PROVO MUNICIPAL COUNCIL

Work Meeting

12:00 PM, Tuesday, March 01, 2022

Hybrid meeting: youtube.com/provocitycouncil or 351 W. Center Street, Provo, UT 84601

The in-person meeting will be held in the **Council Chambers**. The meeting will be available to the public for live broadcast and on-demand viewing on YouTube and Facebook at: youtube.com/provocitycouncil and facebook.com/provocouncil. If one platform is unavailable, please try the other. If you do not have access to the Internet, you can join via telephone following the instructions below.

To listen to the meeting by phone: March 01 Work Meeting: Dial 346-248-7799. Enter Meeting ID 897 2241 5397 **and press #. When asked for a participant ID, press #.**

Agenda

Roll Call

Prayer

Redevelopment Agency Governing Board

1.   A resolution of the Governing Board of the Redevelopment Agency of Provo City Corporation approving the assignment of the parking lease with Provo City Housing Authority. (22-025)

2.   A resolution authorizing the Chief Executive Officer to sign an extension to the Exclusive Right to Negotiate agreement with McWhinney Real Estate Development for the redevelopment of the existing City Hall property downtown. (22-025)

Business

3.   A presentation regarding the FY2023 Budget- Administrative Services (Facilities, Information Systems and Justice Court) (22-016)

4.   A presentation regarding the FY2023 Budget- Police. (22-016)

5.   A presentation regarding the FY2023 Budget- Fire. (22-016)

6.   A presentation regarding the Water Utility Update. (22-026)

7.   A presentation from the Foothills Protection Committee regarding the Provo Foothills Trail Plan. (22-024)

8.   A discussion regarding redistricting adjustments to City Council District maps. (22-003)

9.   A discussion regarding the hiring process and committee for selecting a Municipal Council Executive Director. (22-027)

Closed Meeting
The Municipal Council or the Governing Board of the Redevelopment Agency will consider a motion to close the meeting for the purposes of holding a strategy session to discuss pending or reasonably imminent litigation, and/or to discuss the purchase, sale, exchange, or lease of real property, and/or the character, professional competence, or physical or mental health of an individual in conformance with 52-4-204 and 52-4-205 et. seq., Utah Code.

Adjournment

If you have a comment regarding items on the agenda, please contact Councilors at council@provo.org or using their contact information listed at: provo.org/government/city-council/meet-the-council

Materials and Agenda: agendas.provo.org
Council meetings are broadcast live and available later on demand at youtube.com/ProvoCityCouncil
To send comments to the Council or weigh in on current issues, visit OpenCityHall.provo.org.

The next Work Meeting will be held on Tuesday, March 15, 2022. The meeting will be held in the Council Chambers, 351 W. Center Street, Provo, UT 84601 with an online broadcast. Work Meetings generally begin between 12 and 4 PM. Council Meetings begin at 5:30 PM. The start time for additional meetings may vary. All meeting start times are noticed at least 24 hours prior to the meeting.

Notice of Compliance with the Americans with Disabilities Act (ADA)
In compliance with the ADA, individuals needing special accommodations (including auxiliary communicative aides and services) during this meeting are invited to notify the Provo Council Office at 351 W. Center, Provo, Utah 84601, phone: (801) 852-6120 or email evanderwerken@provo.org at least three working days prior to the meeting. Council meetings are broadcast live and available for on demand viewing at youtube.com/ProvoCityCouncil.

Notice of Telephonic Communications
One or more Council members may participate by telephone or Internet communication in this meeting. Telephone or Internet communications will be amplified as needed so all Council members and others attending the meeting will be able to hear the person(s) participating electronically as well as those participating in person. The meeting will be conducted using the same procedures applicable to regular Municipal Council meetings.

Notice of Compliance with Public Noticing Regulations
This meeting was noticed in compliance with Utah Code 52-4-207(4), which supersedes some requirements listed in Utah Code 52-4-202 and Provo City Code 14.02.010. Agendas and minutes are accessible through the Provo City website at agendas.provo.org. Council meeting agendas are available through the Utah Public Meeting Notice website at utah.gov/pmn, which also offers email subscriptions to notices.

PROVO MUNICIPAL COUNCIL STAFF REPORT

Submitter: DWALTER
Department: Development Services
Requested Meeting Date: 03-01-2022

SUBJECT: Resolution of the Governing Board of the Redevelopment Agency of Provo City Corporation approving the assignment of the parking lease with Provo City Housing Authority. (22-025)

RECOMMENDATION: Staff recommends that the Redevelopment Agency Board approve the attached resolution consenting to the Assignment and Assumption of Parking License Agreement and authorizing the Chief Executive Officer or her designee to sign the Assignment and Assumption Agreement

BACKGROUND: Previously, the Agency Board consented to the assignment of parking spaces in the Wells Fargo garage to the Provo City Housing Authority to meet their obligation for parking for their new project. Provo City Housing Authority was granted a reduction in their parking needs and is looking to transfer their excess capacity to Capital Thirteen, LLC who will utilize those excess spaces to meet their obligations as they refurbish and enhance the former Los Hermanos building.

FISCAL IMPACT: None

PRESENTER'S NAME: David Walter, RDA

REQUESTED DURATION OF PRESENTATION: 10 minutes

COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:
Pursue economic development initiatives
Eliminate blight
Provide a vibrant downtown environment

CITYVIEW OR ISSUE FILE NUMBER: 22-025

REDEVELOPMENT AGENCY RESOLUTION XXX-XXX

RESOLUTION OF THE GOVERNING BOARD OF THE REDEVELOPMENT
AGENCY OF PROVO CITY CORPORATION APPROVING THE
ASSIGNMENT OF THE PARKING LEASE WITH PROVO CITY HOUSING
AUTHORITY (XX-XXX)

Whereas, the Redevelopment Agency of Provo City Corporation ("Agency") has approved through Resolution 2019-RDA-10-08-1 the use of Agency's spaces in the Wells Fargo parking structure by the Provo City Housing Authority ("Authority") for its planned development of a multi-family residential structure; and

Whereas, Authority has requested and received a variance for the number of parking spaces required for its development and no longer needs the same number of spaces as previously expected; and

Whereas, Capital Thirteen has purchased the former Los Hermanos building and desires to improve and add to the structure, including office and residential uses, and needs parking for itself, and desires to fill that parking need from the Authority's excess capacity; and

Whereas, the Authority is willing to provide that excess capacity; and

Whereas, pursuant to the prior Agreement between Agency and Authority, Capital Thirteen has requested the Agency's written consent to the Assignment; and

Whereas, after undertaking due diligence regarding the Assignment, the Agency believes it is in the best interests of the Agency and the citizens of Provo City that the Agency consent to the assignment as set forth herein.

NOW, THEREFORE, be it resolved by the Governing Board of the Redevelopment Agency of Provo City Corporation as follows:

PART I:

The Redevelopment Agency of Provo City Corporation hereby approves the Assignment of the Parking Lease obligations and   authorizes the Chief Administrative Officer, or their designee, to sign any documentation necessary to consent to that assignment.

PART II:

This resolution shall take effect immediately.

END OF RESOLUTION.

Redevelopment Agency of Provo City Corporation

Staff Memorandum

Provo City Housing Authority Assumption of Parking

March 1, 2022

Department Head

Bill Peperone
852-6402

Presenter

David Walter
852-6167

Required Time for Presentation

15 Minutes

Is This Time Sensitive

Yes

Case File # (if applicable)

Not applicable

Purpose of Proposal

- Approve the Assignment and Assumption of Parking Agreement for 86 East

Action Requested

- Staff recommends that the Redevelopment Agency Board approve the attached resolution consenting to the Assignment and Assumption of Parking License Agreement and authorizing the Chief Executive Officer or her designee to sign the Assignment and Assumption Agreement.

Relevant City Policies

- Pursue economic development initiatives
- Eliminate blight
- Provide a vibrant downtown environment

Budget Impact

- None

Description of this item

- In 2003, the Redevelopment Agency entered into agreements to help construct the Wells Fargo Building and the associated parking structure. In exchange the Agency received the ability to designate 204 parking spaces within the Wells Fargo structure to facility downtown redevelopment. Those spaces were crucial to the development of the 63 East complex, which has 41

| | apartments and 5,000 square feet of commercial space on the first floor and is completely leased out. The first floor houses two restaurants, Good Thyme and Roll With It Ice Cream.

● The Provo City Housing Authority purchased the property and will develop it as an apartment complex with 74 units. The Housing Authority intends to apply for Low Income Housing Tax Credits from the State of Utah but doesn't require the number of spaces The Agency needs to approve the assignment of the spaces previously leased by the Provo City Housing Authority to Capital Thirteen LLC, who has purchased the former Los Hermanos building and will refurbish the structure. They intend to keep the ground floor commercial but add several floors above the current building and to include some residential units. Capital Thirteen will maintain the existing façade of the building and will submit all plans to the City for approval, including the Landmarks Commission.

● The attached Assignment to assume the parking lease from the Housing Authority will allow the apartment residents to the parking. Staff recommends that the Redevelopment Agency Board approve the attached resolution approving the signing of the Assignment and authorizing the Chief Executive Officer or her designee to sign any other necessary documentation to facilitate this transaction. |
| | |

ASSIGNMENT AND ASSUMPTION OF PARKING LICENSE AGREEMENT

This Assignment and Assumption of Parking License Agreement (this "*Assignment*"), dated effective as of _____, 2021, is made by and among Provo City Housing Authority, a Utah housing authority ("*Assignor*"), Capital Thirteen LLC, a Delaware limited liability company ("*Assignee*"), and, solely with respect to <u>Sections 2, 3 and 4</u> of this Assignment, Norco Vista, LLC ("*Norco*"), a California limited liability company, as assignee of and successor in interest to 86 North University Avenue Holdings, LLC, a Maryland limited liability company ("*86 North*"), and the Redevelopment Agency of Provo City Corporation ("*Agency*"). Capitalized terms not otherwise defined herein shall have the meanings set forth in the 2019 Assignment and Assumption (defined below).

WHEREAS, Assignor entered into that certain Assignment and Assumption of Parking License Agreements, dated October 8, 2019, by and among Assignor, Forge Development, L.L.C., a Utah limited liability company ("*Forge*"), Norco, and the Agency (the "2019 *Assignment and Assumption*"), pursuant to which Forge assigned, and Assignor assumed, (i) all of Forge's rights in and to the 80 East Parking License, which provided Assignor the right and license to use fifty-five (55) licensed spaces, as more particularly described in the 80 East Parking License, which is attached hereto as <u>Exhibit A</u>, and (ii) all of Forge's right and license to use sixty-five (65) licensed spaces, originally licensed pursuant to the 63 Center Parking License, but transferred and made subject to the 80 East Parking License pursuant to Section 3 of that certain Assignment and Assumption of Parking License Rights, dated May 9, 2018, and attached hereto as <u>Exhibit B</u> (the "*2018 Assignment and Assumption*").

WHEREAS, In connection with Assignee's development project located at _____, Provo, Utah 84606, and more particularly described on <u>Exhibit C</u> attached hereto (the "*Project*"), Assignor desires now to assign all of Assignor's rights, title and interest in and to, and Assignee desires to accept such assignment and assume all of Assignor's obligations under, the 80 East Parking License, including Assignor's right and license to use sixty-five (65) licensed spaces, as more particularly described in the 80 East Parking License (the "*Licensed Spaces*"), pursuant to the terms and conditions in this Assignment.

NOW, THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. <u>Assignment and Assumption</u>. Assignor hereby assigns, transfers and conveys to Assignee, and Assignee hereby assumes and accepts from Assignor, any and all of Assignor's right, title and interest in, to and under the 80 East Parking License, as such assignment and assumption shall be necessary for Assignee to obtain the right and license to use the Licensed Spaces, together, without limitation, its proportionate share of all liabilities and obligations arising thereunder or in connection therewith accruing on and prior to the date hereof. Assignor and Assignee hereby agree that the 80 East Parking License shall be deemed to be bifurcated into two (2) separate agreements such that Assignee shall have all right and license to use the Licensed Spaces, and Assignor shall have all right and license to use the remaining fifty-five (55) spaces.

2. <u>Consent, Waiver, and Additional Rights</u>. Each of Norco and the Agency hereby consents to and approves this Assignment and, specifically, Assignee's use of the Licensed Spaces in connection with the Project, and acknowledges and confirms that all terms and conditions precedent necessary for such consent and approval, including, without limitation, those conditions set forth in the Parking License Agreements, are fully satisfied. Norco and the Agency each hereby waive any requirement set forth in the Parking License Agreements that is not satisfied as a part of this Assignment or any related transaction. Each of Norco and the Agency hereby acknowledge and agree that the 80 East Parking License was amended in connection with the execution of the 2018 Assignment and Assumption to increase the number of licensed spaces subject to the 80 East Parking License from fifty-five (55) to one hundred and twenty (120) and that the Licensed Spaces are subject only to the terms of this Assignment and the 80 East Parking License, which includes, without limitation, a term of ninety-nine (99) years from the Commencement Date.

Following the date hereof, the 80 East Parking License shall be deemed to be bifurcated into two (2) separate agreements—one with Assignee, with respect to the Licensed Spaces, and one with Assignor, with respect to the remaining fifty-five (55) spaces.

3. <u>Further Assurances</u>. At any time and from time to time after the execution and delivery of this Assignment, without further consideration, the parties hereto shall execute and deliver such other instruments of transfer, conveyance, assignment and confirmation as may be reasonably requested by a party hereto in order to more effectively transfer, convey and assign to Assignee and to confirm Assignee's right, title, and interest to the 80 East Parking License or the Licensed Spaces and otherwise to effectuate the transactions contemplated hereunder.

4. <u>General Provisions</u>. This Assignment (i) shall be governed by the laws of the State of Utah without regard to conflicts of law principles; (ii) may be amended only by written agreement of all of the parties hereto; (iii) shall inure to the benefit of, and be binding upon the parties hereto and their respective successors, assigns, heirs, executors and administrators; (iv) constitutes the full and entire understanding and agreement between the parties hereto with respect to the subject matter hereof; and (v) may be executed in any number of counterparts, each of which shall be an original, but all of which together shall constitute one instrument. Facsimile or other electronically transmitted signatures shall be as effective as original signatures.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the parties hereto have executed this Assignment effective as of the date first set forth above.

Exhibit A – 80 East Parking License

Exhibit B – 2018 Assignment and Assumption

Exhibit C – Description of the Project

ASSIGNOR:

PROVO CITY HOUSING AUTHORITY

By: _____
Name: _____
Title: _____

ASSIGNEE:

CAPITAL THIRTEEN LLC

By: _____
Name: _____
Title: _____

Solely with Respect to Section 2:

NORCO:

NORCO VISTA, LLC

By: _____
Name: _____
Title: _____

AGENCY:

REDEVELOPMENT AGENCY OF PROVO CITY
CORPORATION

By: _____
Name: _____
Title: _____

EXHIBIT A

80 EAST PARKING LICENSE

(See Attached)

EXHIBIT B

2018 ASSIGNMENT AND ASSUMPTION

(See Attached)

EXHIBIT C

DESCRIPTION OF THE PROJECT

PROVO MUNICIPAL COUNCIL
STAFF REPORT

Submitter: DWALTER
Department: Development Services
Requested Meeting Date: 01-01-2018

SUBJECT: A resolution authorizing the Chief Executive Officer to sign an extension to the Exclusive Right to Negotiate agreement with McWhinney Real Estate Development for the redevelopment of the existing City Hall property downtown. (22-025)

RECOMMENDATION: Staff recommends that the Redevelopment Agency Board approve the attached resolution approving an extension to the Exclusive Right to Negotiate and authorizing the Chief Executive Officer or her designee to sign the extension

BACKGROUND: Abatement and demolition of the existing structure. McWhinney and the Agency entered into an Exclusive Right to Negotiate giving McWhinney 240 days to refine their planning for the redevelopment and bring a Joint Development Agreement for approval to the City Council. There was also an extension built into the agreement if we decided another 90 days were necessary to finalize the planning.

As we have negotiated with McWhinney on the redevelopment of the block, we have jointly decided to ask for the 90-day extension to finalize the layout of the redevelopment and to fully quantify the assistance being requested

FISCAL IMPACT: None

PRESENTER'S NAME: David Walter, RDA

REQUESTED DURATION OF PRESENTATION: 10 minutes

COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:
Pursue economic development initiatives
Eliminate blight
Provide a vibrant downtown environment

CITYVIEW OR ISSUE FILE NUMBER: 22-025

RESOLUTION 2022-RDA-.

A RESOLUTION AUTHORIZING THE CHIEF EXECUTIVE OFFICER TO SIGN AN EXTENSION TO THE EXCLUSIVE RIGHT TO NEGOTIATE AGREEMENT WITH MCWHINNEY REAL ESTATE DEVELOPMENT FOR THE REDEVELOPMENT OF THE EXISTING CITY HALL PROPERTY DOWNTOWN. (22-xxx)

WHEREAS, the building currently being used as a City Hall and Public Safety facility has reached the end of its useful life; and

WHEREAS, the citizens of Provo agreed to support the construction of a new City Hall and Public Safety facility by the passage of bond for the construction of same; and

WHEREAS, the existing building needs to be removed, leaving the property available for reuse; and

WHEREAS, the City and citizens of Provo seek a dynamic mixed-use project that will serve as a continuation to the attractiveness of Provo's Center Street; and

WHEREAS, the redevelopment of the block is a significant opportunity to create a destination development in the Provo downtown region that will add a high quality and tax generating project to the community; and

WHEREAS, a Request for Proposals was released in May of 2020 seeking developers for such a project; and

WHEREAS, after vetting the responses, McWhinney Real Estate Development was selected as the entity best suited for the redevelopment of the property; and

WHEREAS, the Agency anticipates the transfer of the property from the City and has negotiated the Exclusive Right to Negotiate with McWhinney.

WHEREAS, on June 15, 2021, the Governing Board met to ascertain the facts regarding this matter and receive public comment, which facts and comments are found in the public record of the Board's consideration authorizing an agreement for an Exclusive Right to Negotiate for a period of 240 days with an optional 90 extension to bring a Joint Development Agreement to the City Council of Provo for consideration; and

WHEREAS, McWhinney and the Agency have concluded that the extension of the Exclusive Negotiating Agreement is of benefit to both parties; and

43   WHEREAS, after considering the recommendation, and facts and comments presented to
44 the Governing Board, the Governing Board finds the proposed extension reasonably furthers the
45 health, safety, and general welfare of the citizens of Provo City
46
47   NOW, THEREFORE, be it resolved by the Governing Board of the Provo City
48 Redevelopment Agency as follows:
49
50 PART I:
51
52   The Agency hereby approves the extension to the Exclusive Right to Negotiate with
53 McWhinney as outlined in Exhibit A.
54
55 PART II:
56
57   The Chief Executive Officer or her designee is authorized to sign the attached extension to
58 the Exclusive Right to Negotiate. The Chief Executive Officer is also authorized to make minor
59 changes and sign any additional paperwork as may be necessary for this action.
60
61 PART III:
62
63   This resolution shall take effect immediately.
64
65 END OF RESOLUTION.

Exhibit A

66   **Contract Extension Agreement**

67

68

69   This CONTRACT EXTENSION AGREEMENT ("Extension") is dated as of March 1, 2022 (the
70   "Effective Date"), by and between MCWHINNEY REAL ESTATE SERVICES, located at 1800
71   Wazee Street, Suite 200, Denver CO 80202 ("Developer"), and the REDEVELOPMENT
72   AGENCY OF PROVO CITY CORPORATION, located at 351 West Center Street, Provo UT
73   84601 ("Agency"), (collectively, the "Parties").

74

75   WHEREAS the Parties entered into an Exclusive Right to Negotiate on June 15, 2021 (the
76   "Original Contract").

77

78   WHEREAS the Parties hereby agree to extend the term of the Original Contract in accordance
79   with the terms of the Original Contract as well as the terms provided herein.

80

81   In consideration of the mutual covenants contained herein, each of Developer and Agency
82   mutually covenant and agree as follows:

83

84   - The Original Contract, which is attached hereto as a part of this Extension, will end on
85   February 23, 2022.

86

87   - The parties agree to extend the Original Contract for an additional period, which will begin
88   immediately upon the expiration of the original time period and will end on May 30, 2022.

89
90
91

92

93 - This Extension binds and benefits both Parties and any successors or assigns. This document,
94 including the attached Original Contract, is the entire agreement between the Parties.

95

96 All other terms and conditions of the Original Contract remain unchanged.

97

98 This Agreement shall be signed on behalf of McWhinney Real Estate Services by Ray Pittman,
99 its President and Chief Operating Officer, and on behalf of The Redevelopment Agency of Provo
100 City Corporation by Michelle Kaufusi, its Chief Executive Officer.

101

102 **DEVELOPER**

103 By: _____ Date: _____

104 Name: Ray Pittman
105 Title: President and COO

106

107 **AGENCY**

108 By: _____ Date: _____

109 Michelle Kaufusi
110 Chief Executive Officer

Redevelopment Agency of Provo City Corporation

Staff Memorandum

Approval of the Exclusive Right to Negotiate

March 1, 2022

Department Head Bill Peperone 852-6402 **Presenter** David Walter 852-6167 **Required Time for Presentation** 15 Minutes **Is This Time Sensitive** Yes **Case File # (if applicable)** Not applicable	**Purpose of Proposal** • Approve an extension to the Exclusive Right to Negotiate (ERN) with McWhinney Real Estate Services **Action Requested** • Staff recommends that the Redevelopment Agency Board approve the attached resolution approving an extension to the Exclusive Right to Negotiate and authorizing the Chief Executive Officer or her designee to sign the extension **Relevant City Policies** • Pursue economic development initiatives • Eliminate blight • Provide a vibrant downtown environment **Budget Impact** • None **Description of this item** • On May 5, 2020, the City issued a Request or Proposals a developer to redevelop the property where the existent City Hall building stands once the City vacates and moves to the new City Hall. We received 8 qualified responses. The selection committee reviewed all proposals and ultimately selected McWhinney Development, based in Denver, Colorado, as the developer best suited to redevelop and revitalize the block.

| | ● McWhinney is an established developer with a proven history of quality redevelopment projects undertaken collaboratively with the communities in which they develop. McWhinney intends to densify the block with plans for a mixed-use development that would include office, retail, and commercial uses. Those plans will include the abatement and demolition of the existing structure. McWhinney and the Agency entered into an Exclusive Right to Negotiate giving McWhinney 240 days to refine their planning for the redevelopment and bring a Joint Development Agreement for approval to the City Council. There was also an extension built into the agreement if we decided another 90 days were necessary to finalize the planning.

