24) months of the expiration of the contract or any of its extensions. NG shall have the option to comply or to reduce the fee temporarily or permanently to a level equal to the violation (revenue) collected from that individual system.

1.2.6. *Timeframe for Installation of the System.* NG shall install and activate the Systems in accordance with an Implementation Plan to be mutually agreed to by NG and the Customer, which installation shall, at minimum, conclude within sixty (60) days after all necessary permits and approvals are received by NG. NG shall work diligently to obtain all necessary permits and approvals and use reasonable commercial efforts to install the System in accordance with the schedule set forth in the Implementation Plan. The Customer agrees that the estimated dates of installation and activation of the

System set forth in the Implementation Plan are subject to delay based on conditions beyond the control of NG and are not guaranteed.

1.2.7. *Installation/Ownership of the System.* NG shall procure, install and provide support of Equipment at each of the agreed upon locations. As between NG and the Customer, all components for the System will remain the property of NG, and remain in NG's possession and control.

1.3. Installation

1.3.1. NG shall submit plans and specifications to the Customer for review and approval, which review and approval will not be unreasonably withheld, delayed or conditioned. NG shall provide at least three sets of drawings of the wiring for the System circuitry.

1.3.2. All cameras and other equipment shall be enclosed in lockable, weather and vandal-resistant housing. All wiring shall be internal to equipment (not exposed) and if commercially reasonable and if capacity exists, underground in existing traffic signal conduits, except where required to directly interface with the traffic signals and electrical service. Separate conduits or overhead wiring may be used by NG if existing conduit(s) are at capacity. If existing conduits are used, the Customer will not unreasonably withhold, delay or condition consent to such use.

1.3.3. NG will not enter Customers Traffic Signal Control Boxes without permission and/or authorization of the Customers Traffic Engineering/Public Works.

1.3.4. The provision, installation, and maintenance of all necessary electronic system communication equipment will be the sole responsibility of NG.

1.3.5. The System may be mounted on or utilize support of existing traffic signal poles, arms or other intersection structures where possible, subject to Customer review and approval, such review and approval not to be unreasonably withheld, delayed or conditioned.

1.3.6. The System poles, foundations, signs, and new infrastructure, as required, shall conform to applicable law.

1.4. Restoration of Intersections. Upon termination or expiration of the Agreement, NG shall remove the System and restore the affected public facilities including returning the intersections to their original condition; provided, however, that NG shall not be required to remove any conduit, in-ground fixture, underground wiring

or other infrastructure that will require excavation or demolition. All costs incurred by NG thereby will be the responsibility of NG.

1.5. *Compliance with Law.* NG shall design and install the System in compliance with all currently existing federal, state and local laws and regulations. NG covenants and agrees that its Systems shall, at all times, comply with all applicable laws, regulations, rules and orders ("Legal Requirements"). NG shall continuously monitor the status of such Legal Requirements to ensure continuous compliance. In the event of any change in the Legal Requirements, NG shall modify or replace (at its sole cost) all or any portion of its non-compliant Safety Systems. Any such modification shall be effected by NG in a reasonable period of time (not to exceed ninety (90) days for modification or one hundred eighty (180) days for complete system replacement) and NG' failure to effect such modification or replacement in a timely manner shall be grounds for the Customer to terminate this Agreement for cause. Any such termination shall not relieve NG of its obligation to restore each site to its original condition.

2. **TRAINING OF CUSTOMER PERSONNEL.** After System installation, NG shall provide up to eight (8) hours of training for up to ten (10) persons at two (2) sessions (for a total of 16 hours of training in the aggregate) at the Customer's facilities to acquaint Customer personnel with System operation. Training shall consist of instructional and operational training as well as hands-on equipment exercises with an instructor. All necessary training materials and documentation will be provided by NG at NG's expense. NG shall make all such training services available to the Customer prior to the end of the thirty (30) day period following the Installation Date. If the Customer requests additional courses or training, NG shall provide these at no additional cost to the Customer. Additionally, NG' will provide and maintain a web-based training service that includes basic operation instructions as well any system or procedure changes to ensure continuity for court personnel and law enforcement end users.

3. **INFRACTION PREPARATION AND PROCESSING SERVICES**

3.1. *Infraction Preparation and Processing.* NG shall perform the initial review of all data generated at the roadside, process and format violations utilizing a computerized traffic Infraction program that shall store all information required for Infraction processing by state, local law, and in accordance with court of jurisdiction specification, transfer the Infractions to the Police Department's computer within seven (7) days of the violation, for review and decision on whether or not to issue an Infraction. If NG is permitted by applicable law or regulation to do so, NG shall also review all DMV information and print and mail Infraction forms. NG shall pay all mailing and postage costs, and such other miscellaneous costs and expenses as may be reasonably necessary to issue an Infraction and

deliver it by U.S. mail. The Notice of Infraction form used by NG shall be in compliance with Washington Infraction Rule of Courts of Limited Jurisdiction 2.1(a). To the extent required by applicable law, NG shall obtain a certification of mailing issued by the Post Office. Notwithstanding anything to the contrary in the foregoing provisions of this Section 3.1, NG will not process nor support any Infractions not captured by the System and/or approved by the Customer.

3.2. *Officer Discretion.* NG recognizes and agrees that the decision to issue or dismiss a Infraction shall be the sole and exclusive decision of the Customers Police Department. In no event shall any NG employee or representative have the ability to authorize or dismiss any Infractions.

3.3. *Mailing of Infractions.* Infractions shall be mailed to the violator as soon as is reasonably practicable, and in no event longer than ten (10) business days after being approved by the Customer and NG has been notified of such approval. The form of Infraction shall be subject to the approval of the Customer, which approval may not be unreasonably delayed, conditioned or withheld.

3.4. *Cooperation With Police and the Courts.* NG shall be responsible for, and pay for the cost of issuing and the mailing in accordance with applicable law. NG shall coordinate with the Customer and the Courts, and shall comply with the applicable law and court procedures regarding the mailing and other requirements necessary for the issuance and processing of Traffic Infractions. All Infractions shall be reviewed and approved by the Customer's Police Department prior to mailing. In addition, NG will cooperate with the Courts to set up the necessary communications, systems for processing and upon request establish procedures that will enable NG to send delinquent notices to those registered owners/drivers for whom such notices are appropriate. NG acknowledges that it is aware that the state law (RCW 46.63.220(9) requires that the infraction be mailed to the violator within fourteen (14) days of the date of violation, inclusive of the time it takes for the City personnel to review the violations data. With respect to each authorization to issue an infraction from the Customer, NG shall print and mail an infraction within five (5) days after NG's receipt of such authorization.

3.5. With respect to each authorized violation, within five (5) business days after NG's receipt of such authorization, NG shall file with the King County District Court, Northeast Division, a copy (electronic or otherwise) of the Infraction. NG acknowledges its understanding that Washington State law requires all infractions be filed within five business days of issuance (date signed by Police Officer) or the infraction is subject to dismissal under Court Rule. Filing of issued infractions within five days shall be considered a material provision of this Agreement. This

paragraph only applies in case that the Customer chooses to use JIS. If the Customer elects to use NG's Back Office then no filing would be required.

3.6. *Rental car and business vehicles*. NG will coordinate with the Customer and Courts to establish an acceptable procedure to streamline and coordinate the processing, notification, and accountability of rental car violation and corporate vehicle violations.

3.7. *Preparation of Evidence Packages.* NG shall provide electronic copies of evidence packages in such form as may be reasonably agreed upon with the courts to enable the Customer to enforce its Infractions in court.

3.8. *Access to License Information*. NG shall maintain the ability to access the license information, the registered owner residence and mailing address for all US registered vehicles, and the purchaser information when there is a vehicle report of sale, and all subscription or per-request fees for information, if any, shall be paid by NG. If possible, NG will identify rental vehicle and corporate vehicle violations to migrate and merge original violation with rental and business nomination for appropriate processing needs. If NG is unable to access such information, NG shall provide the make and license plate number of each violator to the Customer, which will obtain and input the information into the System, or provide such information to NG, within a reasonable period of time.

3.9. *Numbering System.* NG, in coordination with the Customer, shall develop and implement an independent numbering system for automated infractions and correlating the original violations with nominations.

3.10. *Transmission of Information.* NG shall make all Infraction information available via an electronic file using comma separated value files on a secure FTP site. NG shall maintain a documented chain of custody for all electronically transmitted information while the information is under NG's control.

3.11. *Customer Service.* NG shall provide an automated toll-free customer service telephone number to the public. Customer Service Representatives will be available Monday through Friday, from 10:00 a.m. to 5:00 p.m. (ET), excluding holidays, in order to schedule violation video viewing appointments for the courts and to answer basic questions regarding the Customer's program.