 ● As we have negotiated with McWhinney on the redevelopment of the block, we have jointly decided to ask for the 90-day extension to finalize the layout of the redevelopment and to fully quantify the assistance being requested. Staff recommends that the Redevelopment Agency Board approve the attached resolution approving and authorizing the Chief Executive Officer or her designee to sign the extension to the ERN. |
| | |

Contract Extension Agreement

This CONTRACT EXTENSION AGREEMENT ("Extension") is dated as of March 1, 2022 (the "Effective Date"), by and between MCWHINNEY REAL ESTATE SERVICES, located at 1800 Wazee Street, Suite 200, Denver CO 80202 ("Developer"), and the REDEVELOPMENT AGENCY OF PROVO CITY CORPORATION, located at 351 West Center Street, Provo UT 84601 ("Agency"), (collectively, the "Parties").

WHEREAS the Parties entered into an Exclusive Right to Negotiate on June 15, 2021 (the "Original Contract").

WHEREAS the Parties hereby agree to extend the term of the Original Contract in accordance with the terms of the Original Contract as well as the terms provided herein.

In consideration of the mutual covenants contained herein, each of Developer and Agency mutually covenant and agree as follows:

- The Original Contract, which is attached hereto as a part of this Extension, will end on February 23, 2022.

- The parties agree to extend the Original Contract for an additional period, which will begin immediately upon the expiration of the original time period and will end on May 30, 2022.

- This Extension binds and benefits both Parties and any successors or assigns. This document, including the attached Original Contract, is the entire agreement between the Parties.

All other terms and conditions of the Original Contract remain unchanged.

This Agreement shall be signed on behalf of McWhinney Real Estate Services by Ray Pittman, its President and Chief Operating Officer, and on behalf of The Redevelopment Agency of Provo City Corporation by Michelle Kaufusi, its Chief Executive Officer.

DEVELOPER

By: _____ Date: _____

Name: Ray Pittman
Title: President and COO

AGENCY

By: _____ Date: _____

Michelle Kaufusi
Chief Executive Officer

PROVO MUNICIPAL COUNCIL
STAFF REPORT

Submitter: MDAYLEY
Department: Council
Requested Meeting Date: 03-01-2022

SUBJECT: A presentation regarding the FY2023 Budget- Administrative Services (Facilities, Information Systems and Justice Court) (22-016)

RECOMMENDATION: Presentation and discussion.

BACKGROUND: In preparation for the drafting and approval of the FY 2022-2023 budget, each department has been asked to present to the Council. In addition to identifying their priorities, needs, wants, and potential costs, their presentations should address the following questions:

•What important needs are currently unfunded or underfunded in your department?
•If you received supplemental money last year, what did you do with those dollars? How did those dollars make it easier to achieve your department/division goals?
•Considering the Implementation Action Plans in the proposed General Plan where you feel like you could do more if given more budget? If so, what are they?
•Are there other requests related to FY2023 budget you'd like to bring before the Council?

 The full budget that was approved for Provo City for FY 2020-2021 can be found here: https://www.provo.org/Home/ShowDocument?id=18366

FISCAL IMPACT: Unknown at this time will depend on future decisions made by the Council.

PRESENTER'S NAME: John Borget, Director of Administrative Services

REQUESTED DURATION OF PRESENTATION: 45 minutes

COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:

CITYVIEW OR ISSUE FILE NUMBER: 22-016

INFORMATION SYSTEMS

ANNUAL REPORT 2022

SERVICE | INNOVATION | TECHNOLOGY | SAFETY

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LETTER FROM THE DIVISION DIRECTOR

Dear Stakeholder,

This IS Annual Report provides background for the Information Systems Division with a focus on the mission, vision, and strategies that will guide the IS Division to meet technology needs of the city. I am excited to report the great achievements made last year by the IS team given the resources that our organization is thankful to have. At the same time, your IS organization continues to be concerned for the risks presented by the large volume of adopted technologies without adequate resources to fully support them.

Last year IS managed 1861 endpoints, serviced 259 servers, supported 132 services, resolved 7509 technology requests / issues, and delivered 39 projects that included a high percentage of exceptionally large and/or complex requirements. Examples include a full Workday HCM implementation, new facilities (planning / design / construction), US census, e911, and others discussed inside the full report. Information Systems is also pleased to deliver to Provo national recognition for our Digital Inclusion efforts while servicing our customers at the highest customer service levels since measurement began in 2012.

Your technology workers are committed, skilled, and at the top of their game allowing them to still find ways to meet day to day operational and project priorities. However, they are having to work extended hours and take critical risks by skipping daily and weekly maintenance duties resulting in risk factors that can affect the security, integrity, reliability, and cost of services Provo depends on.

Considering that a recent city-wide business continuity project identified IS as a critical key factor in all departments being able to operate and recover from significant events, Provo needs to contemplate various options that allow its technology workers to succeed. Do we; a) reduce systems and/or responsibilities, b) continue increasing resources, or c) some mix of the two? With Provo spending $2.7K less per employee on technology than Provo's peers, an option that includes increased resources seems prudent and in line with the stated goals of the city. Although Provo could even double the IS budget without putting IS operations out of alignment with peer cities, we recognize that the city has significant budget challenges and tough decisions must be made to support the great mission we have in service of our residents. As such, you will find within this report a section for supplemental budget requests that can incrementally move the needle.

We invite you now to review this Information Systems Annual Report and come to your own conclusions. Please know that we, your Information Systems Division, will support you on whatever path is chosen. We only ask that you thoroughly investigate and endeavor to align your resourcing priorities with what you hope to get out of your technology team; a team who is working diligently on Provo City's behalf.

Sincerely,

Joshua Ihrig
Division Director Information Systems

KEY STATISTICS

6.6M Daily Security Events

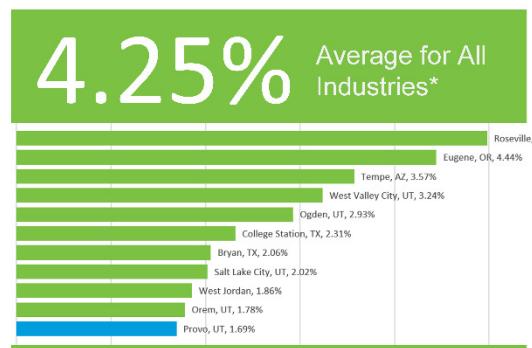**7.5K** Resolved Customer Requests

132 Unique Services

1,861 Endpoints Managed

259 Servers In Service

39 Projects Completed

IT AS PERCENT OF REVENUE

PROVO
1.69%

0.03
0.02
0.01

FY2009 FY2010 FY2011 FY2012 FY2013 FY2014 FY2015 FY2016 FY2017 FY2018 FY2019 FY2020 FY2021

IT Budget as a % of Revenue is a common metric for organizations to measure & compare investments in IT against others in the same industry.

4.25% Average for All Industries*

Roseville, CA, 4.98%
Eugene, OR, 4.44%
Tempe, AZ, 3.57%
West Valley City, UT, 3.24%
Ogden, UT, 2.93%
College Station, TX, 2.31%
Bryan, TX, 2.06%
Salt Lake City, UT, 2.02%
West Jordan, 1.86%
Orem, UT, 1.78%
Provo, UT, 1.69%

*Source: Technology Budgets: Deloitte Insights

IS SUPPLEMENTAL SUMMARY

🔒	BACKUP ARCHIVE	$90.4K
🔒	SECURITY OPERATIONS CENTER	$55K
🔒	HELPDESK PART TIME	$17.2K
🔒↗�շ	CITYVIEW / ONBASE ANALYST	$107K
🔒	EMAIL SECURITY GATEWAY	$116K
🔒↗	CAYENTA ANALYST	$107K
🔒	IVANTI PATCH MANAGER	$6K
🔒	SERVER HARDWARE SUPPORT	$19.8K
↗շ	CITYWIDE O365 STANDARD	$114K
↗շ	TRAINING BUDGET	$25.3K
շ♡	WEBSITE QUALITY TOOLS	$30K

URGENT $163K
CRITICAL $336K
NECESSARY $159K
ASPIRATIONAL

CYBER SECURITY INITIATED / RECOMMENDED

🔒 Safe & Sound
↗ Forward-Looking
շ Economically Vibrant
♡ Welcoming

$687.8K

ACCOMPLISHMENTS SUMMARY

Information Systems is pleased to report our accomplishments over this past year that improved the quality, quantity, and/or efficiency of our IT service offerings to our community and our organization. A few of these successes are as follows:

- Awarded the 2021 Digital Inclusion Trailblazer recognition for outstanding strides towards ending the digital divide by the NDIA (National Digital Inclusion Alliance).

- Successfully delivered the new Workday Human Capital Management system that went live in June 2021. IS Division supplied project management, technical services, data conversion, training support, and process design leading to an on budget, on scope, and on time go live for Core HCM, Recruitment, Payroll, and Benefits.

- Achieved an average 3.9 score (out of 4) for service quality, communication, timeliness, delivery, business skill, technical skill, courtesy, and value. This great score represents the highest received since measurement began in 2012.

- Continued work on large multi-year city construction projects including the new Public Safety and City Hall Building (eta Summer 2022), Provo Airport Terminal (eta Summer 2022), and the new Wastewater Treatment plant. These projects use innovative and cost-effective technology to improve resident access and safety while improving city operational effectiveness and sustainability. From voice and data communications to community spaces, these large facility projects are changing the landscape of city technology for the betterment of those that work, live, and play in Provo.

- City technology workers have a key role in the Federal Census. This past year our division delivered data sets, mapping information, and generalized technical support for the massive data collection effort which are key for how districts are drawn, representation defined, and governmental programs designed. All Provo requirements to the Federal project were met and delivered with high quality and timeliness.

- In support of the state and city move to modern and supportable communications, the Provo Information Systems Division worked with UCA (Utah Communications Authority) to replace the Provo Emergency Dispatch 911 phone system while also migrating and updating citywide radio services. This was completed with no impact to emergency services, performed using existing staff and budget, and has improved citywide emergency and non-emergency communications.
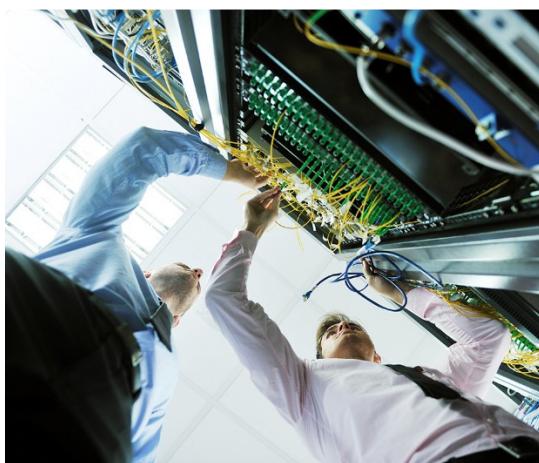
INFORMATION SYSTEMS DIVISION OVERVIEW

The Information Systems Division is part of the Administrative Services Department and is split into the following functional areas:

– **Helpdesk** – this function provides front line technical assistance and customer support related to computer systems, software, and hardware. To carry out these objectives, the team members manage the following service areas:
  - Technology Help Request (Ticket) Intake, Management, and Reporting
  - Device Support and Maintenance (e.g., Laptop, Desktop, Printer, Tablet)
  - PC Software Support (e.g., Windows, MS Office, Adobe)
  - Technology Inventory Lifecycle (Purchase, Issuance, Transfer, Disposal)
  - Employee Technology Management (new hires, changes, terminations, remote work)
  - Front Line Support for all other IS functions

– **GIS** – the Geographic Information Systems function supplies digital mapping services that allow city organizations to visualize, question, analyze, and interpret data to understand relationships, patterns, and trends. Continued use of the GIS functionality requires the following responsibilities be completed:
  - Create and Maintain Mapping Standards
  - Map Development, Maintenance, and Dissemination
  - Map Data Creation, Management, and Maintenance
  - Geospatial Data Analysis Services
  - Mapping Technology Support and Maintenance

– **Communications** – this function provides installation, support, and maintenance of networking, voice, and data services for city operations, inter-local partnerships, contracted service agreements, and various business specific connectivity requirements. Areas of responsibility and focus to meet service requirements include:
  - Internet Access
  - Networking / Connectivity Services / Remote Access
  - Wireless Communications (Wi-Fi, Radio, Cellular)
  - Voice Communications (Phone & Voice Mail)
  - Audio Visual Systems (Conference Rooms, Digital Signage)
  - Physical Wiring (e.g., Fiber, Copper) inside buildings and between city locations

– **Systems** – this function provides installation, support, and maintenance of enterprise technology infrastructure and software for city operations including, but not limited to, financial, human resources, work management, and various city business specific systems (e.g., Utility Billing).
  - Server Infrastructure
  - Enterprise Software Support, Licensing and Maintenance (e.g., ERP, Email, Document Management)
  - Systems Access Rights Management
  - Business Systems & Process Analysis, Integration, and Automation
  - Data & Data Storage Management
  - Data Backup / Disaster Recovery

- **Security** – This function provides services to mitigate risks associated with cyber security incidents using the following five security principals: assessment, prevention, detection, reaction, and recovery.
  - Edge Security (e.g., firewall, remote access)
  - Virus / Malware Detection & Mitigation
  - Security Posture Assessment
  - Risk Mitigation Policy & Procedure
  - Security Control Testing
  - Intrusion Detection / Prevention
  - Incident Response
  - Video Surveillance
  - Security Education

- **Technology** – this function supplies proactive technological investments and upgrades that focus resources and dollars at enhancing city operations and capabilities in a positive way.
  - Named Technology Initiatives (e.g., Provo 360)
  - Technology Pilots
  - Lunch & Learns / Technology Learning Events

- **Web & eGovernment** – this function provides web services to create and maintain city websites and web applications that enable our residents to transact business with the city at any time, from anywhere, and on any device.
  - provo.org
  - home.provo.org (employee intranet)
  - eGovernment initiatives

- **Administrative** – this function provides leadership and management for IS Division functions along with services that support the technology vision, strategy, and planning within the city.
  - Technology Vision, Strategy, and Planning
  - Technology Project Management
  - IS Budget
  - Technology Procurement, Approval, and Oversight
  - Operational Oversight for IS Functions
  - Technology Staffing
  - Technology Contract Management
  - Technology Policy & Procedure

IS STRATEGY

The current Information Systems (IS) strategic plan defines a road map for Provo City based on the guiding principles of service, innovation, technology, and safety. As part of the plan, Provo set a citywide IS vision to provide *Service First*, enable *Anytime / Anywhere / Any Device Access*, improve *Workforce Effectiveness,* and deliver *Operational Excellence*. The plan is reviewed and updated on a periodic basis and, for the purposes of this document, is summarized as follows:

- TECHNOLOGY LEADERSHIP - Provo City has a strong desire to utilize current technology to reach its goals and objectives. Provo expects to offer improved resident services at a higher quality (effectiveness) and with fewer expenses (efficiency). To drive this commitment, we set the objectives to a) Cooperate with other entities to cultivate a culture of process and service innovation, b) Provide effective support for technology, and c) Invest in technology when it provides positive returns for our residents.

- SERVICE EXCELLENCE - To create an environment of service excellence IS must maintain a correct balance of service and safety while addressing upcoming challenges common to both private and public-sector organizations. To meet this challenge, we aim to a) Hire and retain skilled IS professionals, b) Create and maintain effective business relationship management, c) Maintain a highly effective and engaged IS Governance Committee, d) Provide technology education, and e) Perform ongoing IS service measurement and improvement.

- RESILIENT INFRASTRUCTURE – Provo City relies on information systems to perform business efficiently and effectively. To provide service reliability we set the following objectives: a) Create and maintain a fully architected and reliable network, b) Maintain data centers that can operate city services in a cost effective and resilient manner, and c) Sustain preparedness for disasters, both large and small, by maintaining disaster recovery plans and the regional offsite disaster recovery center.

- MOBILE COMPUTING - Mobile computing is an ongoing personal and organizational trend that promises productivity improvements to those that embrace the technology. As such Provo sets the objective to a) Evaluate bring your own device (BYOD) options, b) Implement virtual application technology that provides secure computing to any device, at any time, and from any location, and c) Expose all city services through easy-to-use integrated web applications giving residents unprecedented access to city resources and services.

- SERVICE CONSOLIDATION - Provo City has great opportunities to reduce costs and increase operational efficiency through service consolidation. To take advantage of these opportunities Provo City sets the following objectives to a) Consolidate servers to reduce operational complexity, b) Utilize voice over IP (VOIP) technology to combine data and voice networks, c) Create a printing service plan to reduce print spend, and d) Centralize IS services, where possible, to remove duplicated effort while reducing decentralized staffing risks.

— APPLICATION STANDARDIZATION - Barriers to information sharing and our ability to achieve operational excellence can be mitigated, and even eliminated, through a strong commitment to application standardization. Provo recognizes the value of application standards and sets the objectives to a) Maintain fully integrated municipal systems, b) Utilize a buy vs. build approach to take advantage of rich technology stacks without the costs of custom development, and c) Advance the MS Office 365 productivity suite standard with investment in the training required to be highly productive.

— COLLABORATION - True collaboration is required for the teams of today to accomplish complex tasks and goals. Provo City recognizes that having the right tools is core to a successful collaborative environment and as such Provo sets the objective to: a) Investigate and implement unified communications technologies that provide a positive return on investment, b) Invest in document sharing technology that improves the speed of teams in the creation, editing and publishing of work product, and c) Evaluate and improve the City's collaboration rooms with technology that supports the team's ability to perform business.

— SECURITY – Cyber assets are critical to the operations of the city; therefore, it becomes critical to mitigate municipal government cyber security risks. To this end, Provo sets the objective to a) Maintain and grow a security team, b) Establish an ongoing security program with the appropriate policies, procedures, audits and controls, c) Provide continuing cyber security employee education, and d) Provide special consideration for justified security funding.

FUNDING

Information Systems is authorized to employ eighteen full time equivalent (FTE) staff. The overall IS budget for fiscal year 2022 was $4,247,082. Of this approximately 80% is from the General funds and 20% from the Enterprise funds.

Provo is very conservative in funding Information Systems as evidenced by a 1.69% of revenue metric as compared to an average 2.81% metric of our peers or the 4.25% average for all industries. Looking at it a separate way, Provo spends $4.7k per employee compared to an average $7.4k per employee spent by US cities reviewed (table 1).

Cities selected for review in Table 1 below are based on a sample of cities that meet one or more of the following criteria: Population, Electric Utility, Local, and/or College Town. Limited to   thru population w/ exception for Salt Lake City.

PROVO 1.69%

IT Budget as a % of Revenue is a common metric for organizations to measure & compare investments in IT against others in the same industry.

COMPARISON

4.25% Average for All Industries*

2.81% Average for Local Government**

2.31% Median for Local Government**

*Source: Technology Budgets: Deloitte Insights
** Local Government Review of CAFR & Budget Data

TABLE 1: IT EXPENSE AND BUDGET VS. REVENUE OF "SIMILAR" MUNICIPALITIES (80-180K Population)

City	Residents*	Total City Revenue*	IT Budget**	Total City FTE*	City IT FTE Count**	IT as % Of Revenue	IT Staff as a % of Total Staff	User to IT Staff Ratio	IT Spending Per Employee	IT Spending Per Capita	College Town	Energy Utility
Salt Lake City, UT	199,723	$ 951,005,000	$ 19,215,550	3282.55	84.0	2.02%	2.56%	39	$ 5,853.85	$ 96.21	✓	
Tempe, AZ	180,587	$ 544,820,760	$ 19,461,621	1967	82.0	3.57%	4.17%	24	$ 9,894.06	$ 107.77	✓	
Eugene, OR	173,620	$ 370,520,833	$ 16,460,817	1493	30.0	4.44%	2.01%	50	$ 11,025.33	$ 94.81	✓	✓
Roseville, CA	145,163	$ 270,900,000	$ 13,486,121	1195.73	47.0	4.98%	3.93%	25	$ 11,278.57	$ 92.90		✓
West Valley City, UT	143,804	$ 156,209,595	$ 5,056,788	844.5	13.0	3.24%	1.54%	65	$ 5,987.91	$ 35.16		
College Station, TX	122,738	$ 297,902,253	$ 6,895,062	1046.8	31.3	2.31%	2.99%	33	$ 6,586.80	$ 56.18	✓	✓
West Jordan	116,961	$ 167,032,631	$ 3,100,000	606	8.0	1.86%	1.32%	76	$ 5,115.51	$ 26.50	✓	
Provo, UT	115,162	$ 250,910,654	$ 4,247,082	894	18.2	1.69%	2.04%	49	$ 4,750.65	$ 36.88	✓	✓
Orem, UT	98,129	$ 137,595,821	$ 2,450,136	554	12.0	1.78%	2.17%	46	$ 4,422.63	$ 24.97	✓	
Ogden, UT	87,321	$ 173,771,876	$ 5,084,825	641	20.5	2.93%	3.20%	31	$ 7,932.64	$ 58.23	✓	
Bryan, TX	86,268	$ 394,569,817	$ 8,109,700	892	38.0	2.06%	4.26%	23	$ 9,091.59	$ 94.01	✓	✓
				AVERAGE		2.81%		42:1	$ 7,449.05	$ 65.78		
				MEDIAN		2.31%		39:1	$ 6,586.80	$ 58.23		

* Data comes from City Published CAFR
** Data Comes from City Published Annual Budget
Using data from most Recent Budget Books and Most Recent CAFR (e.g. FY2022 Budget Matched w/ 2021 CAFR) - Current as of 1/20/2022

IT AS % OF REVENUE (COMPARABLE CITIES)

- Roseville, CA, 4.98%
- Eugene, OR, 4.44%
- Tempe, AZ, 3.57%
- West Valley City, UT, 3.24%
- Ogden, UT, 2.93%
- College Station, TX, 2.31%
- Bryan, TX, 2.06%
- Salt Lake City, UT, 2.02%
- West Jordan, 1.86%
- Orem, UT, 1.78%
- Provo, UT, 1.69%

Average technology budget as a percentage of revenue

Expected decrease in technology budgets due to pandemic

| 2016	2018	2020	2022
3.28%	3.64%	4.25%	5.11%*

Notes: *The 2022 data is projected based on Deloitte analysis; 2016 N=747; 2018 N=624; 2020 N=374.
Sources: 2016–2017 Deloitte Global CIO Survey; 2018 Deloitte Global CIO Survey; 2020 Global Technology Leadership Study.