4. MAINTENANCE

4.1. *Maintenance of System.* Except as provided herein, NG shall Maintain the System (as such term is defined below); provided however, that NG shall not be responsible for any maintenance, repair or replacement required as a result of (i) the negligence

or intentional act of the Customer, its employees, agents or independent contractors (other than NG) and/or (ii) any equipment or software not provided by NG. NG shall maintain a maintenance log that documents all service issues. To "Maintain the System" shall mean to keep the System in a state of operation such that the System's functionality and operation conforms in all material respects to the description of the System set forth in this Exhibit. NG will initially respond to any camera or system malfunction within twenty-four (24) hours of detection, and make all reasonable efforts to have the system fully operational within seventy-two (72) hours. In the event that a System is not fully operational within seventy-two (72) hours of reporting the incident, NG shall credit the monthly invoice in the amount of the prorated Monthly Photo Enforcement fees for the downed System for each day the System is down after the initial seventy-two (72) hours. The System shall automatically notify appropriate personnel of any system failure, malfunction, or other problem that would cause the System to be inoperable. The System shall be designed so that ninety percent (90%) of all system malfunctions can be repaired within four (4) hours.NG shall also install all software revisions for Systems as and when developed and made commercially available by NG. NG is responsible to ensure systems are operational. NG will repair and upgrade as needed, including damage caused by vandalism, traffic accidents, weather damage, or any unforeseen event that should cause a failure of operations, and shall maintain a reasonably clean appearance and in a graffiti-free condition.

4.2. *Equipment Checks.* NG shall use commercially reasonable efforts to perform remote camera and equipment checks to confirm proper operation of computers, cameras and communications network. Routine in-field camera equipment inspection will be done as needed. The System shall have the capability of on-line monitoring of all cameras at each intersection.

4.3. NG will conduct routine testing, evaluation, and monitor the system to ensure the system is operational. If a deficiency, malfunction, or failure of the system is detected NG will notify the Customers Police Department within 72 hours by written or electronic notification. If the system cannot be restored or repaired to full functional capability within 7 consecutive calendar days NG with reduce the fee to reflect the time the system is deficient, malfunctioning, or failing. The fee reduction shall be applied to the effected billing cycle and continue until the system is restored to full operation. This reduction shall be identified on the billing statement to the Customers Finance Department.

5. PUBLIC EDUCATION CAMPAIGN

5.1. *Public Awareness Program.* NG shall assist the Customer with a Public Awareness Program. Such assistance shall consist of:

5.1.1. Paying for and installing all signage required by State law and local ordinance or as otherwise required by resolution of the Customer's Council

5.1.2. Reasonable assistance for a media event to launch the community education program

5.1.3. Preparing, publishing and printing a brochure for distribution

5.1.4. A reasonable amount of training for a Customer staffed speaker's bureau

5.1.5. Providing a toll-free customer service hotline which shall be staffed sufficiently during all regular business hours.

6. EXPERT WITNESS TESTIMONY AND COURT TRAINING

6.1. *Expert Witness Testimony*. NG shall provide expert witness testimony at its sole expense, as reasonably necessary, to testify regarding the accuracy and technical operation of the System as necessary for court challenges to the operation of the System.

6.2. *Court Training.* NG shall conduct a one-day workshop-orientation session for Municipal Court judges (and/or their designees), hearing officers, other appropriate court officials and the Customer prosecutor. NG will provide and maintain a web based training service that includes basic operation as well as any system or procedure changes to ensure continuity for court staff end users.

7. REPORTING

7.1. *Reporting in General.* NG will provide the Customer with monthly reports on System performance, the content and precise timing of which will be mutually agreed upon by the Customer and NG. All mutually agreed upon reports shall be constantly and automatically updated and made available for the Customer to review at the Customer's discretion. NG will also prepare and submit financial, program progress, monitoring, evaluation, and other such reports as may be required by the Customer or state law. NG shall maintain and permit on-site inspections of property, personnel, financial, and other records and reports as may be required by the Customer to assure proper accounting for all compensation paid by the Customer to NG.

7.2. *Bi-Monthly Report*. NG shall submit to the Customer a Bi-Monthly Report on project results within fifteen (15) days after the end of two-week period and NG shall provide web access to such reports.

7.3. *Monthly Report*. NG shall submit to the Customer's Public Works/Traffic Engineering department a monthly Report on statistical information regarding

traffic volumes, average speed, traffic congestion within thirty (30) days after the end of calendar month and NG shall provide web access to such reports.

7.4. *Annual Report*. Per RCW 46.63.220, NG shall submit an annual report of the number of notices of infraction issues for each camera system and any other relevant information about the automated traffic safety cameras the Customers Police Department deems appropriate for the Customers Police Department web page.

7.5. *Additional Reports or Information*. Any other reports and information are not part of the Agreement and the preparation and delivery of any other such reports or information may result in additional fees.