Deloitte Insights | deloitte.com/insights

STAFFING

The Information Systems Division has 17 full-time and two (2) part-time positions to fulfill the information technology needs of the City. In addition, Administrative Services has one (1) full-time resource dedicated to Cyber Security. The team is running at a 49:1 employee to IT worker ratio vs. our peers who run, on average, a 42:1. We recognize that staff ratios have fallen out of favor as organizations can now avoid some IS staffing by using cloud services. As such, this ratio should be reviewed as part of any assessment related to funding as a percentage or similar metric.
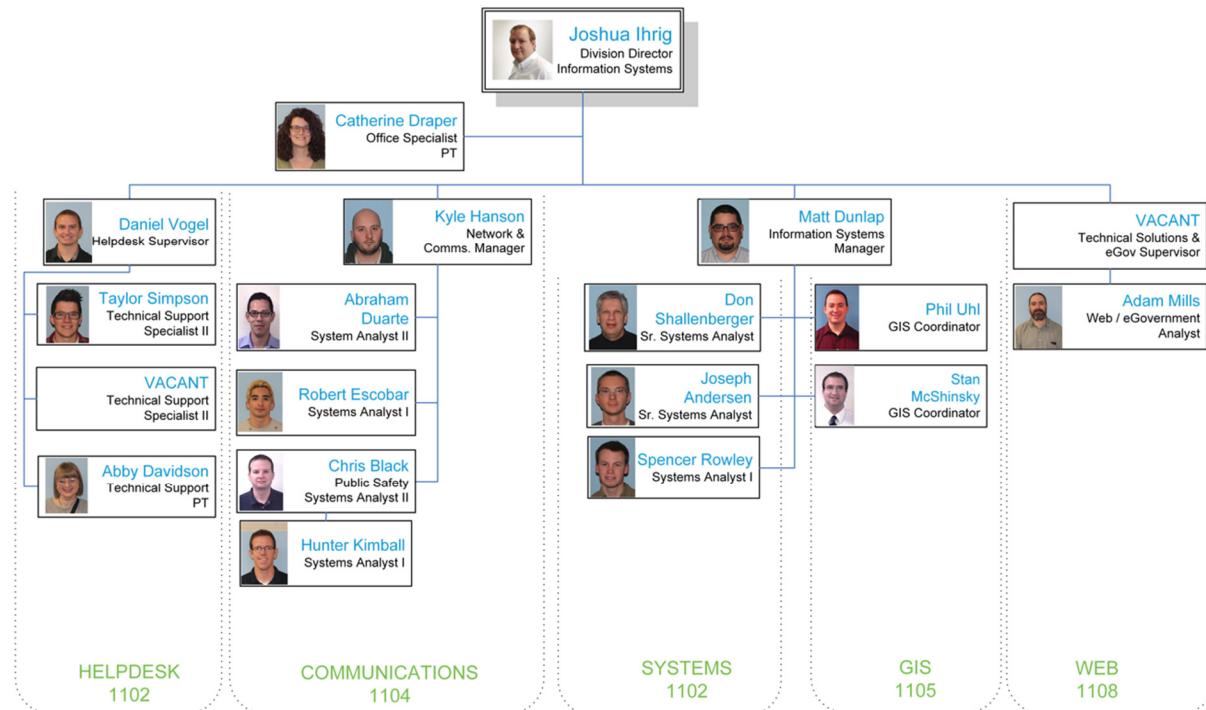
BUDGET AREA	FTE	NOTES
Helpdesk	3.5	
Communications	5	2 Dedicated to Public Safety
Systems	4	1 Dedicated to CIS (Utility Billing)
GIS	2	
Security	1	Reports directly to Director of Administrative Services (IS Auditor Role)
Web & EGovernment	2	
Administrative	1.5	

IS PERFORMANCE METRICS

PERCEIVED SERVICE SCORES
OVERALL STATUS: EXCEEDED TARGET

The Information Systems Division periodically surveys employees that received IS services. This survey measures several customer service indicators, from quality and timeliness to business skill and courtesy. Employees respond on a 4-point scale in which one (1) means 'very dissatisfied,' two (2) means 'dissatisfied,' three (3) means 'satisfied,' and four (4) means 'very satisfied.' Since measurement began in late 2012, all indicators have seen an increase in satisfaction with recent scores not only meeting or exceeding targets but reaching the highest levels since measurement began.

1 = VERY DISSATISFIED	2 = DISSATISFIED	3 = SATISFIED	4 = VERY SATISFIED

HELPDESK / IT SUPPORT

OVERALL STATUS: ON TARGET

The customer support responsibility of the Information Systems team changed significantly over the past year as organizations shifted to pandemic response. At the height of 2021, over 800 requests for assistance were received in a single month, requiring an average of about 50 issues responded to and closed per business day to keep pace. Due to heavy remote work and a reduction in helpdesk staff, not all tickets were logged, and tickets were often more complex as city teams sent requests on behalf of larger groups. As such, the below trend does not accurately capture the workload or efforts of the helpdesk operation.

CITYWIDE TICKET QUANTITY
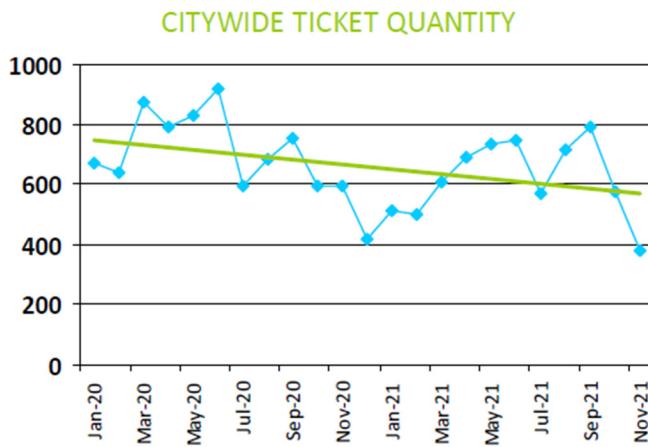
YEAR	# TICKETS	% INCREASE
2014	4581	
2015	7110	55.2%
2016	6652	-6.4%
2017	7912	18.9%
2018	8866	12.1%
2019	7906	-10.8%
2020	8361	5.8%
2021	7509	-10.2%

RESOLUTION DAYS

OVERALL STATUS: CRITICAL WARNING / MISSED TARGET

Information Systems continues to strive to resolve help requests for our customers on average within three business days. This past year the team was unable to meet this target with a result 3.1 average resolution days. Upon analysis, we found that ticket number metrics falsely dropped due to work performance by some staff without corresponding logged tickets. Additionally, workload per ticket increased due to larger per ticket scope, complexity, and delays outside the control of staff. This includes dealing with heavy supply chain delays, move to remote work that needed more complex setup / troubleshooting, and working with reduced headcounts (reduction in force and illnesses). Without positive change in the identified areas, we anticipate the ability for IS to return to a three-day average is at risk and likely to get worse. As such, this metric has a critical warning and should be watched closely over the coming months and year.

CITYWIDE TICKET AVERAGE CLOSE DAYS
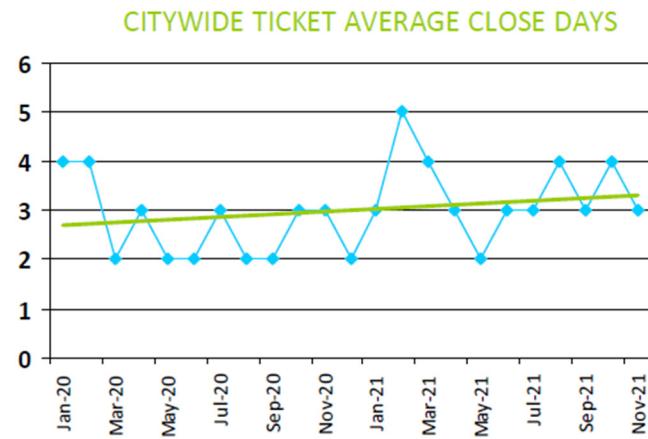
3.0 Day Target

3.1 Resolution Day Avg

TECHNOLOGY PURCHASES

OVERALL SCORE: CRITICAL WARNING / MISSED TARGET

The IS team was unable to meet the average 30-day technology purchasing turnaround target from time of approval to installation. At our fastest, this process was able to be executed in as little as three days however, due to supply chain issues outside Provo control, has averaged this past year at 40 days with some purchases taking as long as six months. The coming year continues to be at high risk due to ongoing supply chain issues with critical concerns related to semi-conductors used in all aspects of technology operations. A move to mass purchasing and retaining some emergency replacement stock should be considered by the organization.

AVG PURCHASING TURN AROUND
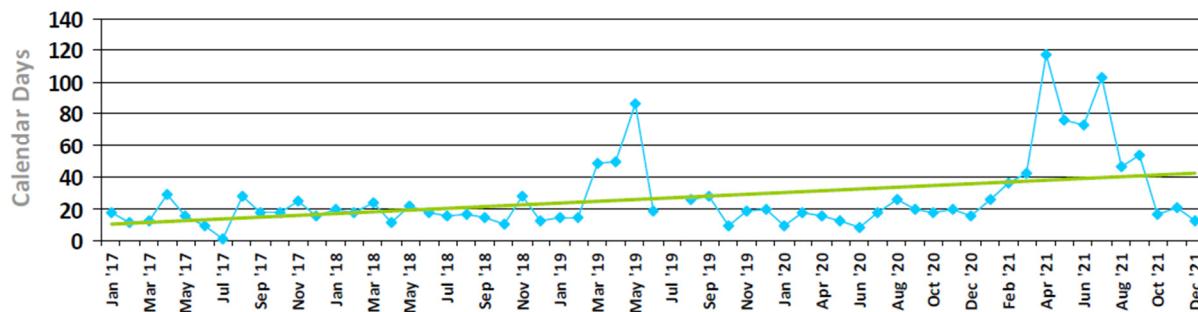
PROJECTS

OVERALL SCORE: CRITICAL WARNING / MISSED TARGET

The IS team continues to see large numbers of technology projects with most of them initiated outside of the IS Division (i.e., Departments and/or the Administration). Last year saw a 39% reduction in project completion rates over the prior year primarily due to the high number of large multi-year projects that required high IS resourcing levels. Examples include a) New City Hall, b) New Airport, c) New Wastewater Treatment Plant, and d) Workday.

Out of 18 full time equivalent (FTE) staff members in information systems, there are 12 technology workers that are available to work on technology projects. Six FTEs in helpdesk, administrative & security roles are not available for technology project work. As such, technology workers handle an average of four, or more, active projects in addition to their reactive maintenance (tickets), preventative maintenance, cyber security, and administrative duties.

It is also important to note that most, if not all, of the projects the team completes provide technology-related efficiency improvements for the requesting departments. However, adding the technology to the portfolio adds workload to the IS Division in the form of increased reactive maintenance, preventative maintenance, cyber security, and administrative duties. A continuation of this trend without adding resources places higher and higher risk on daily operations.


Project Completed
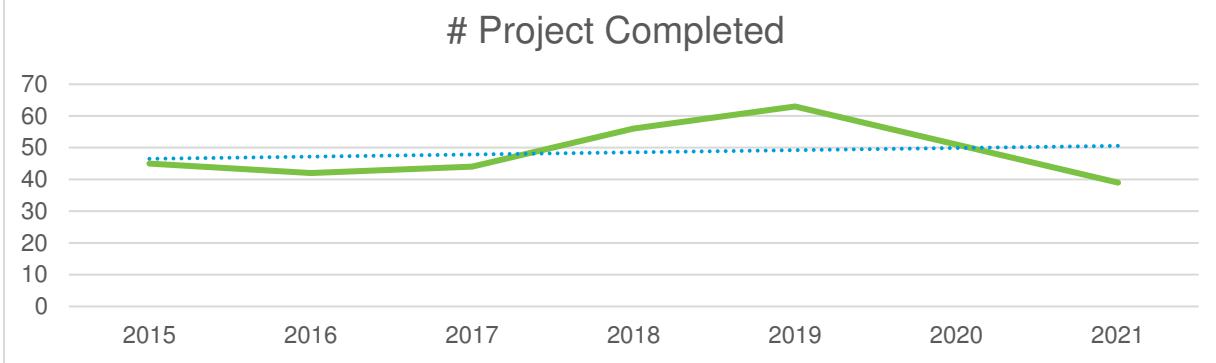
SERVICES OFFERED
OVERALL SCORE: CRITICAL WARNING / MISSED TARGET

The IS team continues to see the City's appetite for IS services grow at a high rate. The number of unique services has increased by 10.8% over the past five years. With a move of services to the cloud, along with modernization projects coming to completion, the team was able to reduce servers by 0.7% over the same period. Even with this reduction, the IS systems team can only focus its full attention for 28 business hours per system per year. With the ongoing service growth, more complex technology architectures, and increasing cyber security workloads, the demands continue to exceed our resource capability leaving systems with inadequate preventative maintenance.

Correctives to this include a) adding support resources, b) removing services, or c) accept risks (default). See section on service resourcing levels for more information.

Customer Facing Services

Systems In Service
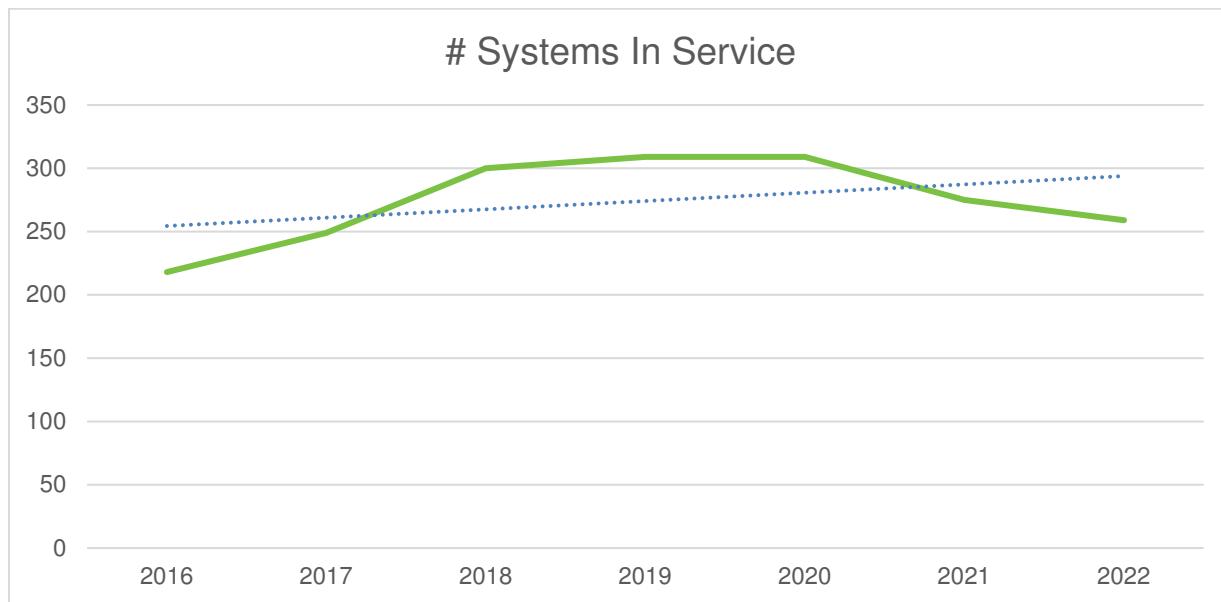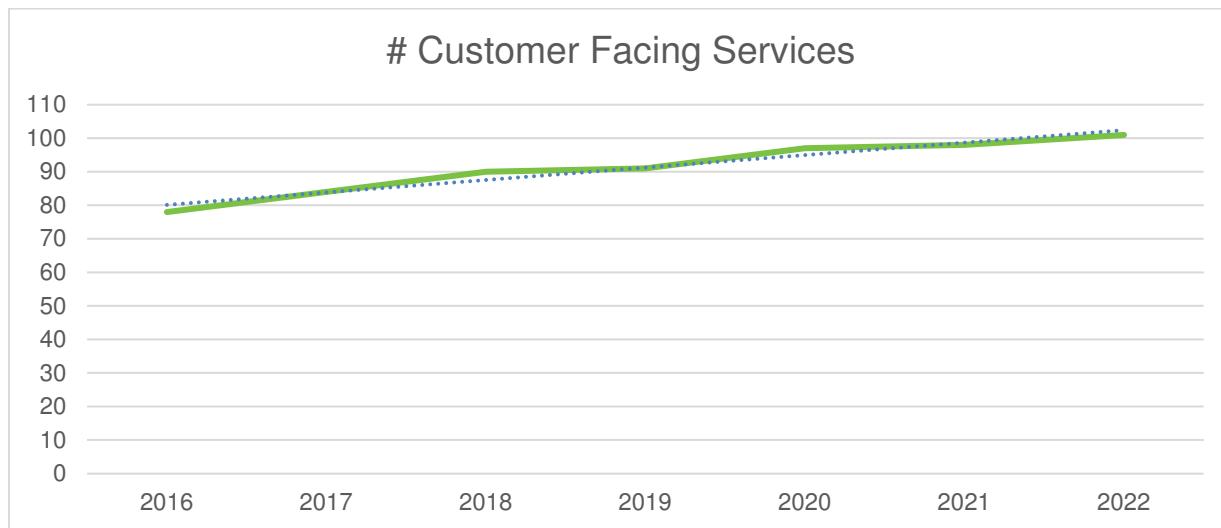
SERVICE RESOURCING LEVEL

OVERALL SCORE: CRITICAL WARNING / MISSED TARGET

Key to any Information System / Technology Service is the appropriate staffing of skilled workers. Proper staffing levels allow adequate focus to know, maintain, upgrade/patch, and monitor the service. Lower than recommended resources increase outage and security risks while decreasing system value (e.g., missing upgraded functionality, missing reporting etc.).

The IS team publishes a service catalog that identifies all services provided, an overview, and the service resource rating. The catalog can be made available to authorized administrative staff. However, the resource is confidential as bad actors can utilize information about specific service offerings to develop targeted attacks against Provo's cyber assets. To request access, please contact jihrig@provo.org.
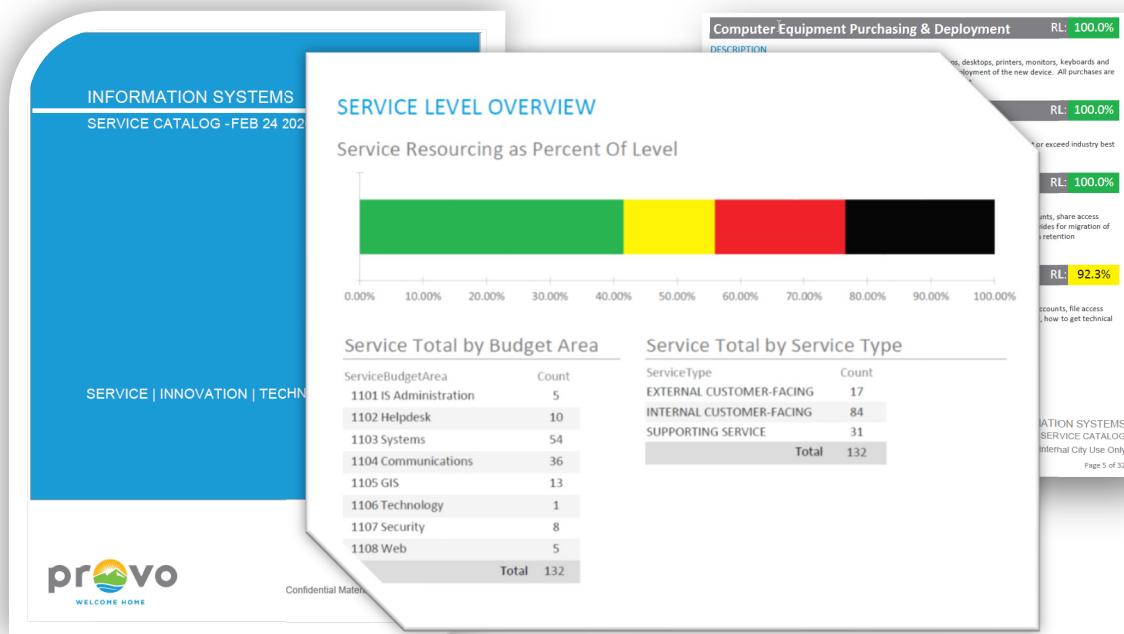
Provo currently operates **132** services. Of these services **43.9%** run in the red or black (high / extreme risk) resource level, **14.4%** operate in the Yellow (medium risk) resource level, and **41.7%** operate in the Green (minimal risk) level.

Due to the considerable risk at which some services are operating, the IS team strongly advises the administration to review the service offerings and take corrective actions as deemed appropriate to meet the objectives of the city. Correctives include the following options: a) add support resources, b) remove services, or c) accept risks (default).

CURRENT RESOURCING LEVEL OVERVIEW GRAPH

| 41.7% | 14.4% | 20.5% | 23.5% |

0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0% 90.0% 100.0%
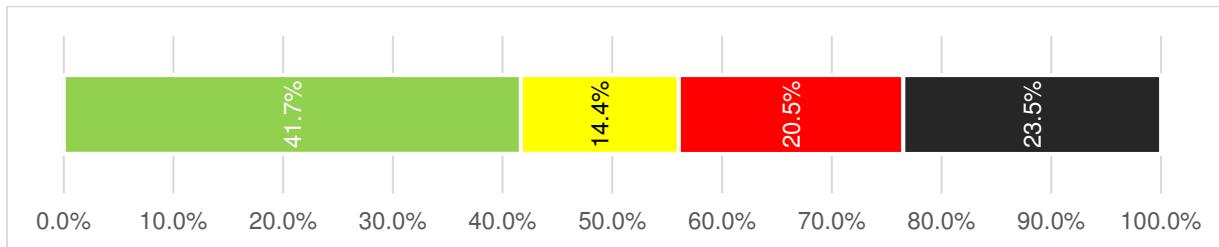
Service Total by Budget Area

ServiceBudgetArea	Count
1101 IS Administration	5
1102 Helpdesk	10
1103 Systems	54
1104 Communications	36
1105 GIS	13
1106 Technology	1
1107 Security	8
1108 Web	5
Total	132

Service Total by Service Type

ServiceType	Count
EXTERNAL CUSTOMER-FACING	17
INTERNAL CUSTOMER-FACING	84
SUPPORTING SERVICE	31
Total	132

RESOURCING LEVEL LEGEND

Green	95-100	Minimal Downtime
		All Preventative Maintenance Performed
		Upgrades / Patches Kept "Up to Date"
		Low Security Risk
		High Technology Worker Skill
Yellow	65-94	Med to High Risk of Outages (delayed recovery times & potential data loss)
		Some Preventative Maintenance Performed (Critical Only)
		Some Upgrades / Patches Performed (Critical Patches Only)
		Med-High Security Risks
		Low-Med Technology Worker Skill
Red	25-64	High Risk of Outages (prolonged recovery times & data loss)
		Little to No Preventative Maintenance Performed (Backups Only)
		No Upgrades / Patches
		High Security Risks
		Little to No Technology Worker Skill
Black	<25	Extreme Outage Risk
		No Preventative Maintenance Performed
		No Upgrades / Patches
		Extreme Security Risks
		No Technology Worker Skill

SUPPLEMENTALS

Provo City has high demand for technology in support of a resident population that expects it. While IS delivers excellent value with the resources available, the team is unable to meet current or forecasted expectations of the city.

The Information Systems team recommends that the city administration evaluate its funding strategy for technology and ensure the chosen strategy aligns with the City's direction. As it currently stands, the City's strategy for Information Systems is out of alignment with the funding allotted and may require a fundamental re-prioritization to address desired outcomes. This determination is based on industry metrics, peer review, technology projects in progress, and initiatives on the horizon.

In the absence of a fundamental change by the city, we focus our requests for the upcoming year on the most needed areas named in the sections below. If all supplemental requests were to gain approval, the $687.8k would represent a shift from 1.6% of revenue to 2.03% which is 0.78 percentage points lower than the average of comparable cities (ref 2.81% avg). To arrive at an Ogden Utah IT Department comparable (2.93% of revenue), Provo would need to invest an additional $3,104,603.

IS SUPPLEMENTAL SUMMARY

BACKUP ARCHIVE	$90.4K	CRITICAL $163K
SECURITY OPERATIONS CENTER	$55K	
HELPDESK PART TIME	$17.2K	
CITYVIEW / ONBASE ANALYST	$107K	URGENT $336K
EMAIL SECURITY GATEWAY	$116K	
CAYENTA ANALYST	$107K	
IVANTI PATCH MANAGER	$6K	
SERVER HARDWARE SUPPORT	$19.8K	NECESSARY $159K
CITYWIDE O365 STANDARD	$114K	
TRAINING BUDGET	$25.3K	
WEBSITE QUALITY TOOLS	$30K	ASPIRATIONAL

Safe & Sound — Forward-Looking — Economically Vibrant — Welcoming

$687.8K

CYBER SECURITY INITIATED / RECOMMENDED

BACKUP ARCHIVAL

$90,420 (Ongoing) - CRITICAL

Day to day records such as financial transactions, utility billing, and citizen requests are vital to the city's operation. It is therefore critical that Provo City has the capability to recover from any incident including hardware failures, software corruption, and cybersecurity events. Recent statistics show that many cybersecurity events are not detected for an average of seven months and most cases relied on backup systems as the core difference between incident recovery and organizational insolvency. For this reason, it is crucial that adequate protected backups exist.

Provo's current backup capability does not allow for data recovery after 90 days nor does it meet the FBI's recommendation for the use of immutable storage that is designed to prevent modification or deletion. In the event of a ransomware incident, this data is not fully recoverable with existing capabilities. Since 2016, Clearfield City and 400 other city and county governments experienced ransomware attacks with many of them losing critical data and/or having extensive outages and expensive recovery costs. Local news reporting on the ransomware event that impacted Clearfield stated: "[They] shut all its systems down, cutting phone service, requiring cash or check payments, and prompting police and fire dispatch to use a spreadsheet to track information." Cost, time, and business impact of this recovery would have been mitigated by an immutable backup archive solution.

This proposal enhances Provo's capability to recover from disaster and cyber security incidents by purchasing and implementing an immutable backup archive solution that is designed to weather attacks used by today's cyber criminals while also addressing recovery from natural and human caused disasters.

SECURITY OPERATIONS CENTER

$55,000 (Ongoing) - CRITICAL

Between January 1st and February 1st, 2022, Provo City experienced an average of 6.6 million security-related events per day. Without specialized software and more personnel, it is unlikely for Provo's existing resources to adequately detect abnormal or malicious behavior in these events. For this reason, organizations implement Security Operations Centers (SOCs) to detect, analyze and respond to cyber security threats. These have become critical in today's high cybercrime environment as they enable quick identification and rapid response. However, SOCs require trained analysts and specialized software to be successful.

Provo City currently does not maintain a SOC however does have a dedicated cybersecurity analyst. The on-duty hours of the existing resource cover approximately 23% of the 24/7/365 yearly operations of the city. If the city were to watch and respond to all potential security threats during all hours of city operation, a minimum of four additional full-time analysts would be required.

Understanding the budget limitations of acquiring and retaining four additional analysts, the IS and security team members have researched other effective methods to address these risks. One solution to the personnel shortage is to use an externally managed SOC. These managed security solutions provide specialized software and trained personnel to offer organizations many of the same functions that an internal team can. The external SOC will coordinate with and augment the existing IS and security team and can do so at a fraction of the cost.

Other neighboring cities and counties have come to similar conclusions including Ogden City, Box Elder County, and Wasatch County. Industry trends also show ongoing rapid adoption by many other cities and counties for this improved cyber-security practice.

This proposal requests funding to engage a third party to operate a security operation center which will increase the probability of detection and prevention while also reducing the average detection time for more sophisticated attacks.

HELPDESK PT – RESTORE COVID BUDGET CUT
$17,243 (Ongoing) - CRITICAL

In 2020, the city predicted significant budget shortfalls and decided to proactively cut budgets including the reduction of a part time IS team member that provides front line technical services. This action reduced helpdesk service capacity and coverage by 12.5% (4FTEs to 3.5 FTEs) resulting in reduced response times, missed tickets, and lack of ticket logging. This occurred at the time when the needs of employees were higher than ever before (e.g., complex remote support needs, social distancing changes, and rapid technology adoption rates). During budget restoration in 2021, the helpdesk position was not restored leaving an ongoing gap in the team's ability to meet their core functions.

Core functions include handling technology help requests (Tickets), device support and maintenance (e.g., Laptop, Desktop, Printer, Tablet), PC software support (e.g., Windows, MS Office, Adobe), technology inventory lifecycle (Purchase, Issuance, Transfer, Disposal), employee technology workflow management (new hires, changes, terminations, remote work), and front-line support for all other IS functions.

This proposal restores the funding to pre-covid levels allowing the IS helpdesk to have resources to meet current high demands for their services while ensuring that customer requests are logged, followed up on, and solved.

CITYVIEW / ONBASE ANALYST
$107,000 (Ongoing) - URGENT

The CityView and OnBase solution that provides License, Permit, Code Enforcement, and Cemetery functions continues to experience heavy resource constraints. These services went into production a little over three years ago and since that time the solution has needed significant support services from the IS organization. Unfortunately, when these support services are delivered, the resource usage is noted by our customers as either "heavily impacting" support for other services city workers rely on (e.g., email, financials, backups etc.) or requiring high-cost vendor services to perform the need.

To help understand and address the impacts, IS performed a time study that showed 88 hours of work per week were required to fully support the CityView and OnBase services. As the team can currently only allocate 19 hours of staff time, the resources used came at the expense of other service duties. Addressing this gap would require a) adding resources to the IS team, b) removing services from IS, c) augmenting with outside support services or d) acceptance of risk when running these services at high to extreme risk.

The IS organization currently feels adding a full-time resource is the most prudent course of action because:
   a) Work orders with CityView and OnBase are expensive. A $20k bid was received for the creation of a small reporting project that took less than two weeks to perform. It only takes a few of these projects to rack up expenses that exceed the cost of having a dedicated resource. Extrapolation of this cost to meet the gap through vendor-based staff augmentation would cost over $450,000 per year.
   b) City administrators have been unable, to date, to find services that can be removed from IS operations to free up resources for this service area.
   c) It is strongly recommended to not run core customer facing services at high risk.

As such, we now recommend Provo take a measured approach by adding an FTE (40 hours) to address the city-wide support needs of this platform along with better organizational prioritization and some measure of accepted risks. This added resource would supply the following:

a) CityView and OnBase workflow creation & modification.
b) Reports development including metrics and key performance indicators (KPI's).
c) Automation and script development.
d) Tier 2 and 3 technical support including assisting departments with base configuration services (e.g., yearly fee structure configurations).

EMAIL SECURITY GATEWAY
$116,640 (Ongoing) - URGENT

Cyber-attacks continue to cost organizations millions of dollars per year. In 2021, email was responsible for 91% of all cyber-attacks. Attackers create 300,000 new malware programs per day; this malware can establish an essential foothold in an organization for a ransomware attack. In 2020 ransomware attacks increased by 150%. The continued upward trend of attacks has resulted in an average cost of $4.24M per incident as of July 2021.

In addition to the monetary cost of a breach, other costs are just as important to consider such as the loss of citizen trust.

During a single internal simulated email attack against Provo City employees, over one hundred user credentials were compromised. One of the root causes of this vulnerability, identified by Provo's cyber security team, was not running an adequate email security gateway solution. These gateway solutions are designed to reduce the number of malicious messages that arrive to user's mailboxes while also providing additional services that improve email operational resiliency. An email security gateway, combined with Multi Factor Authentication (MFA), an operational SOC, and an ongoing education program, will reduce the cyber security threat and meet critical recommendations set by the FBI's cyber task force.

Given the global statistics on cyber-attacks and their associated costs, the cyber security team proposes an immediate investment in an email security gateway.

CAYENTA ANALYST
$107,000 (Ongoing) - URGENT

The Cayenta solution that supplies Finance, and Utilities functions continues to experience heavy resource constraints. These services went into production in 2018 (finance and utilities following a year later) and since that time the solution has needed significant support services from the IS organization.

Unfortunately, when these support services are delivered, the resource usage is noted by our customers as either "heavily impacting" support for other services city workers rely on (e.g., email, financials, backups etc.) or requiring high-cost vendor services to perform the need.

The IS organization currently feels adding a full-time resource is the most prudent course of action because:

a) Cayenta vendors and customers recommend operating the solution with at least two full time technical resources. With allocation current less than one full time employee, the Cayenta

services are running in the red (high risk) resource level. To close this gap, at least one FTE should be hired.
b) Contracts with Cayenta have been expensive. Contracting even simple report writing functions have cost an excess of $8,000.
c) City operations have been unable, to date, to find services that Provo can remove from operation to free up IS resources that can be redirected to this service area.
d) It is strongly recommended that customer facing core services are not run at high risk.

As such, we now recommend Provo take a measured approach by adding an FTE (40 hours) to address the city-wide support needs of this platform along with better organizational prioritization and some measure of accepted risks. This added resource would provide the following:
a) Cayenta Work Management System (WMS) support and implementation.
b) Reports development including metrics and key performance indicators (KPI's).
c) Automation and script development.
d) Tier 2 and 3 technical support including assisting departments with base configuration services.

IVANTI PATCH MANAGER
$6,000 (Ongoing) - URGENT
Provo City's workforce utilizes over 900 computers to facilitate the delivery of services to our community. Each of these workstations requires routine software updates to minimize security exposure, maximize reliability, and reduce overall financial risk. Manually updating the software on each of these workstations is labor intensive, especially considering it is common for patches to be released weekly. These updates take on average 20 minutes per machine leaving Provo's helpdesk team with 300 hours of work (7.5 FTEs worth) per week just to keep up with this one job duty. This is not feasible with current resources.

Current operations rely on teams patching workstations as tickets come in with occasional focused projects to perform targeted updates. This practice does not meet industry recommendations and has increased risks for security incidents. Additionally, employees are more likely to experience preventable system issues resulting in lost work time while reducing community trust.

This proposal invests in an automated patch management system to allow our team to efficiently mitigate security risks and help provide employees and our community a more reliable experience with our systems.

SERVER INFRASTUCTURE HARDWARE SUPPORT
$19,772 (Ongoing) - NECESSARY
Several of the physical server hardware systems that support our virtual infrastructure have reached the end of their useful life cycle. The recommended life cycle for these systems is between three and four years. To meet budget constraints, we have pushed past recommended replacement cycles with servers exceeding five years of age. We are now at the stage where failure is statistically probable. A failure of a system without maintenance would require a replacement of hardware with a potential price tag of up to $16,000 (per failed server) plus expedite fees and elevated risk for extended outages (e.g., supply chain shortage risks). To continue to support this hardware we are asking for maintenance funding of $19,772 that will cover ten of the most critical servers.

An investment now in this preventative maintenance can potentially save the city significant dollars in repair or replacement costs, while ensuring that the information services that residents and workforce depend on remain functional.

CITYWIDE OFFICE 365 STANDARD
$113,950 (Ongoing) - NECESSARY

Provo City currently uses Microsoft Office 365 cloud services for email and, in limited cases, the full Office 365 productivity suite (e.g., Word, Excel, PowerPoint, SharePoint). This request represents the funding needed to standardize all Microsoft Office productivity suites and provide a reliable funding source to pay for the needed tools. This request became necessary with the advent of the Covid 19 pandemic where the MS Office 365 tools were critical to success as Provo's teams moved to social distanced and remote work.

- Supplies key telework tools for Provo team members.
- Simplifies current mix of licensing standards for MS Office (no more having everyone on different versions).
- Reduces workload of IS licensing and billing functions.
- Supplies the full productivity tool to workers who rely on computers for their job (Only $17 for each employee per month to have access to this productivity suite).
- Simplifies integrations and IS support requirements.
- Team members will have access to the added bundled tools (e.g., collaboration tools) that promote teamwork and innovation.

FULLY FUNDED TRAINING BUDGET
$25,314 (Ongoing) - NECESSARY

The Provo pillars of economically vibrant, safe & sound, welcoming, and looking forward, are all directly impacted by having a highly effective, and skilled, technology workforce. From 911 systems to web sites, and from code enforcement / planning systems, to email, the impact of our technology workers is felt. How that impact is felt, positively or negatively, is directly correlated to the knowledge and skill the technology workforce brings to the table. Keeping a positive impact is a difficult challenge as information technology is rapidly evolving, more so than any other industry, making it imperative that technology workers constantly train. Without constant training, a technology worker's ability to supply effective services quickly diminish, reduces worker satisfaction important in retention strategies for today's job market, and adds increased risk of cyber security and service outages incident occurrence.

Over the past few years, the city added technology workers (i.e., Security, Network, and Public Safety) but was not able to fund the training those resources would require. Additionally, over the past eight years, there were IS training budget cuts and net zero budget years which hurt Provo's ability to keep up with the increasing costs of training technology workers. These reasons have resulted in a funding gap that has, and will continue to, limit the ability for all technology workers to have access to quality training resources.

A typical IS class costs $2,500 and requires $1,420 in travel expenses. A fully funded training program for IS would include, at the proposed minimum level, one course per IS FTE per year (18 FTEs x $2,500 =

$45,000 and 18 FTEs x $1,420 = $25,560 with a grand total of $70,560 per year). Current IS budget allows for $45,245 leaving a training funding gap of $25,314.

This supplemental request addresses the base gap and places IS back on the road to strong training practices. By funding the $25k, Provo will provide its technology workers the opportunity to attend yearly training to keep critical skills sharp and relevant for today's rapidly changing technology field.

As an aspirational goal, Provo could provide more funding (e.g., two classes per core FTE) to better align with the IS Strategy of hiring and maintaining the best IS workforce in local government. If the $25k requested base cannot be approved, partial funding would be welcome and directed to the most critical training needs.

WEBSITE QUALITY TOOLS
$18,000 (One Time) + $12,000 (Ongoing) - ASPIRATIONAL

Access to and use of Information Technology is the fifth value listed in Provo's core values. Key to this area is the city web site and the communication conduit it provides to our residents, employees, and visitors. Errors, outdated content, and other issues on the web site create distrust in the tool, hurt Provo's communication channel effectiveness, and causes frustration for our citizens and employees. This means that it is imperative that our web content quality be error free, relevant, and timely.

During FY2020 the IS Division did a pilot using Site Improve, a web quality assurance (QA) automation toolset, during which time we found over five thousand errors in our website. These errors included, but were not limited to, broken links, duplicate content, and issues that effected site speed. The automation tool not only helped us find initial site quality issues but enabled us to proactively maintain the site with less than 10 issues identified per month for the rest of the year. Additionally, the tool helped Provo identify and correct potential ADA issues while further enhancing the accessible content for users.

To put this into perspective, the website currently has 728 pages, 5,561 documents, 15,621 calendar events, 7,683 images, 411 FAQs, 44 contact forms, and 248 news posts which all require their content to be relevant, accurate, and error-free. Performing QA checks manually on Provo's frequently changing web content, sometimes multiple times per day, is not possible with current resources and structure. However, Provo could optionally add headcount to the Web team, accept the risks of not performing QA, offload QA to Department representatives, or remove other service offerings allowing more time to be dedicated to QA workloads. None of these options seem to supply the same level of quality nor cost effectiveness.

The pilot funding ran out during FY2020 and requests for added funding to continue the tool set subscriptions were unable to be met leaving the QA work to be done manually. With this supplemental request, the team would like to again ask for funding to buy and keep contracts for automated tools. These automated tools along with the existing development tools of the website will allow the team to meet website demands and support quality assurance standards. All at a fraction of the human resource investment it would take to perform the same level of quality assurance manually.

FY 2023 BUDGET PRESENTATION FACILITIES SERVICES

Dick Blackham

Facilities Services Manager

March 1, 2022

The new Public Safety / City Hall building that is currently being constructed has been designed to meet a high standard for energy efficiency and will utilize sustainable building principles (no natural gas in the building, all electric). This new facility was designed to achieve a net zero ready status and will reflect creative design, community involvement and cost consciousness.

Construction completion date: End of **May 2022**

Current construction progress is **88%**

With the new building, there will be a significant increase in the square footage that will need to be maintained.

- Janitorial contract increase is due to new City Hall square footage going from **64,230** square feet to **204,428** square feet. (Current $115,458 Revised $367,503 difference of $252,045) These numbers are only forecasts until formal RFP is done in May of 2022.
- New airport terminal additional square footage will go from 3,180 square feet to 63,450 square feet. Janitorial contract increase (Current $30,787 Revised $123,610 difference of $92,823) These numbers are only forecasts until formal RFP is done in May of 2022.
- Emergency generator maintenance cost is slightly increased due to the larger size of the new City Hall and airport terminal generators. (Current $18,309 Revised $20,718 difference of $2,409)

• <u>HVAC maintenance</u> is increased due to a proposed service agreement for new City Hall by current sub-contractor / installer KHI. (Current $8,902 Revised $19,425 difference of $10,523) Airport HVAC expense will be increased as well due to more square footage (Current $1,500 Revised $6,500 difference of $5,000)

• <u>Elevator contract</u> increase is due to new City Hall having four additional elevators (Current $30,350 Revised $42,572 difference of $12,222)

• <u>Overhead door</u> cost is increased due to new City Hall lower Police basement doors (Current $13,037 Revised $25,832 difference of $12,835)

• <u>UPS maintenance</u> cost is increased due to larger and more UPS units in new City Hall (Current $22,990 Revised $29,124 difference of $6,134)

• Janitorial supplies (paper products) increase is due to additional rest rooms (Current **14 rest rooms**, Revised **46**) and square footage in new City Hall and new airport terminal (Current $28,537 Revised $63,090 difference of $34,553)

• Window cleaning was previously included in janitorial contract. It will now be a separate contract and cost for the airport and new City Hall (These amounts are only estimates prior to formal RFP). Revised $37,240 this expense is for two cleanings per year for both City Hall and airport.

• Utilities projected cost for new City Hall is $407,000 per year (Current $233,946 difference of $173,054) This is an estimate by project engineers used by the architectural firm (VCBO). Utilities projected cost for new airport terminal is $126,560 per year (Current $24,655 difference of $101,905)

- Goals and Objectives in the General Plan where you feel like you could do more if given more budget? If so, what are they?

  ○ Look for opportunities in other city owned facilities for various equipment upgrades, such as chillers, boilers, air handlers to improve the operational system, enhance efficiency and increase sustainability.

- Do you see important needs being unfunded or underfunded in your department currently?

  ○ No

- If you received supplemental money last year, what did you do with those dollars? How did those dollars make it easier to achieve your department/division goals?

  ○ We did not receive supplemental money last year.

- Are there other requests related to FY2023 budget you'd like to bring before the Council?