7.6. NG shall permit authorized Customer personnel to generate reports using NG's system.

7.7. *Database.* NG shall maintain a database with the following information per violation:

7.7.1. Location, date and time

7.7.2. Vehicle description including license plate state and number

7.7.3. Applicable vehicle code section violated (if available to NG)

7.7.4. Infraction prepared or reason for not preparing Infraction (if available to NG)

7.7.5. Registered vehicle owner's name and address, and related information required to prepare Infractions where violation is made by a driver other than registered owner (if available to NG) (Affidavit of Non-Liability)

7.7.6. Status of Infraction (outstanding, cancelled, reissued, paid, bail forfeited, traffic school, warrants issued, etc.) (if available to NG)

7.8. NG shall maintain at its sole expense all records, including, but not limited to all video recordings, which it generates or receives as a result of the performance of services pursuant to the Agreement for the period of time required by, and otherwise in accordance with, the Revised Code of Washington, Chapter 42.56, Public Records Act and Revised Code of Washington 46.63.220, as same may be amended from time to time. Upon receipt of a request from the Customer for a copy of any record being maintained by NG, NG shall provide the requested record to the Customer within a reasonable time following such request, but in no event later than seven (7) days following the date the request is received by NG. NG shall provide a data and information storage solution that is in compliance with the

Washington State Law Enforcement Retention Schedule, in conjunction with the Local Government Common Records Retention Schedule (CORE).

7.9. Additional Services (if requested by the Customer in writing):

7.9.1. *Payment Processing Services.* NG shall use reasonable commercial efforts which are mutually agreeable to the Customers treasury department and the court system to receive Infraction fees from violators, deposit amounts collected into an appropriate bank account, provide accounting records to the Customer, and remit the amounts received as instructed by the Customer. In addition, if approved by the Customers treasury and the courts NG will provide an online payment portal for violators.

7.9.2. *Intersection Assessment Program.* NG will generate a video-based analysis of an intersection or school zones designed to evaluate the frequency of red-light violations or school zone speed violations for each approach at the targeted intersection. The video media will contain up to 16 hours of video monitoring assuming the equipment remains installed at the intersection or school zone during the course of monitoring, but not to exceed three consecutive calendar days. A report summarizing the results, along with the media generated will be provided to the Customer. There is no charge for the initial 18 approaches or any future system placement requests to be evaluated by NG pursuant to this Agreement.

EXHIBIT B
COMPENSATION AND PRICING

MONTHLY FEE

Pricing for NG Safety Systems relating to fixed red light photo enforcement shall be as follows:

- $3,999.00 per system per month.

Pricing for NG Safety Systems relating to fixed speed photo enforcement shall be as follows:

- $3,999.00 per system per month, with less than 400 Infractions issued per month.
- $4,900.00 per system per month, with between 400 and 800 Infractions issued per month.
- $5,700.00 per system per month, with more than 800 Infractions issued per month.

NG acknowledges school zone fixed speed photo enforcement systems will only function during specified times throughout the school day and in accordance with Customers flashing beacon system. Additionally, NG will deduct from the total monthly fee to compensate when schools are not in session for more than seven (7) consecutive calendar days. These school breaks do not constitute a temporary suspension as defined below. To simplify the administrative work for all parties, NG shall bill the monthly fees for all months of the year, but compensate the Customer with a twenty five percent (25 %) discount on the monthly fees for School Zone Systems.

Temporary Suspensions. In the event of construction by the Customer, that cause a disruption of service, this Agreement, upon NG's written request, can be extended. For every twelve (12) months, (per individual system) of interrupted service the entire NG agreement can be extended for a one-month period.

OPTIONAL PRICING

Pricing for NG Safety Systems relating to portable photo enforcement (for any application) shall be as follows:

- $4,799.00 per system per month, with less than 400 Infractions issued per month.
- $5,700.00 per system per month, with between 400 and 800 Infractions issued per month.
- $6,600.00 per system per month, with more than 800 Infractions issued per month.

Pricing for NG Safety Systems relating to fixed photo enforcement (for any application) shall be as follows:

- $3,999.00 per system per month, with less than 400 Infractions issued per month.
- $4,900.00 per system per month, with between 400 and 800 Infractions issued per month.
- $5,700.00 per system per month, with more than 800 Infractions issued per month.

Pricing for NG Safety Systems relating to LPR-Sec (License Plate Recognition) shall be as follows:

- $399.00 per lane per month. LPR-Sec assumes having current infrastructure and power.