  ○ No

Provo Justice Court Revenues
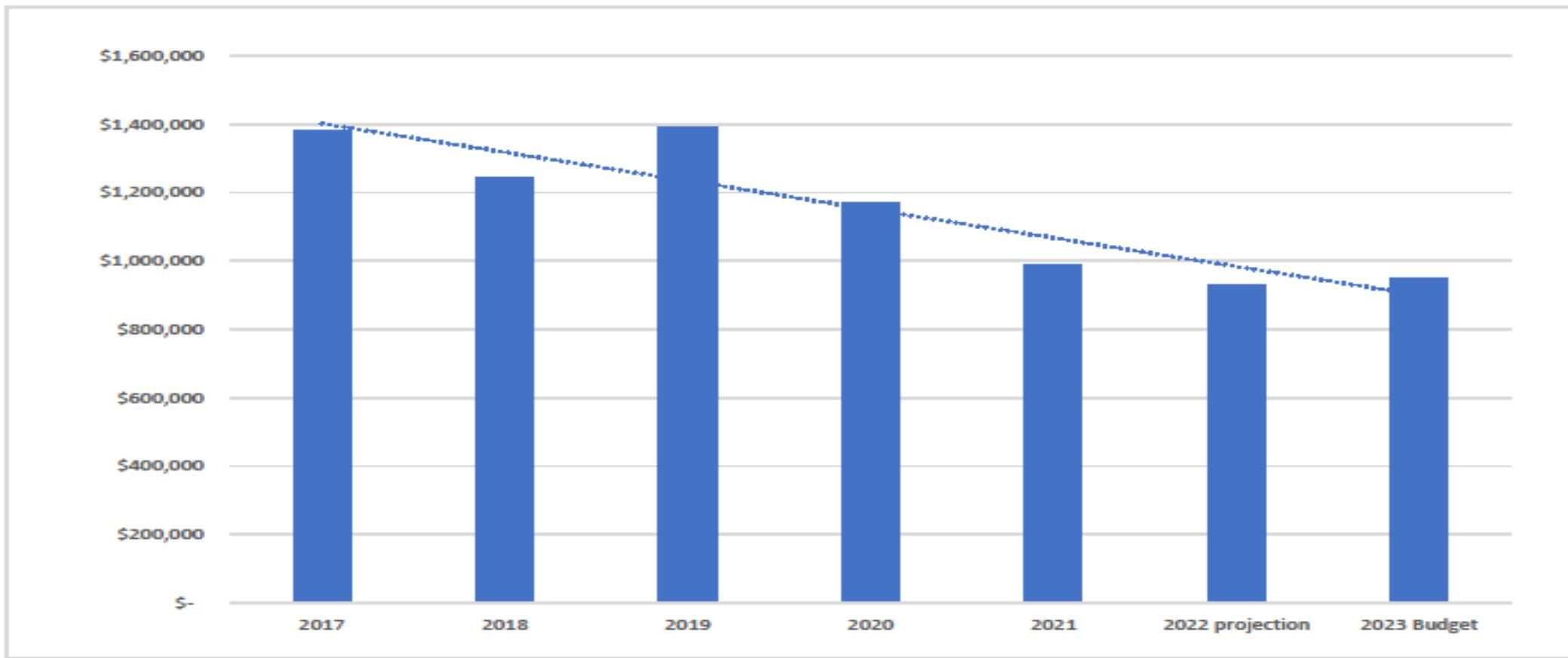
PANDEMIC RESTRICTIONS

- Warrants
  - warrants could not be issued from March 2020-April 2021
- Hearings/trials
  - Virtual hearings and no transports from March 2020-April 2021. In-person hearings are still being limited to trials and exigent circumstances.
  - Jury trials stayed from March 2020 – June 2021.
- Collections
  - Fine and fee collection efforts were restricted from March 202-April 2021

JUSTICE REFORM

- Defendants now have the option of cash or bond on most warrants/bail.

- We are seeing more unsecured bonds.

- Community service is an option in lieu of fine payments.

- Video will likely remain an option for most hearings.

- Transports may continue to be limited.

- A push for treatment based, sentencing rather than fines and incarceration.

- Continued discussion of pushing Class A misdemeanors to Justice Courts.

- What is your department/division doing to help the City achieve the goals listed in the General Plan:
  - Have 2 full-time employees on staff that speak both English and Spanish. Court appointed interpreters are provided for criminal, traffic and small claims hearings in any language requested/needed.
  - Open and receptive with citizens as the come to the Justice Court:
    - High customer service scores in our annual customer service surveys.
    - Focus on customer service through employee recognition.

- Do you see important needs being unfunded or underfunded in your department currently?
  -
    - No

- If you received supplemental money last year, what did you do with those dollars? How did those dollars make it easier to achieve your department/division goals?
  -
    - We did not receive supplemental money last year.
  -
- Are there other requests related to FY2023 budget you'd like to bring before the Council?
  - No

PROVO CITY

INFORMATION SYSTEMS
FY2023 BUDGET

SERVICE | INNOVATION | TECHNOLOGY | SAFETY

A recent city-wide business continuity project identified IS as a critical key factor in all departments being able to operate and recover from significant events.

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SUPPLEMENTAL FUNDS FY22

NEW PUBLIC SAFETY BUILDING & CITY HALL
- Voice Communications (Phone, 911, Radio)
- Network / Wireless
- Data Storage (SAN)

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WELCOME HOME

WELCOME HOME

City	Residents*	Total City Revenue*	IT Budget**	Total City FTE*	City IT FTE Count**	IT as % Of Revenue	IT Staff as a % of Total Staff	User to IT Staff Ratio	IT Spending Per Employee	IT Spending Per Capita	College Town	Energy Utility
Salt Lake City, UT	199,723	$ 951,005,000	$ 19,215,550	3282.55	84.0	2.02%	2.56%	39	$ 5,853.85	$ 96.21	✓	
Tempe, AZ	180,587	$ 544,820,760	$ 19,461,621	1967	82.0	3.57%	4.17%	24	$ 9,894.06	$ 107.77	✓	
Eugene, OR	173,620	$ 370,520,833	$ 16,460,817	1493	30.0	4.44%	2.01%	50	$ 11,025.33	$ 94.81	✓	✓
Roseville, CA	145,163	$ 270,900,000	$ 13,486,121	1195.73	47.0	4.98%	3.93%	25	$ 11,278.57	$ 92.90		✓
West Valley City, UT	143,804	$ 156,209,595	$ 5,056,788	844.5	13.0	3.24%	1.54%	65	$ 5,987.91	$ 35.16		
College Station, TX	122,738	$ 297,902,253	$ 6,895,062	1046.8	31.3	2.31%	2.99%	33	$ 6,586.80	$ 56.18	✓	✓
West Jordan	116,961	$ 167,032,631	$ 3,100,000	606	8.0	1.86%	1.32%	76	$ 5,115.51	$ 26.50	✓	
Provo, UT	115,162	$ 250,910,654	$ 4,247,082	894	18.2	1.69%	2.04%	49	$ 4,750.65	$ 36.88	✓	✓
Orem, UT	98,129	$ 137,595,821	$ 2,450,136	554	12.0	1.78%	2.17%	46	$ 4,422.63	$ 24.97	✓	
Ogden, UT	87,321	$ 173,771,876	$ 5,084,825	641	20.5	2.93%	3.20%	31	$ 7,932.64	$ 58.23	✓	
Bryan, TX	86,268	$ 394,569,817	$ 8,109,700	892	38.0	2.06%	4.26%	23	$ 9,091.59	$ 94.01	✓	✓
					AVERAGE	2.81%		42:1	$ 7,449.05	$ 65.78		
					MEDIAN	2.31%		39:1	$ 6,586.80	$ 58.23		

* Data comes from City Published CAFR

** Data Comes from City Published Annual Budget

Using data from most Recent Budget Books and Most Recent CAFR (e.g. FY2022 Budget Matched w/ 2021 CAFR) - Current as of 1/20/2022

IT AS % OF REVENUE (COMPARABLE CITIES)

- Roseville, CA, 4.98%
- Eugene, OR, 4.44%
- Tempe, AZ, 3.57%
- West Valley City, UT, 3.24%
- Ogden, UT, 2.93%
- College Station, TX, 2.31%
- Bryan, TX, 2.06%
- Salt Lake City, UT, 2.02%
- West Jordan, 1.86%
- Orem, UT, 1.78%
- Provo, UT, 1.69%

Average technology budget as a percentage of revenue

Expected decrease in technology budgets due to pandemic

- 2016: 3.28%
- 2018: 3.64%
- 2020: 4.25%
- 2022: 5.11%*

Notes: *The 2022 data is projected based on Deloitte analysis; 2016 N=747; 2018 N=624; 2020 N=374.
Sources: 2016–2017 Deloitte Global CIO Survey; 2018 Deloitte Global CIO Survey; 2020 Global Technology Leadership Study.

Deloitte Insights | deloitte.com/insights

IS SUPPLEMENTALS REQUESTS FY23

IS SUPPLEMENTAL SUMMARY
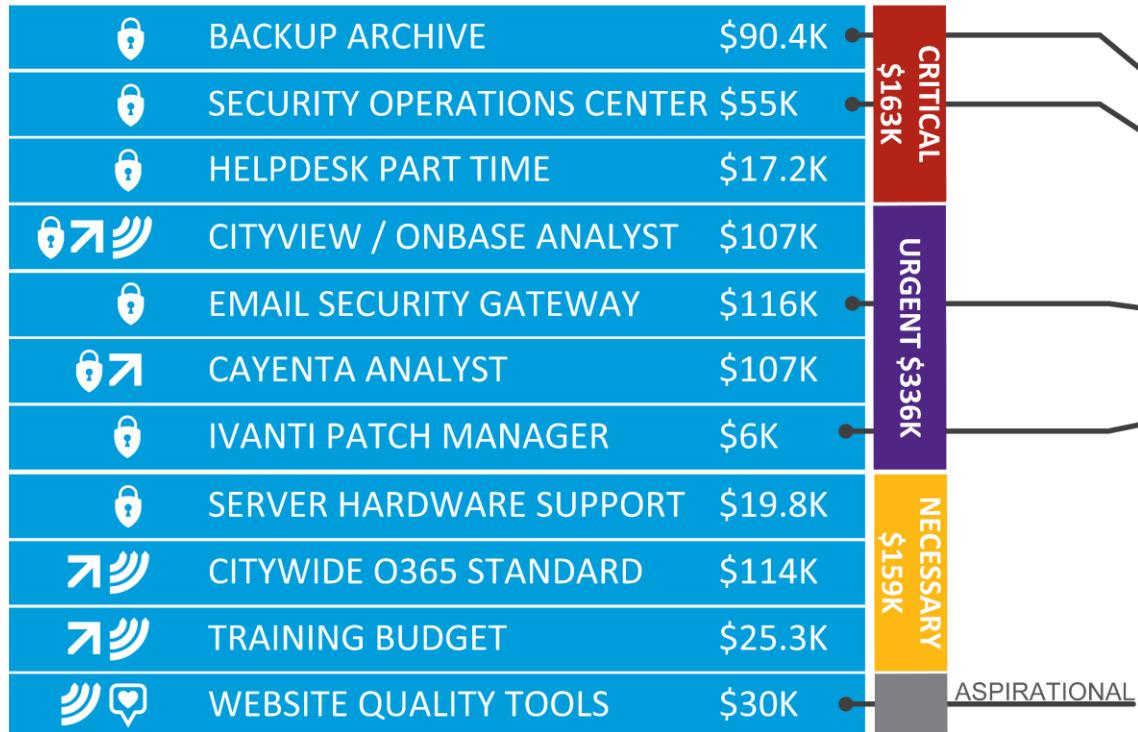
🔒	BACKUP ARCHIVE	$90.4K
🔒	SECURITY OPERATIONS CENTER	$55K
🔒	HELPDESK PART TIME	$17.2K
🔒↗🟦	CITYVIEW / ONBASE ANALYST	$107K
🔒	EMAIL SECURITY GATEWAY	$116K
🔒↗	CAYENTA ANALYST	$107K
🔒	IVANTI PATCH MANAGER	$6K
🔒	SERVER HARDWARE SUPPORT	$19.8K
↗🟦	CITYWIDE O365 STANDARD	$114K
↗🟦	TRAINING BUDGET	$25.3K
🟦♡	WEBSITE QUALITY TOOLS	$30K

CRITICAL $163K

URGENT $336K

NECESSARY $159K

ASPIRATIONAL

CYBER SECURITY
INITIATED / RECOMMENDED

$687.8K

🔒 Safe & Sound   ↗ Forward-Looking   🟦 Economically Vibrant   ♡ Welcoming

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BACKUP ARCHIVE

Adds a three-year backup retention with yearly, quarterly, monthly, and weekly cycles.

$90,420 (Ongoing)
RECOMMENDED BY ISPG, IS DIVISION, & CYBER SECURITY

Since 2016, Clearfield City and over 400 other city and county governments experienced cybersecurity breaches.

IBM's 2021 Cost of a Data Breach Report stated a 4.24M average cost to recover.

It takes an average of 7 months to detect a cybersecurity breach.

The FBI recommends the use of immutable storage backups that can allow data recovery prior to breach.

Provo's current backup capability covers 3 months.

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SECURITY OPERATIONS CENTER

$55,000 (Ongoing)
RECOMMENDED BY ISPG, IS DIVISION, & CYBER SECURITY

Provo had an average of 6.6 million security-related events per day in January.

Current cyber security resource covers 23% of the 24/7/365 yearly operations.

5+

Contracted Security Operations Centers (SOC) have large teams of security professionals armed with constantly updated tools.

Peer organizations (e.g., Ogden City, Box Elder County, and Wasatch County) are engaged with similar services.

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WELCOME HOME

RESTORE HELPDESK PART TIME

$17,243 (Ongoing)
RECOMMENDED IS DIVISION

Restores Helpdesk Part-time position that was cut during Covid.

Helpdesk service capacity and coverage has been reduced by 12.5% (4FTEs to 3.5 FTEs) for the past two years.

Cut resulted in reduced response times, missed tickets, and lack of ticket logging.

(ref Pg. 12 IS Annual Report)

Senior staff required to perform entry level duties.

Has been a great job for our local students going into tech.

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CYBER SECURITY PLAN

Security Team	Responsible to Defend the Cyber Assets of the City
Security Program	Assessment – Prevention – Detection – Reaction – Response
Education	On-going Cyber Security Training for All Employees
Funding	Enhance Cyber Security to Meet New and Emerging Threats

Identify Risks

Implement Controls

Refine Controls

Automate Controls

Evaluate Controls

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WELCOME HOME
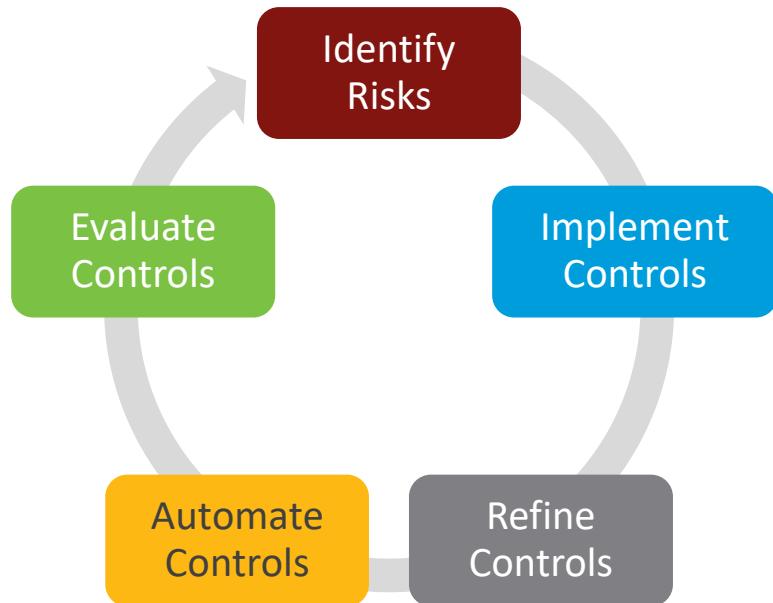
IMPLEMENTATION ACTION PLAN

Most, if not all, identified action plan items can be advanced by investment in technology.

IMPLEMENTATION ACTION PLAN

- *Data Analytics*
- *GIS Mapping*
- *Modern Web Technology*
- *Social Media / Communications*
- *Collaboration Tools*

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IMPLEMENTATION ACTION PLAN

PILOT ANALYTICS PROJECT
DATA NOT VALIDATED

IMPLEMENTATION ACTION PLAN

IS ANNUAL REPORT

NEW CITY HALL TECHNOLOGY
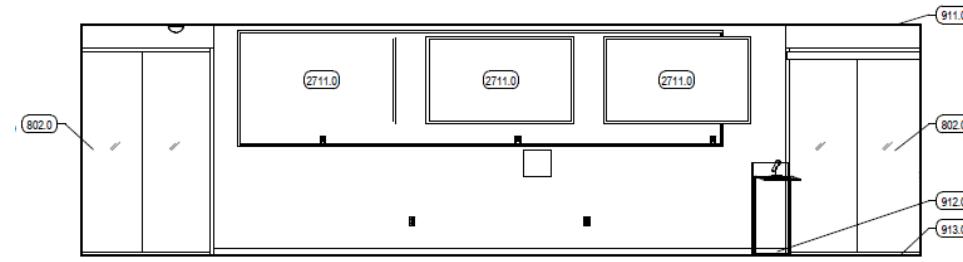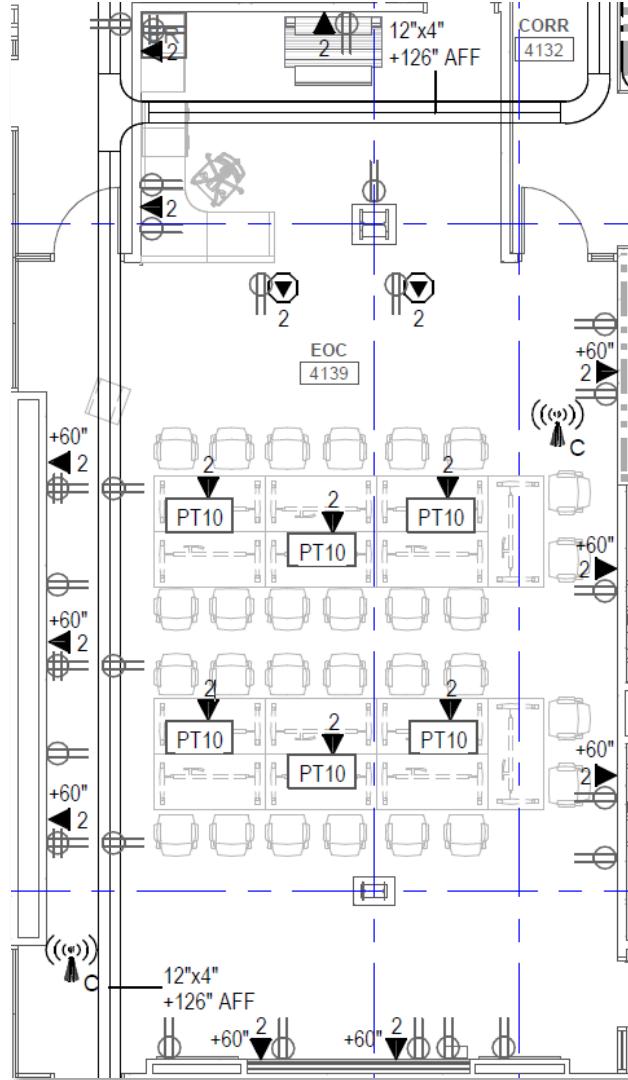
– Modern 911 Dispatch, Emergency Operations, & Telecom / Data Centers

– Voice Communications (Phone, Radio)
- No more 93rd caller busy signal
- Remote capable

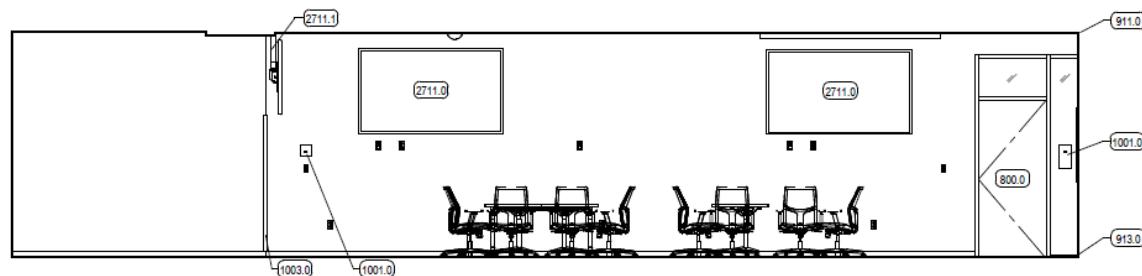– Outfitted Meeting Rooms, Public Spaces, and Public WiFi

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WELCOME HOME

EOC

RM 4139 - EOC - WEST
SCALE: 1/4" = 1'-0"

RM 4139 - EOC - EAST
SCALE: 1/4" = 1'-0"

VOICE COMMUNICATIONS
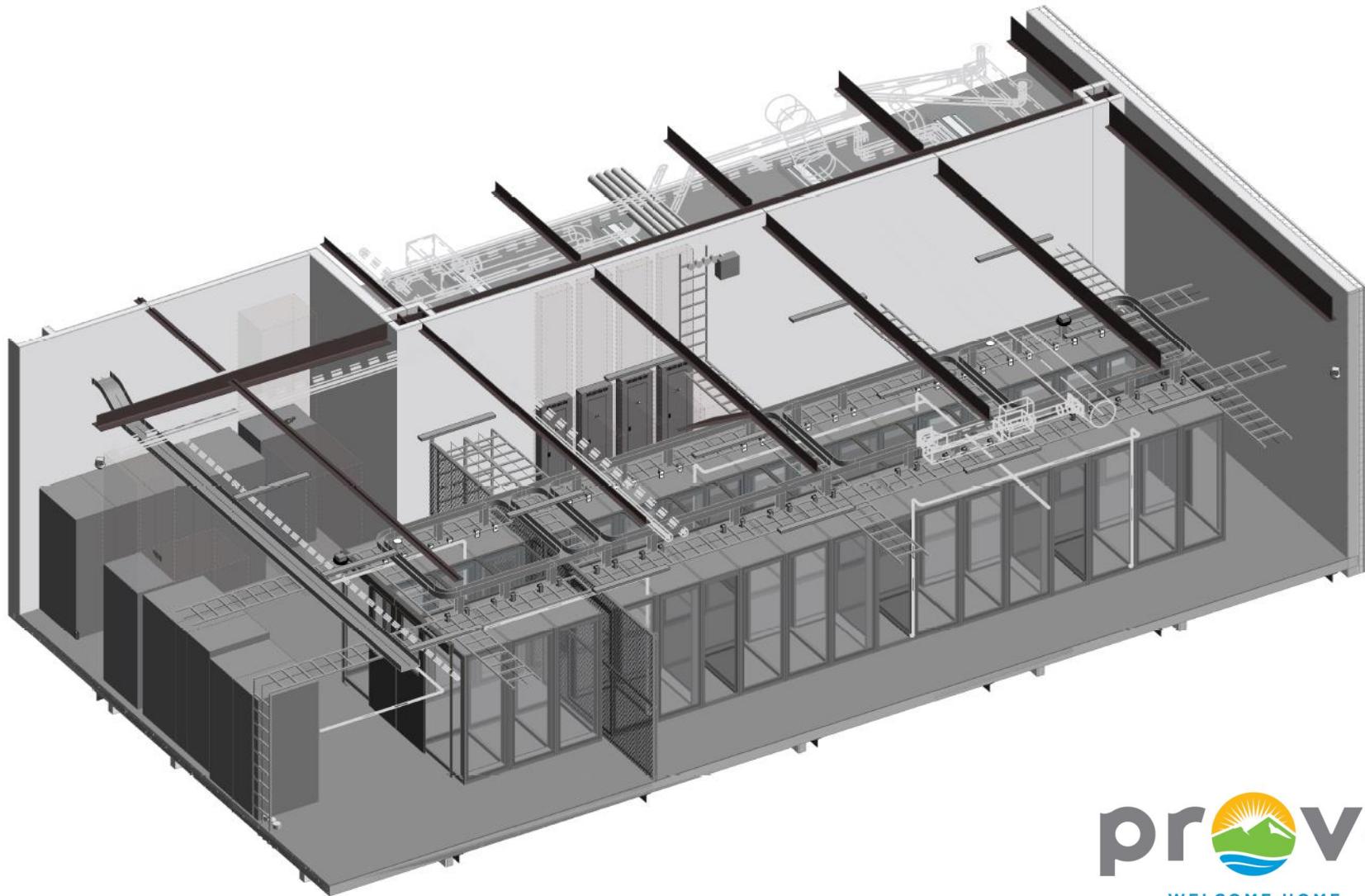
QUESTIONS

ANSWERS

PROVO MUNICIPAL COUNCIL STAFF REPORT

Submitter: MDAYLEY
Department: Council
Requested Meeting Date: 03-01-2022

SUBJECT: A presentation regarding the FY2023 Budget- Police. (22-016)

RECOMMENDATION: Presentation and discussion.