BUSINESS ASSUMPTIONS FOR ALL PRICING OPTIONS

1. Except where a balance remains unpaid due to a deficit in the gross cash received as described herein, Customer agrees to pay NG within thirty (30) days after the invoice or Monthly report is received. A monthly late fee of 1.0% is payable for amounts remaining unpaid sixty (60) days from date of invoice or monthly report if such delay is the responsibility of the Customer.
2. Required Payment Convenience Fees will not be considered to be revenue received and are the responsibility of the violator.
3. Required Refund Fees will not be considered to be revenue received and are the responsibility of the violator.
4. Violations sent to a Collection agency will have an additional charge as negotiated with the chosen collection agency in mutually agreement with the Customer and the court system.

City of Redmond
Attn: Brian Coats, Deputy Chief
8701 160th Ave NE
Redmond, WA 98052

Heidi Traverso

Business Development Manager
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E-mail: htraverso@novoaglobal.com

1/1/2025

RE: Sole Source

Sole Source Justification

NovoaGlobal has developed a proprietary technology, Intelligent Adaptive Enforcement (IAE), that has been used successfully within our customer base. Intelligent Adaptive Enforcement (IAE) technology, particularly in enhancing traffic safety and community acceptance. By reducing speeding incidents and fatalities while minimizing the burden on local legal systems, your approach seems quite innovative. IAE is an algorithm developed by NovoaGlobal designed to adjust high violation volumes to municipal and court capacities in real time, prioritizing the most severe violations first.

The implementation of photo enforcement technology used in conjunction with IAE, in Redmond, could greatly benefit school zones, especially during peak hours when children are present. The ability to adapt and adjust to the specific enforcement areas, to include non-beacon time speed enforcement while children are present in school and the capability to review and adjust to each specific camera system, this technology could potentially allow to adjust in specific school zones to reduce the number of violations and not overtax your city, or court systems.

In addition, NovoaGlobal provides the most integrated technology in the market having the following capabilities:

- Fixed and Portable systems with optional capabilities.
  - 3 weeks without recharging
  - low power 25 W
  - small footprint (2x3ft)

- wireless light connection
- vehicle tracking
- pedestrian tracking
- speed violations
- crosswalk violations
- stop sign violations
- high-definition DVR 10 days
- low-definition DVR 30 days, capability to increase
- send warning

- License plate recognition technology
  - Connect to criminal sources
  - Automatically detect a plate number
  - Automatically detect the state
- Video monitoring technology
  - Operates via cellular network
- Integrated back-end solution