BACKGROUND: In preparation for the drafting and approval of the FY 2022-2023 budget, each department has been asked to present to the Council. In addition to identifying their priorities, needs, wants, and potential costs, their presentations should address the following questions:

•What important needs are currently unfunded or underfunded in your department?
•If you received supplemental money last year, what did you do with those dollars? How did those dollars make it easier to achieve your department/division goals?
•Considering the Implementation Action Plans in the proposed General Plan where you feel like you could do more if given more budget? If so, what are they?
•Are there other requests related to FY2023 budget you'd like to bring before the Council?

The full budget that was approved for Provo City for FY 2020-2021 can be found here: https://www.provo.org/Home/ShowDocument?id=18366

FISCAL IMPACT: Unknown at this time will depend on future decisions made by the Council.

PRESENTER'S NAME: Cheif Fred Ross

REQUESTED DURATION OF PRESENTATION: 30 minutes

COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:

CITYVIEW OR ISSUE FILE NUMBER: 22-016

PROVO MUNICIPAL COUNCIL
STAFF REPORT

Submitter: MDAYLEY
Department: Council
Requested Meeting Date: 03-01-2022

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RECOMMENDATION: Presentation and discussion.

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FISCAL IMPACT: Unknown at this time will depend on future decisions made by the Council.

PRESENTER'S NAME: Cheif Jim Miguel

REQUESTED DURATION OF PRESENTATION: 30 minutes

COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:

CITYVIEW OR ISSUE FILE NUMBER: 22-016

![Provo Fire & Rescue logo]

Provo Fire & Rescue
Provo, Utah

May 2021

Community Risk Assessment:
Standards of Cover

ESCI **Emergency Services Consulting International**

Providing Expertise & Guidance that Enhances Community Safety

Acknowledgments

Jim Miguel
Fire Chief

Michelle Kaufusi
Mayor

Jeremy Headman
Deputy Chief

Wayne Parker
Chief Administrative Officer

Lynn Schofield
Fire Marshal

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Fleet Manager

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Development Services Director

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Ben Schofield
IAFF Local 593

Dustin Wright
Development Services Planner

Gary Winterton
Provo City Council (Retired)

Daniel Softley
Human Resources Director

And the rest of the men and women of the Provo Fire Department and City of Provo, who professionally serve with pride, commitment, and compassion.

Table of Contents

Introduction

The City of Provo retained ESCI to conduct a *Community Risk Assessment: Standards of Cover* study. The motivation behind this effort resulted from the significant recent growth in population, demographic changes, the evolution of the built environment in the City's downtown core, and significant expansion of the Provo Airport. This study is consistent with the Center for Fire Public Safety Excellence (CPSE) 6th Edition *Community Risk Assessment: Standards of Cover* model that develops written procedures to determine the distribution and concentration of a fire and emergency service agency's fixed and mobile resources, and should assist the Provo Fire & Rescue Department in ensuring a safe and effective response force for fire suppression, emergency medical services, and specialty response situations.

Creating a Community Risk Assessment: Standards of Cover document requires that many areas be researched, studied, and evaluated. This report will begin with an overview of both the community and the Provo Fire & Rescue Department (PFRD). Following this overview, the plan will discuss areas such as community risk assessment, critical task analysis, Department service-level objectives, incident distribution and concentration analysis, response time performance, and population and service delivery growth projections. The report will conclude with policy and operational recommendations.

ESCI extends its appreciation to the elected officials, City administrators and department heads, citizens, and PFRD members who contributed to this plan.

Section I: Community & Fire Department Overview

Description of Community Served

Part of a Community Risk Assessment includes an analysis of the community's demographics, economic conditions, and environmental influences. The following section summarizes Provo's key demographics and community influences.

Community Description

Utah County is 2,014 square miles in size, with a 2019 estimated population of 636,235 residents.[1] Located along what is known as the "Wasatch Front," the City of Provo is approximately 43 miles south of Salt Lake City. The City is located at an elevation of 4,549 feet, in a climate that transitions between humid subtropical and humid continental climate.

The City encompasses approximately 43 square miles, 42 of which is land. The 2019 estimated population of Provo was 116,618 persons.[1] The City also serves as the Utah County seat, and is home to Brigham Young University, which has over 30,000 students. Several transportation corridors bisect the City, including the Union Pacific Railway, Interstate 15, State Highway 89, and State Highway 189. According to the multi-county hazard mitigation plan, these corridors, along with the natural geography, limit the ability for rapid evacuation of several areas in the City.

Study Area

The following figure displays the general study area of the PFRD.

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[1] U.S. Census Quickfacts.

Figure 1: PFRD Study Area
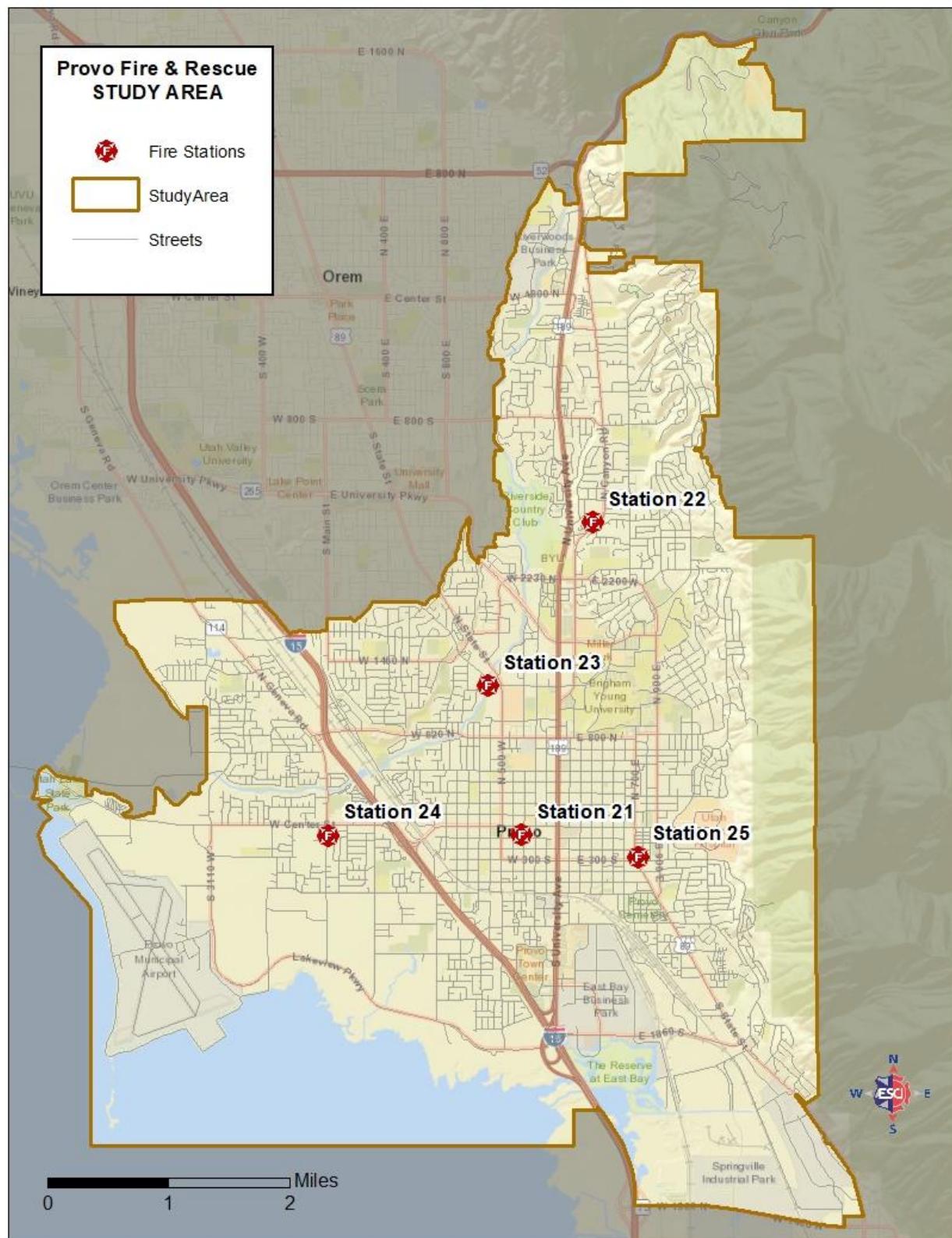
Climate

The weather classification for the PFRD service area is transitional humid subtropical to humid continental climate. The annual high temperature is 66 °F, with August being the hottest month (92 °F), and the annual lowest temperature is 41 °F, with January being the coldest month (22 °F).

The area receives about 19.75 inches of precipitation annually, which is approximately 20 inches below the national average of 39 inches.[2] May is the wettest month (2.08 inches), followed by April (2.01 inches). The driest months are July (.75 inches) and August (.99 inches).

Governance & Lines of Authority

The City of Provo is governed under a Mayor/Council form of government. A seven-member City Council is the policy-making body for the City. Five Council positions represent individual districts, and two are at large positions.

The Mayor serves as the City's Executive, and is responsible for executing policies as established by the City Council, and overseeing the City's financial affairs and the operation of the fifteen City departments. A Chief Administrative Officer handles the day to day operational oversight of City operations, and reports directly to the Mayor.

Provo's Economy

Provo and the surrounding area are home to several large employers, employing over 60,000 people. The largest employer is Brigham Young University (4,100 employees).[3] The largest job sectors in Provo are:

- Educational Services (14,618)
- Retail Trade (7,060)
- Health Care & Assistance (6,073)

In 2018, the median household income in Provo was $46,532, which was 43% less than the median income of all Utah County residents.[4] Between 2016 and 2017, employment grew at a rate of 6.2% (30,100 employees to 31,900 employees).

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[2] USClimatedata.com
[3] Brigham Young University Human Resources Division.
[4] Ibid.

The following figure illustrates the employment in Provo by occupation type.

Figure 2: Employment by Occupation Type
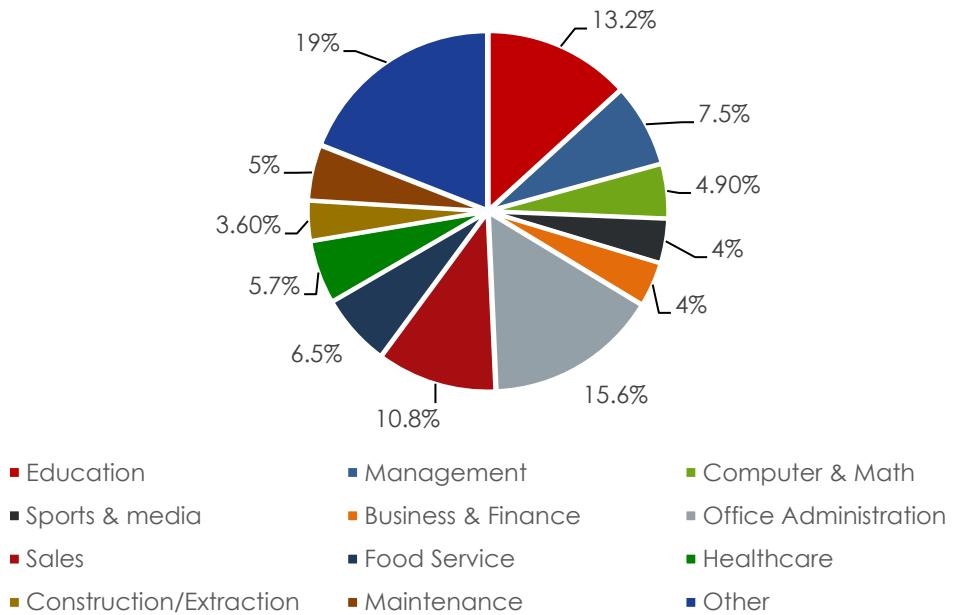
The highest paid jobs held by Provo residents, by median earnings, are Legal Occupations ($73,864), Health Diagnosing and Treating Practitioners/Other Technical Occupations ($45,786), and Management Occupations ($43,542).

General Population Characteristics

A 2019 *Daily Herald* newspaper article noted that the Provo-Orem metropolitan area was 10th in the nation for growth between 2017 and 2018 with a 2.6% increase. The population of Provo has increased approximately 3.3% since 2010, adding just over 3,600 new residents. Much of this growth was the result of an increase of new technology companies locating in the Provo-Orem area, also known as the "Silicon Slope."

Population distribution within the City is another important factor to consider in emergency services planning and service delivery. The following figure shows the variances in population distribution in Provo.

Figure 3: Provo Population Density
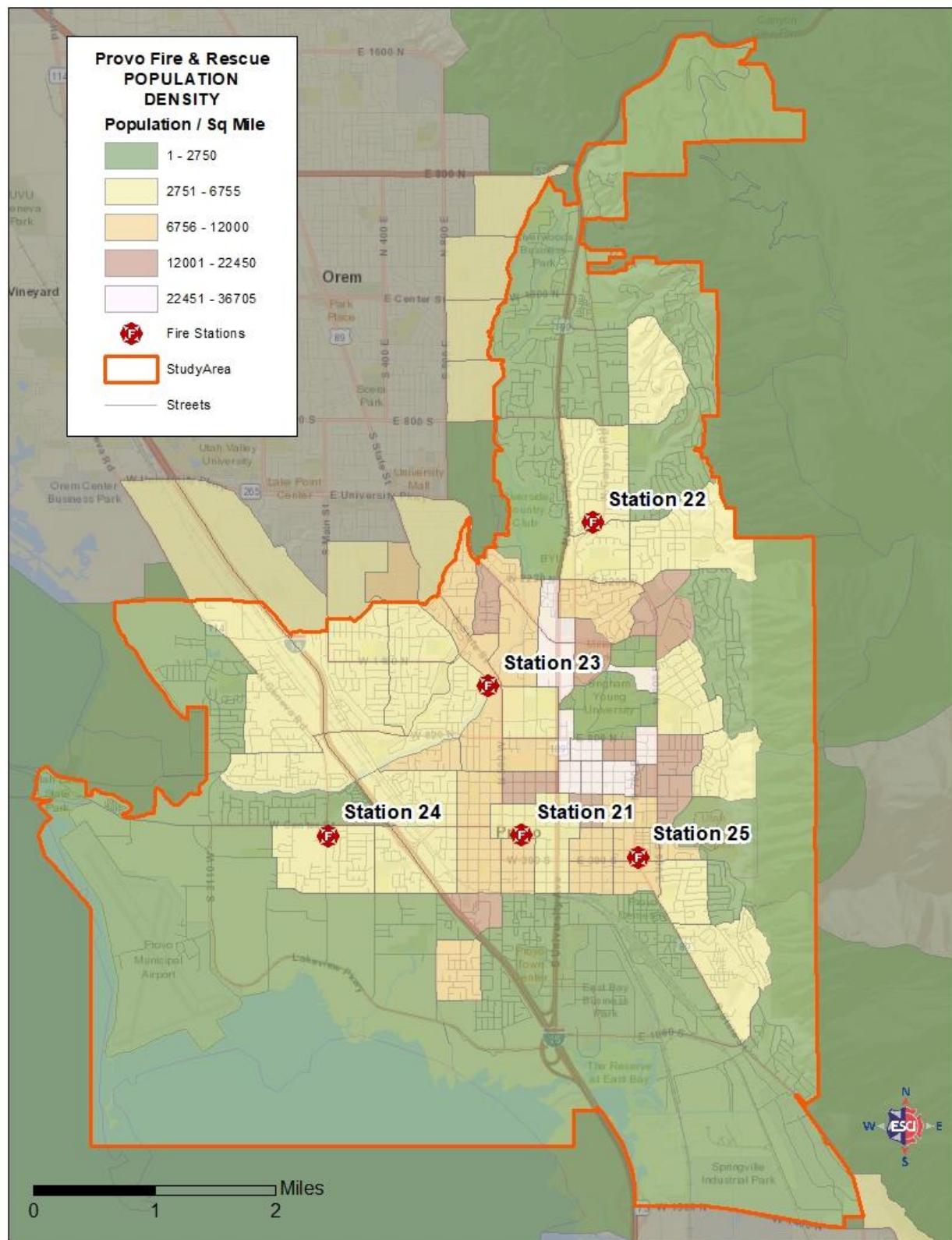
Fire Department Overview

The PFRD is a full-time career fire department, providing fire, emergency medical care, and rescue services from five strategically placed fire stations. The Department was founded in 1890 as a volunteer fire department. According to the U.S. Census Bureau, the Department serves a population of nearly 117,000 residents over 42 square miles of land in the city. The PFRD maintains and staffs five fire stations in the City and a station at the Provo Municipal Airport during commercial airline operations. Almost all operations personnel are Firefighter/EMT-Paramedics.

Firefighters respond to a wide variety of 911 calls, including structure and wildland fires, motor vehicle accidents, vehicle extrication, swift and open water rescue, hazardous materials, technical rescue incidents, and aircraft incidents.

The Mission of the PFRD is:

"To Provide Professional Quality Service with Dedication and Pride."

The PFRD maintains and staffs five fire stations organized into three shifts, each of which works 48 hours on-duty, followed by 96 hours off-duty. The Department provides the following services:

- Fire Suppression
- Aircraft Rescue & Firefighting (ARFF)
- EMS Basic Life Support and Advanced Life Support care and transport
- Regional Technical Rescue (Confined Space, Rope, Trench/Collapse, Machinery, Surface Water)
- Wildland Fire Mitigation & Suppression
- Emergency Management
- Fire Prevention & Code Enforcement
- Public Life Safety Education

Fire Suppression

The minimum daily staffing is 19 personnel deployed across five fire stations. Each station is staffed with four personnel who staff either an engine, quint, or hazmat/rescue unit. PFRD also cross-staffs an ALS equipped ambulance in each station.

Airport Firefighting

The Department provides aircraft rescue and firefighting (ARFF) response out of a three-bay fire station located directly north of the main airport terminal. Two of the bays store ARFF apparatus, and the remaining space is used to store airport vehicles and equipment.

The airport ARFF capability and requirements are categorized as Index B as identified under FAA Part 139 Airport Certification requirements. The Index categories are primarily based on the frequency of takeoffs and landings and the overall average length of the largest aircraft using the airport.

The ARFF fire station is unstaffed until 30 minutes before and after the scheduled arrival and departure of commercial passenger aircraft. During these times, either two employees are hired back on overtime or two ARFF trained personnel from Station 24 or Station 21 are detailed to the airport to stand by during these scheduled flights. According to the Department, personnel hired on overtime are used approximately 50% of the time for ARFF coverage. The station does not have living quarters, and is not equipped or configured for continual use. This will likely become problematic as the airport expansion and resulting increased number of commercial flights in and out of the airport will require increased presence by ARFF firefighters on any given day.

Lastly, depending on the eventual number of commercial flights and size of aircraft, the airport may eventually be classified as an Index C ARFF category, which may require larger ARFF apparatus and a larger fire station.

Wildland Firefighting

The geography, climate, and natural fuels present in and around Provo make it susceptible to wildfires, especially in the wildland urban interface areas in the eastern foothills. The Department routinely responds to wildfires, especially in the summer and fall. PFRD operations personnel are National Wildfire Coordinating Group (NWCG) Red Card trained and qualified to fight wildfires, and are required to take periodic refresher training. The Department has four Type 6 brush units, and two all-terrain vehicles (ATVs) to access remote areas in the foothills.

EMS

Each station is minimally staffed with at least one EMT-Paramedic and one EMT-Basic who cross-staff an ALS-equipped ambulance to respond to medical incidents in their first-due territory and transport for definitive care as appropriate. All operations personnel are minimally trained and certified at the EMT-Basic level. At the time of this study, 72 operations personnel were certified as EMT-Paramedics, and the Department has a goal of having all operations personnel trained and certified as EMT-Paramedics.

Hazardous Materials Response

The Department provides hazardous materials response as part of a countywide response program with 40 team members. The Department's hazmat specialized equipment responds out of Station 22. All operations assigned personnel are trained to at least the HazMat Operations level, and 10 are trained to the HazMat Technician Level. These personnel are trained and equipped to conduct surveillance, containment, and control of uncontrolled chemical releases in Level A protective ensembles. The team trains at least twice a year to maintain proficiency.

Technical Rescue

The Department provides a wide range of technical rescue response as part of a countywide technical rescue team program, which includes swift-water rescue, confined space, structural/trench collapse, trench rescue, and high angle rope rescue. The overall team has 17 members, and the technical rescue equipment is located on the hazmat/rescue unit operating out of Station 25.

Mutual Aid

PFRD has mutual aid agreements for emergency response with these neighboring fire departments:

- North Fork Fire Department (NFFD)
- Orem Fire Department (OFD)
- Springville Fire & Rescue (SFR)

Of the three fire departments, the OFD is the only one that staffs all of its stations with full-time firefighters. The NFFD—which is part of the North Fork Special Services District—is located at the Sundance Ski Resort on the front range, east of Provo, and responds into the east Provo Canyon area upon request from PFRD. SFR is a combination full-time and volunteer fire department.

PFRD does not have automatic aid agreements with these fire departments. ESCI understands that informal discussions have taken place between the PFRD and OFD leadership to explore establishing automatic aid agreements that would allow for automatic dispatching of each agencies respective units to incidents to increase the effective response force (ERF) of each department, and improve response times into portions of the northern areas in Provo and the southern areas in Orem.