Regards,

Heidi Traverso
Business Development Manager

Automated Speed Safety Camera Program

April 8, 2025

Chief Darrell Lowe

Camera Location Maps

Redmond High School

Camera Location Maps

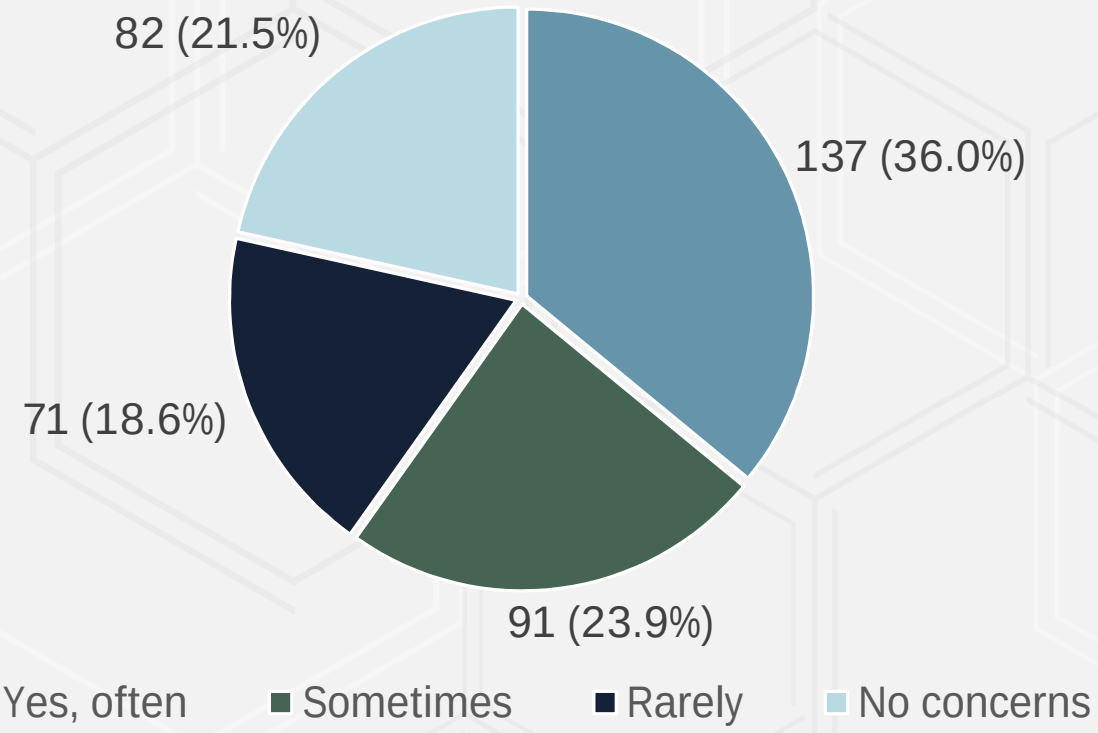
Redmond Middle School

Camera Location Ma

Rose Hill Middle School

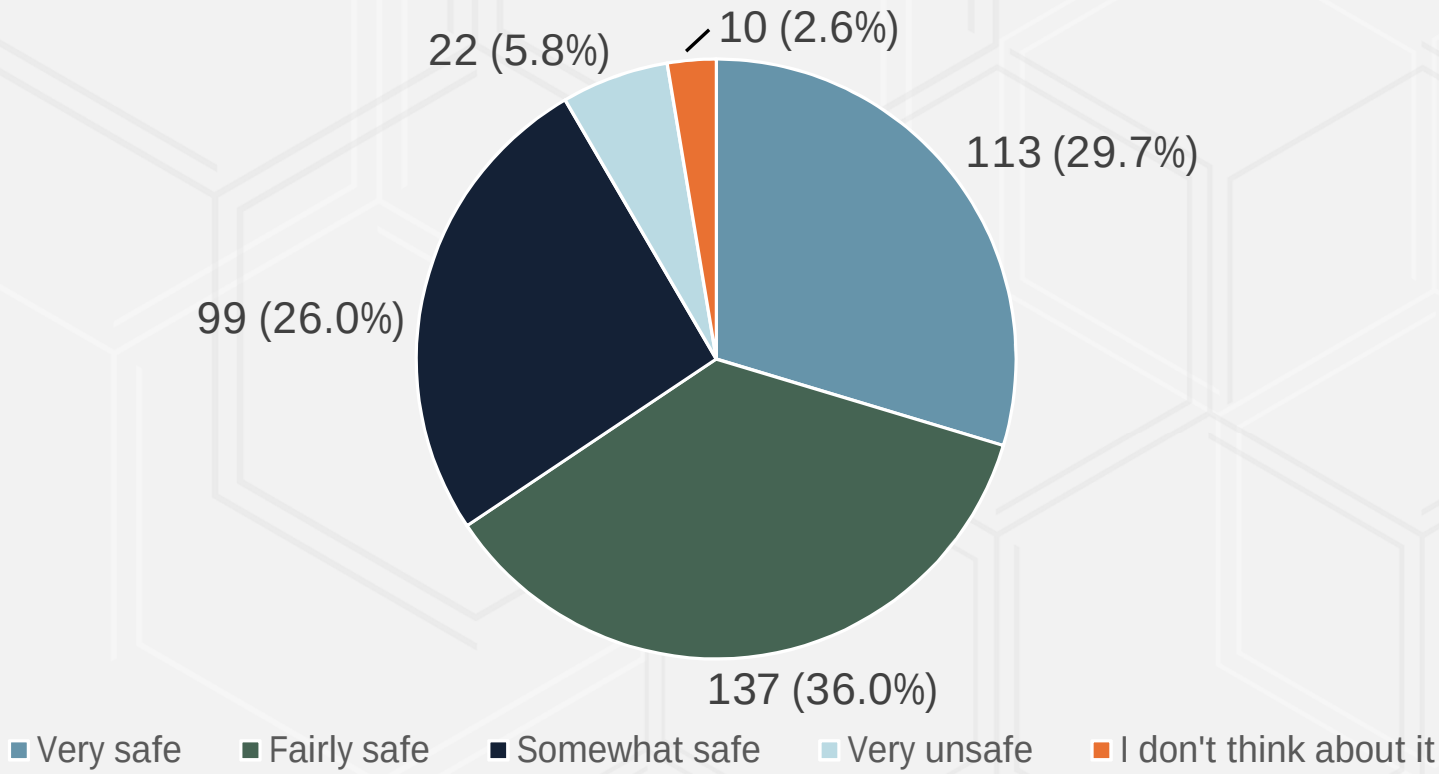
Community Survey Results

Do you have concerns about traffic safety in areas near parks and schools in Redmond? (e.g. speeding, reckless driving, etc.)