The Insurance Services Office (ISO) recognizes and gives credit in rating a jurisdiction's fire protection capabilities for automatic aid agreements and response procedures where assistance is dispatched automatically by contractual agreement between two communities to all first alarm structural fires. To receive credit, the automatic aid agreement must include the following:[5]

- The assistance must be prearranged for first-alarm response according to a definite plan. It is preferable to have a written agreement, but ISO may recognize demonstrated performance.
- The aid must be dispatched to reported structure fires on the initial alarm.
- The aid must be provided 24 hours a day, 365 days a year.
- The assistance may be fire department companies—including apparatus and firefighters—or only firefighters.
- For fireground communications, the communities should have common dispatch and tactical radio frequency capability and standard operating procedures.

Ideally, automatic aid agreements are most seamless when combined with the implementation of automatic vehicle location (AVL) systems that are connected to a Dispatch Center's CAD system, which allows for seamless dispatching of the closest unit to an incident, regardless of which jurisdiction the incident occurs in. ESCI understands that PFRD units have mobile data computers (MDCs) that, if equipped with the necessary software interfaces and antennas, could be used to transmit AVL information to the Dispatch Center. The presence of two separate dispatch centers is another key consideration and potentially complicating factor in implementing automatic aid agreements and AVL technology. However, ESCI understands that the Orem 911 Communications Center CAD is connected to the PFRD Dispatch Center CAD, which may enhance the integration of an AVL system and the implementation of automatic aid between the two fire departments.

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[5] ISO Mitigation, retrieved online https://www.isomitigation.com/ppc/technical/automatic-aid/

Lastly, PFRD should engage SFR in similar automatic aid discussions if their station closest to Provo transitions to full-time staffing, as SFR Station 41 is only 1.3 miles from the far southern border of Provo off of Highway 89.

Support Programs

Emergency Communications

The PFRD oversees the delivery of fire and EMS dispatching services through the Provo 911 dispatch center, which serves as the Primary Public Safety Answering Point (PSAP) for all law enforcement and fire department 911 calls originating in the City of Provo. The Center is staffed with a Dispatch Center Manager and 24 Call Taker/Dispatchers. The Center uses a limited computerized version of the Medical Priority Dispatch® (MPD) Emergency Medical Dispatch (EMD) caller interrogation card system. However, the program is not tied into the CAD system, nor does it provide triage recommendations featured in the full ProQA™ computerized EMD protocols to conduct caller interrogation and relay pre-arrival instructions. Currently, the system is not used to triage, prioritize, or assign response modes for responding units.

Public Safety communication centers across the United States that receive 911 calls and dispatch units to EMS incidents are now using formal caller interrogation protocol systems designed to identify life-threatening medical and trauma situations, dispatch the appropriate resources—in the appropriate response mode (emergency vs. non-emergency)—and provide appropriate pre-arrival instructions to the caller to help the patient before EMS units arrive quickly and accurately. These protocol systems are commercially available and have been medically reviewed and approved. Examples of these programs include, but are not limited to, Priority Dispatch® EMD, King County Washington's criteria-based EMD, and Powerphone® EMD.

Ensuring these protocols are properly and consistently followed to ensure dispatchers are accurate and appropriate in their caller interrogation and determination of the type of medical and trauma situation is equally as important. Centers that implement EMD protocols should have a quality assurance process in place that routinely reviews the use of the protocols to ensure they are being used appropriately and consistently. The review process should involve physicians or personnel with advanced EMS certifications.

Emergency Management

The PFRD is responsible for planning, managing, and coordinating community disaster resiliency programs for the City. An Emergency Management Manager oversees the program and reports directly to the Fire Chief. The Manager oversees and coordinates disaster planning activities throughout all City departments. The position also secures state and federal grants, maintains the City's Emergency Operations Plan (EOP), and coordinate specific training activities, Continuity of Operations (COP) planning, and public education messaging.

Fire Prevention & Life Safety Education

In today's fire service, the many competing interests for limited funding can make establishing priorities extremely challenging. During times of increasing costs and decreasing resources, fire prevention and public education activities are often sacrificed to ensure adequate emergency response capabilities are maintained. Assessing the overall risks in a community and creating a focused Community Risk Reduction Plan based on this assessment can help focus the allocation of limited fire prevention resources on the highest risks found in the community. The following section evaluates PFRD's fire prevention and life safety education activities.

Fire Prevention

It is far more effective to prevent fires and other emergencies than it is to respond to them. The financial impact of a fire or injury goes far beyond the cost of extinguishment or treatment. According to the Federal Emergency Management Agency (FEMA), 40% of businesses do not reopen following a disaster. Additionally, another 25% fail within one year. The United States Small Business Administration found that more than 90% of companies fail within two years of being struck by a disaster.[6]

The fiscal impacts of injuries, while not as immediately evident, can be equally devastating. Individuals experiencing an injury may lose the ability to earn an income during the recovery time, and businesses lose the productivity of that individual until they return to work. Beyond the fiscal impacts associated with lost work time, injured persons and families often experience significant emotional trauma.

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[6] https://encompass.eku.edu/cgi/viewcontent.cgi?article=1166&context=etd.

A strong fire prevention and life safety program, based on effective application of relevant codes and ordinances, reduces the loss of property, life, and the personal disruption that accompanies a catastrophic fire and accidents.[6]

The fundamental components of an effective fire prevention program are listed in the following figure, accompanied by the elements needed to address each component.

Figure 4: Fire Prevention Program Components

Fire Prevention Program Components	Elements Needed to Address Program Components
Fire Code Enforcement	Proposed construction and plans review New construction inspections Existing structure/occupancy inspections Internal protection systems design review Storage and handling of hazardous materials
Public Fire and Life Safety Education	Public education Specialized education Juvenile firesetter intervention Prevention information dissemination
Fire Cause Investigation	Fire cause and origin determination Fire death investigation Arson investigation and prosecution

Plan Reviews and Inspection Activities

The review of planned construction is a critical component in effective fire prevention programs. Working in conjunction with the local, county, and/or regional building officials ensures that planned construction will be built to applicable fire codes and standards to ensure a safe environment. In concert with evaluating planned and newly built structures, regularly performing inspections of existing occupancies helps ensure these occupancies remain safe to occupy, and also provides an opportunity for fire personnel to become familiar with the building characteristics, layout, and any special hazards within. The recommended frequency for business/occupancy inspection may vary based on the type of use and degree of hazard. The National Fire Protection Association (NFPA) recommended standard for fire safety inspections by hazard class is noted in the following figure.

Figure 5: Recommended Fire Inspection Frequencies per NFPA 1730

Hazard Classification	Example Facilities	Recommended Inspection Frequency
Low	Apartment common areas, small stores, and offices, medical offices, storage of other than flammable or hazardous materials.	Annual
Moderate	Gas stations, large (> 12,000 square feet) stores and offices, restaurants, schools, hospitals, manufacturing (moderate hazardous materials use), industrial (moderate hazardous materials use), auto repair shops, storage of large quantities of combustible or flammable material.	Semi-Annual
High	Nursing homes, large quantity users of hazardous materials, industrial facilities with high process hazards, bulk flammable liquid storage facilities, facilities classified as an "extremely hazardous substance" facility by federal regulations (SARA Title III).	Quarterly

The Department's Fire Prevention Division is responsible for enforcing the fire code throughout the City. The Division is managed by a Fire Marshal, who oversees the activities of two Deputy Fire Marshals. The City has adopted the 2018 edition of the International Fire Code (IFC), along with amendments adopted by the State of Utah. The City does not have a residential sprinkler ordinance. The Fire Marshal is a certified Plans Examiner, as well as a certified Fire Investigator, and the two Deputy Fire Marshals are also certified Fire Investigators.

New Construction Inspection and Involvement

The Fire Prevention Division reviews all new commercial construction and residential development plans for compliance with the IFC. The Department is consulted on planned new commercial occupancies, changes to existing occupancy uses and residential developments, and participates in the City's Coordinator's Review Committee, which reviews proposed construction projects. Fire protection systems reviews are outsourced to a third-party contractor.

The Department enjoys an excellent working relationship with the City's Building Department, and there are close collaboration and coordination between the two departments, including weekly joint staff meetings to discuss projects and code issues.

Existing Occupancy Inspections

Inspection of existing commercial occupancies is shared between the Fire Marshal and Deputy Fire Marshals. However, only the following select general occupancy categories are regularly inspected:

- Public Assembly

- Tier II Hazardous Materials sites

- Institutional occupancies

- High life risk occupancies

- Businesses with new business licenses

There is no inspection of existing fire protection systems in buildings other than those listed above.

ESCI noted that the Department does not have a formal fire preplan program or target hazard identification program for occupancies within the city limits, including Brigham Young University, which has a significant number of special hazard occupancies, including large public assembly buildings, hazardous materials storage and use facilities (laboratories), and other special hazard occupancies.

The frequency of inspections should be consistent with the value and risk of the structure and business operation. NFPA 1730: *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations,* suggests an inspection frequency matrix, as shown in the following figure.

Figure 6: NFPA 1730 Minimum Inspection Frequency

Occupancy Risk Classification	Frequency
High	Annually
Moderate	Biennially
Low	Triennially
Critical Infrastructure	Per AHJ

Fire and Life Safety Public Education Program

Delivering fire and life safety messages to the community through direct and indirect engagement is an important mission in contemporary fire departments. A well-educated and trained public can become a "force multiplier" in maintaining a safe and resilient community.

PFRD does not have a dedicated Public Information Officer position. Instead, external department public messaging and social media posts are shared between an operations Firefighter Paramedic and the administratively assigned EMS Captain. The Department does not have a comprehensive, dedicated Fire and Life Safety Public Education Program for the residents of Provo, nor does it have a formal presence in the schools to provide fire and life safety education. However, the Department does provide some elements of life safety education upon request, including Fire Extinguisher Training, First Aid courses, Cardiopulmonary Resuscitation (CPR) Training, Citizen Emergency Response Team (CERT) training, and a Juvenile Firesetter Program.

Specific to the wildfire hazard present in the eastern city areas, the Department is planning to implement the FireWise® education and fuels mitigation program in Spring 2021.

Fire Origin and Cause Determination

Accurately determining the cause of a fire is an essential element of a fire department's fire prevention efforts. When fires are set intentionally, identification and/or prosecution of the responsible offender is critical in preventing additional fires and potential loss of life.

PFRD performs fire investigations to determine fire origin and cause, often in partnership with the Provo Police Department or the Utah County Fire Arson Task Force. In addition to the investigation capabilities and certifications of the Fire Marshal and Deputy Fire Marshals, seven operations assigned personnel are trained and certified fire investigators.

Fire Prevention Discussion

ESCI noted the positive working relationships and coordination with the City's Building Department. This relationship is extremely important given the significant current and planned new construction projects in the City.

However, given the size and complexity of the Provo community, including the presence of a large university, PFRD should be concerned about the lack of inspection of legacy and newly constructed buildings once they are occupied. It is commonly accepted that stringent and diligent fire code enforcement programs improve community resiliency, and can result in lower fire insurance rates for residents and businesses.

Clearly, PFRD does not have the resources or programs in place to ensure commercial occupancies, including large multi-family occupancies, are regularly inspected to identify significant hazards. The three personnel assigned to the Division cannot be expected to perform fire inspections as defined in *Figure 5: Recommended Fire Inspection Frequencies per NFPA 1730*. Alternative inspection methods should be explored to ensure legacy commercial occupancies are periodically inspected.

Many of the fire departments studied by ESCI utilize operations crews to conduct inspections in certain types of occupancies such as apartment buildings, hotels, public assemblies, and certain types of target hazard occupancies. The benefits of this approach are essentially two-fold: 1. Timely identification of significant hazards or fire code violations that must be corrected, and 2. Provides an opportunity for crews to become familiar with the layout and hazards in the occupancies.

Some communities have implemented "self-inspection" programs. Business owners receive a form from the fire department that includes a checklist of fire code items to look for to ensure they comply. Using this checklist, the business proprietors conduct their own inspection, correct any deficiencies, and return the completed checklist to the fire department. Typically, this approach is used in low-hazard businesses only.

Training

A comprehensive training program is one of the most critical factors in ensuring the safe and effective performance in emergencies. Failure to provide necessary and effective training on a continual basis endangers firefighters and the citizens they serve, while concurrently exposing the fire department to liabilities with potentially severe consequences.

To deliver a comprehensive training regime, fire departments must have access to qualified instructors and training resources that are typically found within the organization, externally with regional partners, or a combination of both. It is essential to ensure training programs are applicable, consistent, and of high quality, and not just delivered to fulfill mandatory training hours. Fire administrators and instructors must ensure firefighters, EMS personnel, and officers are not only competent, but also self-confident in the variety of skills necessary to perform effectively in high-stress situations.

Training Administration

An administrative Battalion Chief is responsible for the Department's non-EMS training. He coordinates the training schedule with the EMS Captain, who oversees the Department's EMS continuing education.

The Training Chief also oversees the activities of the Training Committee, which is comprised of a cross-section of operations personnel who have a strong interest in providing quality training. This group assists in establishing the annual training calendar.

The types of training applicable to PFRD includes:

- Basic and advanced firefighter training
- Basic and advanced medical training
- Driver/operators training courses
- Hazardous materials training
- Firefighter safety and survival
- Technical rescue training (confined space, rope rescue, mountain rescue, swiftwater rescue)
- Wildland firefighting and refresher course work (NWCG RT-130)
- Aircraft firefighting and rescue
- Incident command
- Officer development training

An annual training calendar is created at the end of the preceding year. The calendar identifies monthly training topics for multi-company and single company training and drills. Along with regular monthly fire and EMS training topics, the Department also conducts monthly ARFF training, along with annual aircraft live fire drills using an airplane fire prop and instructors from *139Fire®,* an aircraft firefighting training company. Additionally, the Department conducts a monthly "Extrication Day," where two crews perform various extrication scenarios using junk cars.

The Department uses the web-based *Target Solutions®* program to deliver and document training. Other training is recorded on paper and manually entered into the Department's RMS. A review of 2019 training records revealed that department personnel completed, on average, approximately 21 hours of EMS training and 90 hours of fire training. However, during the study's data gathering process, it was discovered that the Department is unable to access the National Registry of EMT database to query additional hours of training separately documented in this database.

Training Facilities

The Department's training facility is located behind Station Three. A modular building houses the Training Chief and EMS Captain, along with a 20-person classroom, EMS training equipment, and audio-visual equipment.

A five-story drill tower is located on the site, along with a pitched roof ventilation prop and forcible entry prop. The tower is equipped with a standpipe, interior and exterior stairwells, and windows of various sizes and shapes.

ESCI noted that the overall size of the drill ground is small, with a considerable amount of space occupied by equipment trailers, vehicles, and the training building

The Department has an excellent working relationship with Utah Valley University's Fire and Rescue Academy. Several PFRD personnel, including the Training Chief, teach at the Academy. The University has a 10-acre drill ground located adjacent to the Provo Airport. The facility has various props and burn rooms to conduct live fire training. PFRD uses this facility monthly to conduct live fire training for on shift crews.

Financial Analysis

The financial health of the PFRD is critical to ensure that the Department can continue to provide fire services at an acceptable level to the Provo community. To assist Provo Fire Department in determining how its financial policies have impacted its financial stability, ESCI developed a data-driven model to represent these policies fairly and consistently.

In this section, background information provided by the City and Department is used to describe the historical and current financial condition of the PFRD. This includes a multi-year historical review of revenues and expenses, employee counts, and other financial indicators. This analysis relies solely on the financial documentation provided by the Provo Fire Department, the City of Provo, and obtained from Provo.org.

Historical Revenue and Expense

The PFRD is funded primarily through the General Fund of the City. This fund is used to account for all financial resources not accounted for in other funds. The departments/divisions included in the General Fund are the Municipal Council, Mayor's Office & Media, Administrative Services (Human Resources, Information Systems, Finance, Recorder), Community Development, Economic Development, General Services, Fire, Police, Parks and Recreation, Engineering, and Streets. General Fund revenues include sales tax, property tax, other taxes, and fees. Sales Tax makes up 29% of the revenue.

From 2015 through 2020, the General Fund has grown at an average annualized rate of 3.7%. The General Fund has ranged from $56,428,632 in 2015 to $67,585,563 in 2020. This growth is shown in the following figures.

Figure 7: City of Provo General Fund (FY 2015–2020)

Year	2015	2016	2017	2018	2019	2020
Provo GF	$56,428,632	$60,635,426	$63,801,003	$65,519,631	$66,295,303	$67,585,563
% of Growth	7.19%	-0.23%	2.27%	1.40%	3.95%	2.64%

The PFRD makes up, on average, 13.4% of the General Fund for the City, which is the expense of the department to the General Fund after revenues have been recognized, as shown in the following figure.

Figure 8: Provo Fire Department Percentage of General Fund (FY 2015–2020)
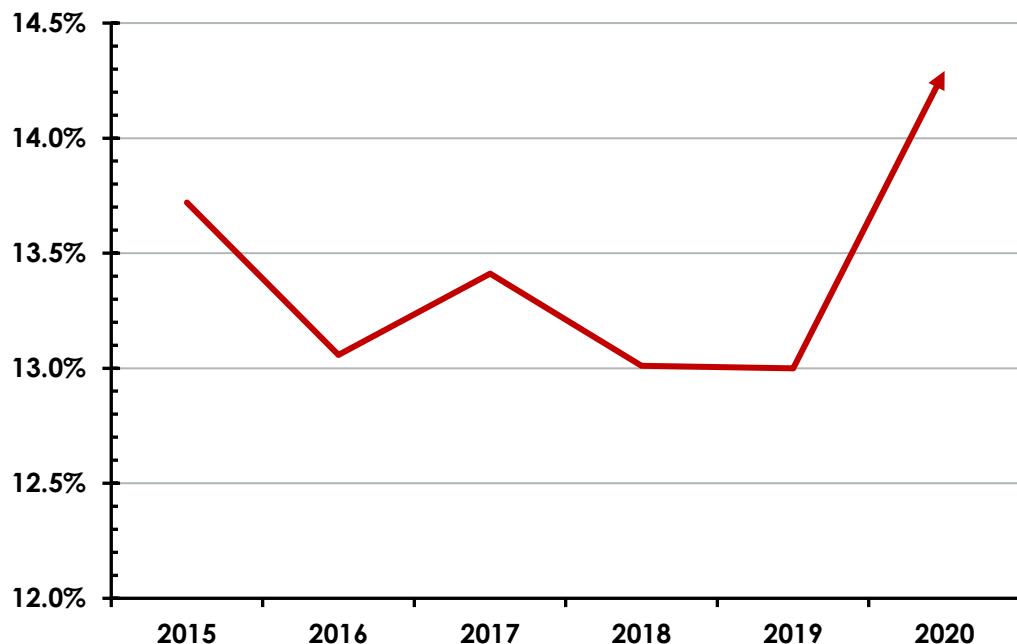
At the time of this study, the COVID-19 pandemic has significantly impacted the social and economic health of the community. To help mitigate the financial impacts, the City ordered a 1.5% cut for all General Fund departments to reduce expenses, except for the Fire and Police departments. It is important to recognize that any increases in funding needs will come at the expense of other departments also funded by the General Fund.

Provo Fire Department's budget has experienced growth from 2013 through 2021, having grown at an annualized average rate of 3.7%, increasing from $6,945,480 in 2013 to $9,030,066 in 2021. The following figures show the historical growth of the Fire Department budget from FY 2013 through FY 2021.

Figure 9: Provo Fire Department Budget and Growth (FY 2013–2021)

Year	PFRD Budget	Percentage of Growth
2013	$6,945,480	—
2014	$7,473,282	7.6%
2015	$7,741,875	3.6%
2016	$7,917,453	2.3%
2017	$8,556,448	8.1%
2018	$8,524,651	-0.4%
2019	$8,617,990	1.1%
2020	$9,659,339	12.1%
2021	$9,030,066	-6.5%

The PFRD budget is broken down into two sections: revenues and expenses. The two areas have performed differently during the period of 2013 through 2021. Both have an impact to the General Fund needs of the department.

From 2013 through 2021, Provo Fire Department generated revenues from Fees, Grants, and Miscellaneous income. Revenues have ranged from $1,629,367 in 2013 to $1,920,000 in 2021. The revenue grew at an annual average rate of 8.3%. Fees are the largest area of revenue for the Provo Fire Department. The following two figures illustrate the revenues and percentage growth.

Figure 10: Provo Fire Department Revenue (FY 2013–2021)

Year	PFRD Revenue	Percentage of Growth
2013	$1,629,367	—
2014	$1,326,333	-18.6%
2015	$1,371,382	3.4%
2016	$1,640,193	19.6%
2017	$1,617,100	-1.4%
2018	$1,902,554	17.7%
2019	$2,451,832	28.9%
2020	$2,140,237	-12.7%
2021	$1,920,000	32.4%

Figure 11: Provo Fire Department Revenue (FY 2013–2021)
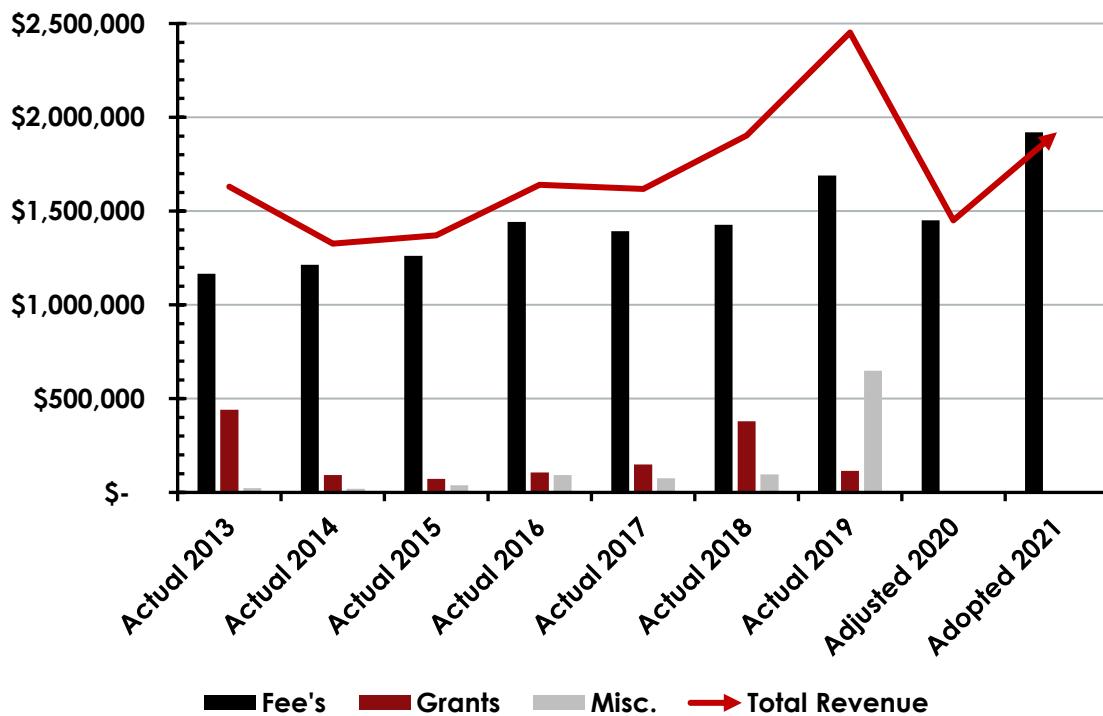
Revenue Analysis

The revenues shown in the preceding three figures were obtained from published budget books available at Provo.org.[7] When comparing revenues for the period of 2017 through 2019, revenues consistently outperformed the Adjusted Budget. This performance is shown in the following figures.