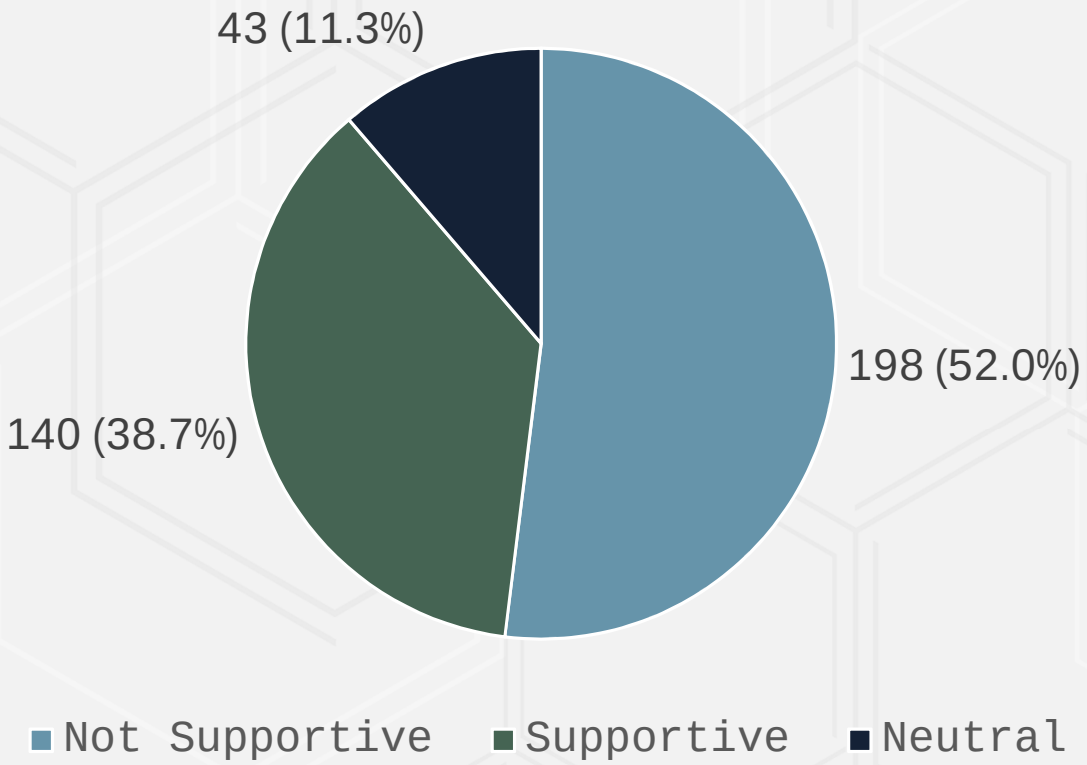
Community Survey Results

Do you feel safe walking, biking, or rolling (i.e., mobility assistance device) to and from parks as it relates to current traffic conditions?



Community Survey Results

How supportive are you of measures, such as speed safety cameras to reduce speeding and improve safety near schools?



Community Survey Results

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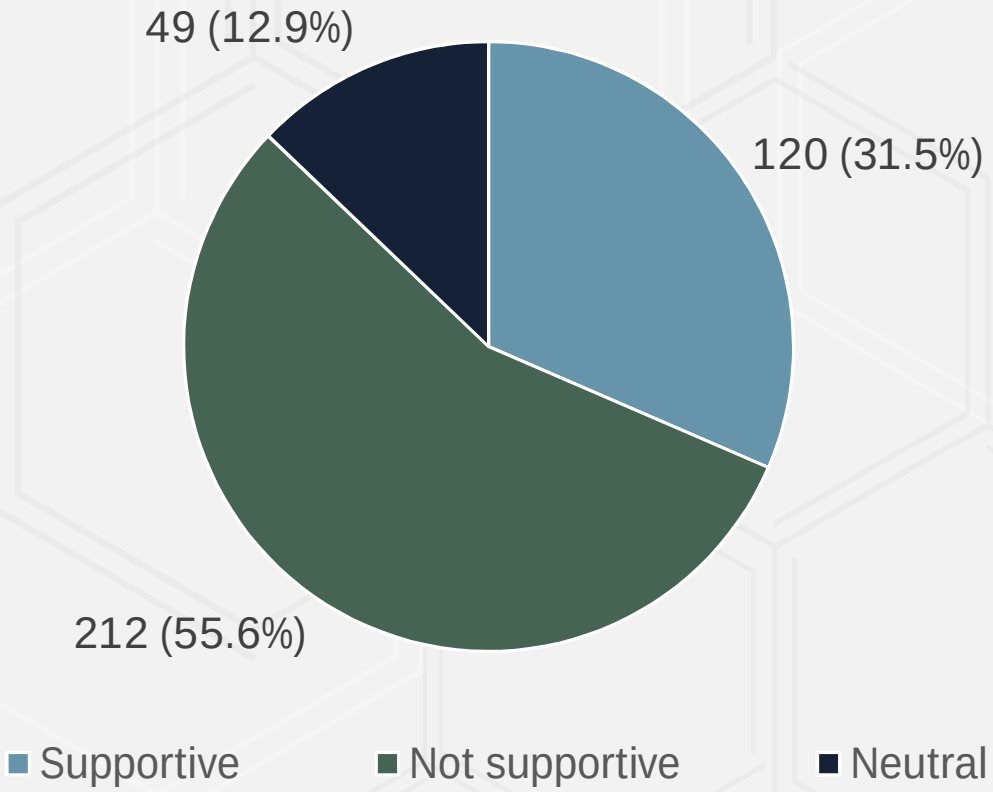
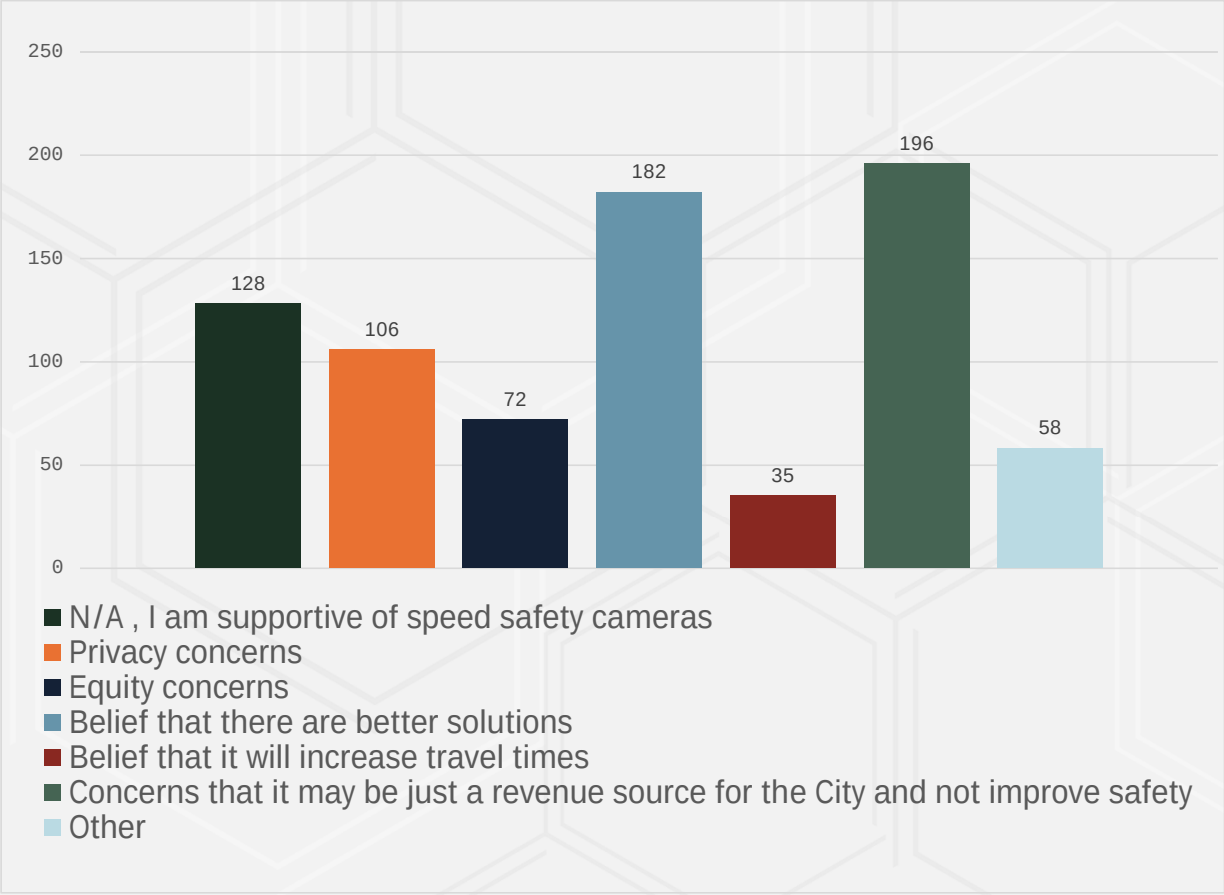


Community Survey Results

If you indicated that you are not supportive of speed safety cameras in Redmond, why? (Please select all that apply)



THANK YOU

Any Questions?

Memorandum

Date: 4/8/2025
Meeting of: City Council Study Session

File No. SS 25-026
Type: Study Session

Council Talk Time