Figure 12: Provo Fire Department Revenue-Adjusted versus Actual (FY 2017–2019)

Year	2017	2018	2019
Adjusted Budget	$1,603,686	$1,830,265	$2,025,100
Actual Revenue	$1,617,100	$1,902,554	$2,451,832
Exceeds Budget	$13,414	$72,289	$426,732

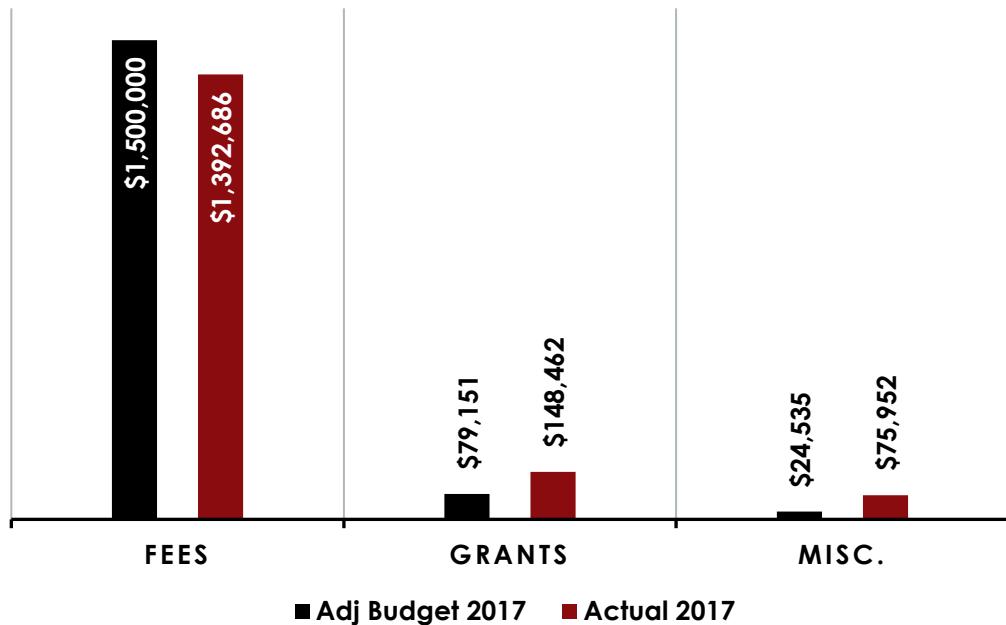[7] https://www.provo.org/government/city-council/budget.

Figure 13: Provo Fire Department Revenue Budget vs. Actual (FY 2017)

Figure 14: Provo Fire Department Revenue Budget vs. Actual (FY 2018)
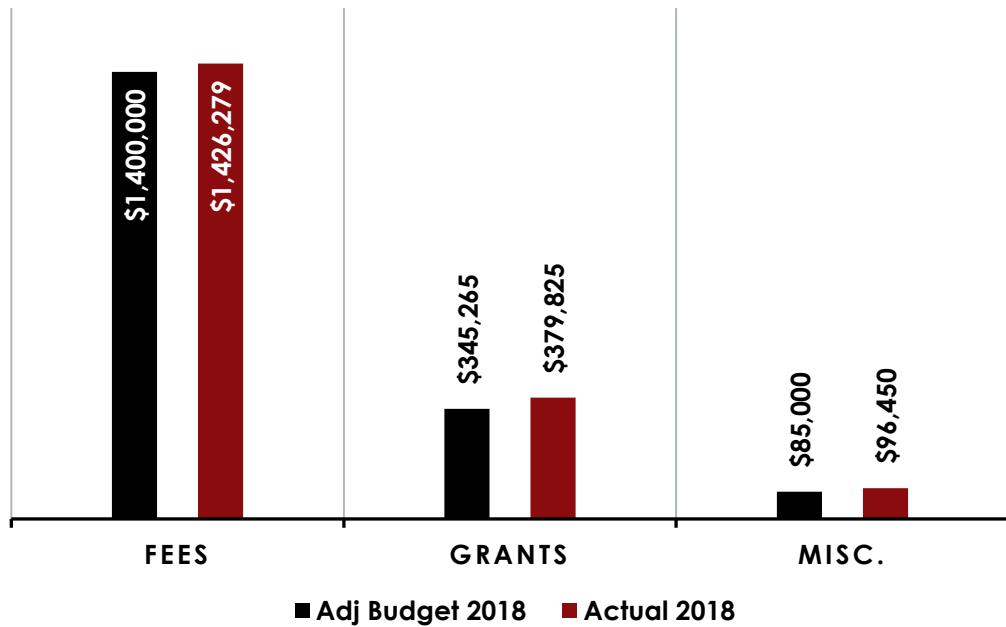
Figure 15: Provo Fire Department Revenue Budget vs. Actual (FY 2019)

■ **Adj Budget 2019**   ■ **Actual 2019**
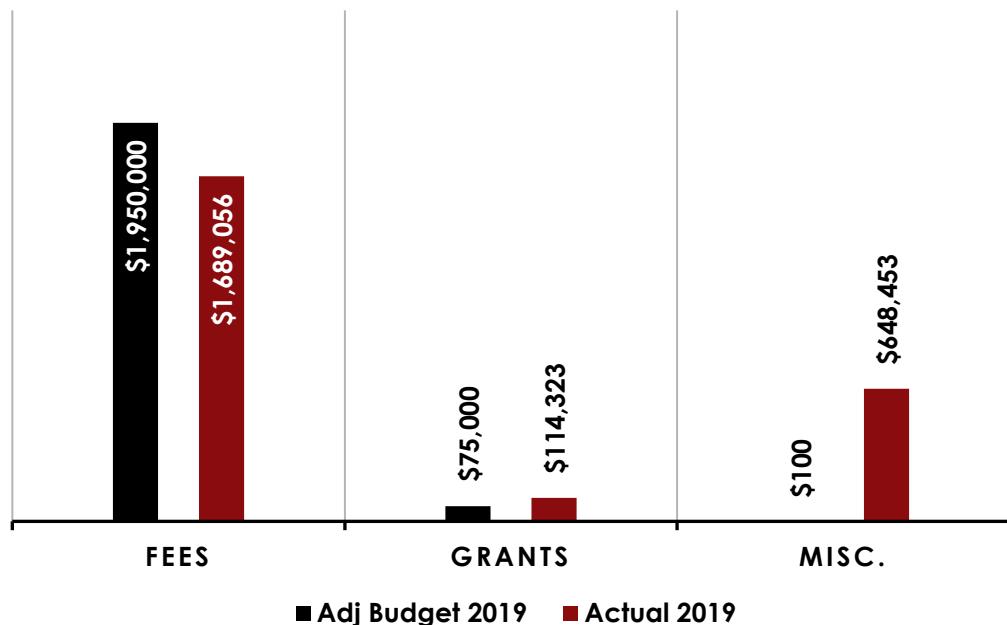
As shown in the preceding figures, collected fee performance was relatively close to budget while grants and miscellaneous revenues tended to outperform their budgeted amounts. While these numbers show a positive overall performance, ESCI would recommend increased budgeting for Grants and Miscellaneous to keep those amounts to smaller variances when compared to the actual budget.

Revenue growth for 2018 and 2019 can be explained by a change to billing allowances for ambulance service. The fee to be charged to the Federal Government for ambulance transportation services increased markedly, leading to the rise in fee revenues.

Expense Analysis

Between 2013 and 2021, Provo Fire Department had expenses in the categories of Fire Department Administration, Emergency Fire Response, Fire Prevention, Training, Emergency Management, Emergency Medical Response, Airport, Fire Reimbursable OT, Fire Grants, and Wildfire Response. Expenses ranged from $8,574,847 in 2013 to $10,950,066 in 2021. The total expense has grown at an annual average rate of 4.4%. Emergency Fire Response is the largest area of expense. The following figure summarizes the overall PFRD expenses and annual percentage change.

Figure 16: Provo Fire Department Expense (FY 2013–2021)

Year	PFRD Expense	Percentage of Growth
2013	$8,574,847	—
2014	$8,799,615	2.6%
2015	$9,113,257	3.6%
2016	$9,557,646	4.9%
2017	$10,173,548	6.4%
2018	$10,427,205	2.5%
2019	$11,069,822	6.2%
2020	$11,109,339	0.4%
2021	$10,950,066	-6.5%

The 2021 PFRD expense budget dropped significantly in 2021 due to current and anticipated future General Fund revenue impacts resulting from the Covid-19 pandemic.

Looking at the period of 2017 through 2019, ESCI used the actual expenses information available on the City's website, and compared the expense budget performance to the Adjusted Budget for the corresponding year. The numbers in 2017 use different accounts than those utilized in 2018 and 2019. This corresponds with the implementation of a new accounting software system. This change is reflected in the following figures.

In 2017, Provo Fire Department had actual expenses of $11,866,600 versus a budget of $11,640,844, exceeding its budget by $225,756 or 1.9%. The following figure shows the breakdown of expenses in 2017.

Figure 17: Provo Fire Department Expense by Category (FY 2017)
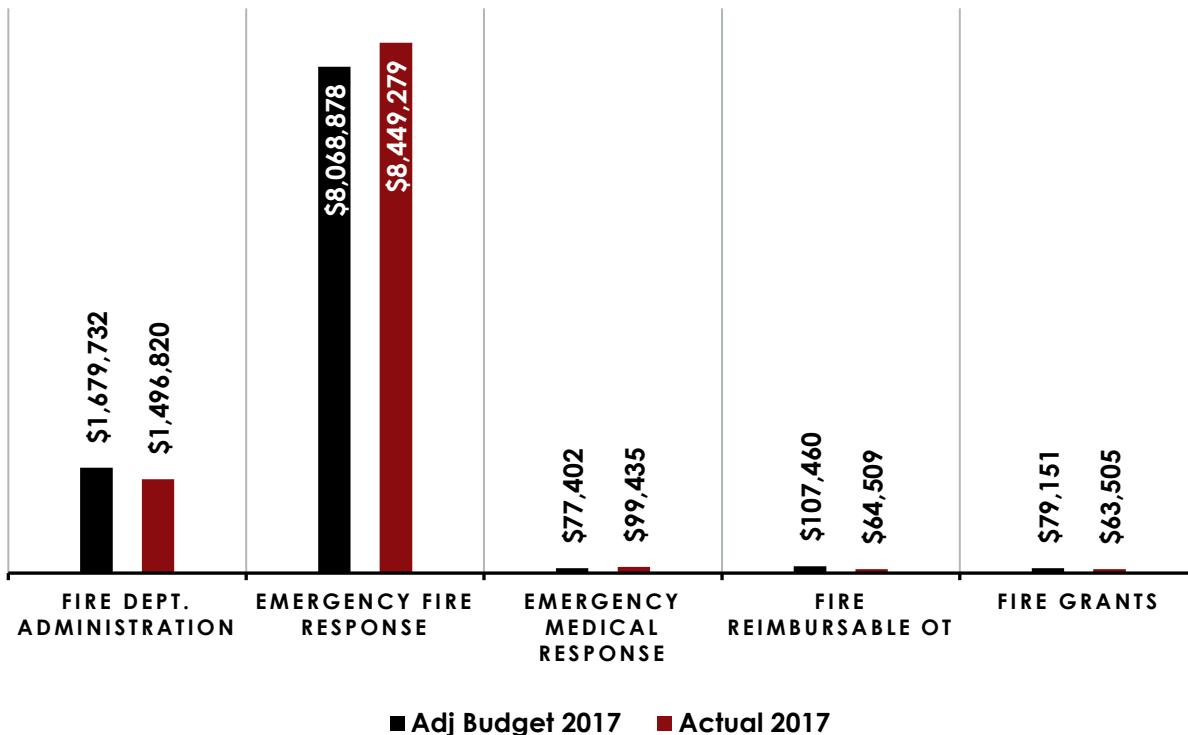
The data shows that the expenses exceeded budget in some expense categories and were under budget in other categories. In 2017, Provo Fire Department exceeded budgeted expense in Emergency Fire Response and Emergency Medical Response. Fire Administration, Fire Reimbursable OT, and Fire Grants categories reported were under budget.

In 2018, Provo Fire Department had actual expenses of $10,427,205 versus an Adjusted Budget of $10,298,722. The Department exceeded budgeted expenses by $128,483 or 1.2%. The following figure shows the breakdown of expenses in 2018.

Figure 18: Provo Fire Department Expense by Category (FY 2018)
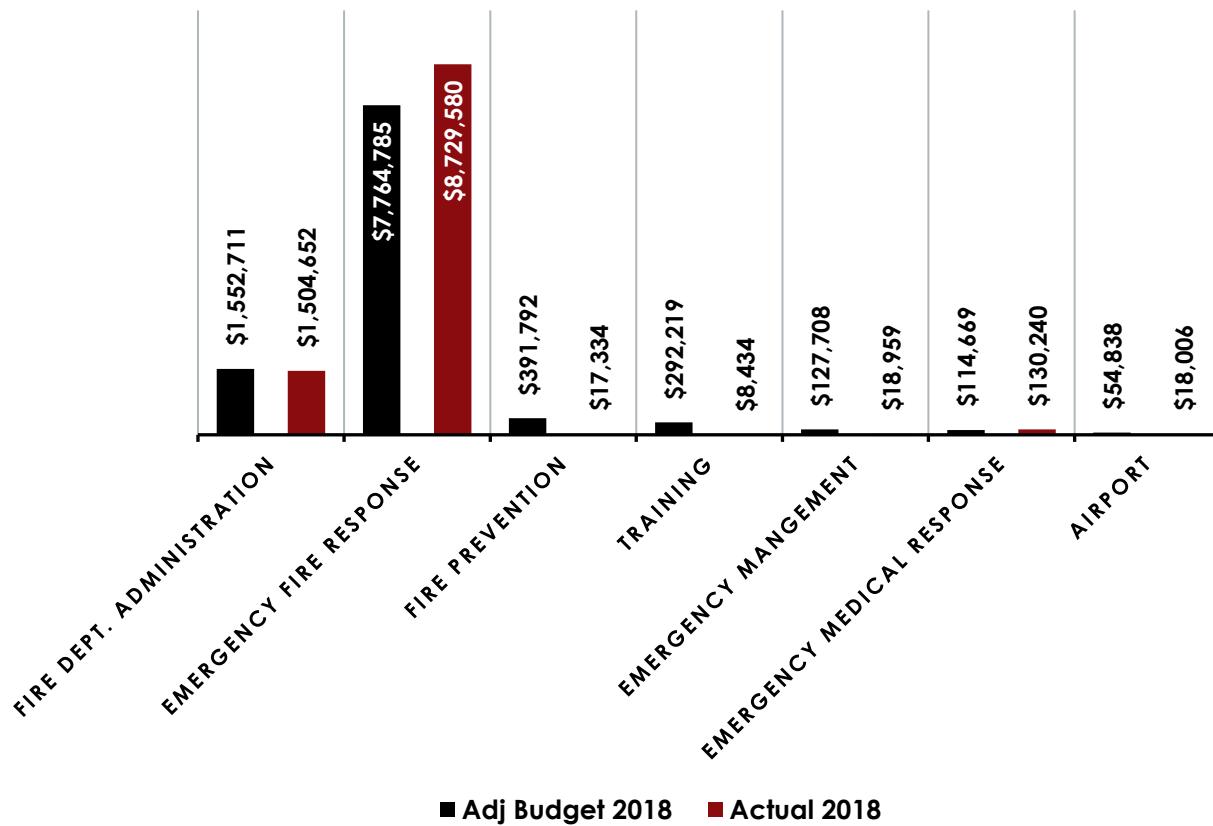
The preceding figure shows that expenses exceeded budget in some expense categories and were below in others. In 2018, PFRD exceeded budgeted expenses in Emergency Fire Response and Emergency Medical Response. Emergency Fire Response is the single largest expense, accounting for 75.4% of the 2018 Adjusted Budget, and exceeded the budget by 12.4%. Fire Administration, Fire Prevention, Training, Emergency Management, and Airport operated under budget.

In 2019, Provo Fire Department had actual expenses of $11,069,822 versus an Adjusted Budget of $10,777,672, exceeding budgeted expense by $292,150 or 2.7%. This was the result of a mid-year budget amendment related to the authorized purchase of all new portable radios in the Department. The following figure illustrates the breakdown of expenses in 2019.

Figure 19: Provo Fire Department Expense by Category (FY 2019)
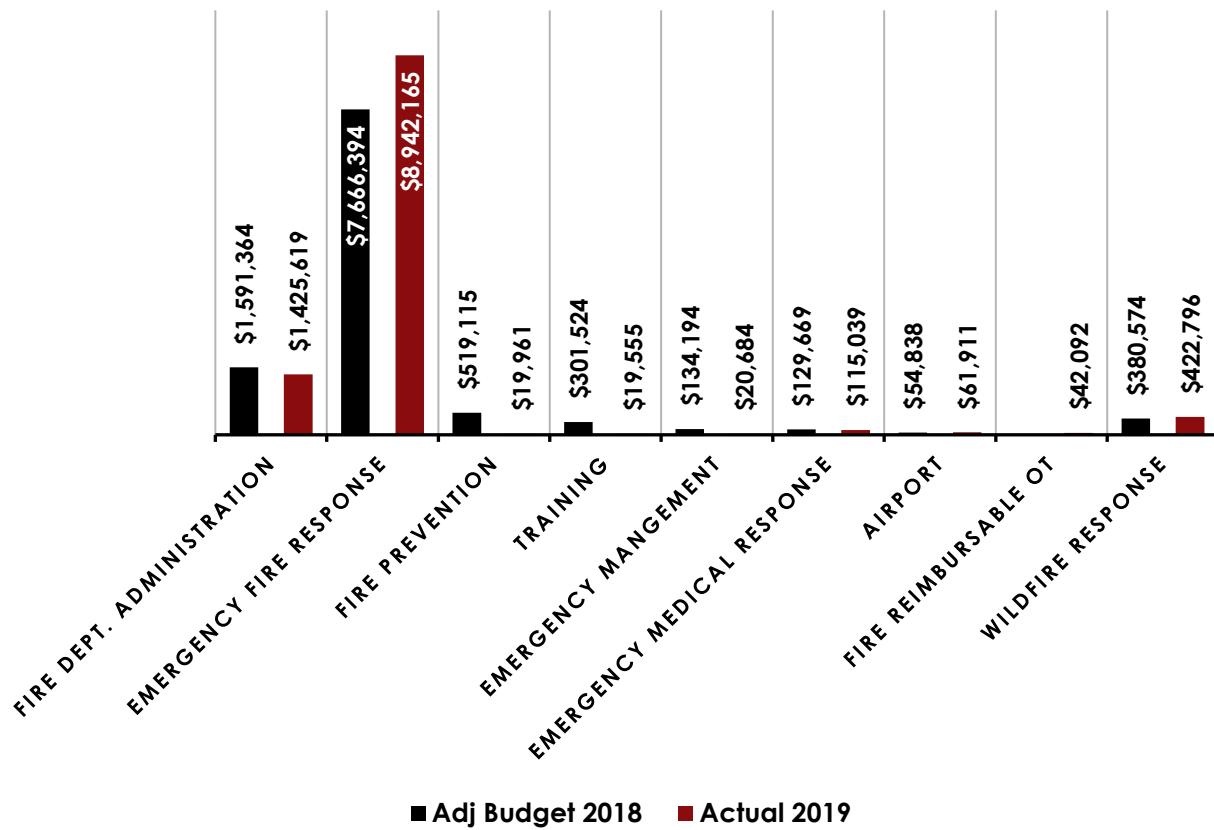

The data again shows that expenses exceeded budget in some expense categories and were under budget in others. In 2019, Provo Fire Department exceeded budgeted expenses in Emergency Fire Response, Emergency Medical Response, Airport, Fire Reimbursable OT, and Wildfire Response. Emergency Fire Response is the single largest PFRD expense, accounting for 71.1% of the 2019 Adjusted Budget. Emergency Fire Response exceeded its budget by 16.6% in 2019 or $1,275,771. This overrun caused Emergency Fire Response to account for 80.7% of the total department expenses. Fire Administration, Fire Prevention, Training, Emergency Management, and Emergency Medical Response operated under budget.

Budget Overview Discussion

In reviewing the overall PFRD budget history for the study period, it appears the Department balances the expense overages in the Fire and EMS Operations Divisions by reducing expenses in other internal divisions, especially Fire Prevention and Training. Fire Prevention and Training annually underspent their budgets by large amounts. Fire Prevention underspent its budget by $374,458 in 2018 and $281,969 in 2019. Training underspent its budget by $283,785 in 2018 and $281,969 in 2019. ESCI understands that the City recorded almost all uniformed administrative assigned salary and benefits expenses in the Emergency Fire Response and Emergency Medical Response categories, even though these costs are budgeted in their respective administrative division budgets (Training and Fire Prevention). This practice will soon cease with the implementation of a new payroll/finance software system.

This is a common practice found in other fire departments studied by ESCI. However, adequate funding of non-operations centered support activities is extremely important, especially in the Training Division, as reduced training can lead to incremental skill degradation that can have severe consequences for response personnel and the public during emergencies.

While it is impossible to predict all situations that can result in unanticipated significant expenditures in managing fire and EMS operations in any given year, consideration should be given to adjusting the projected expense budgets in these divisions in the budget planning process, while ensuring adequate funding is maintained in the other internal cost centers.

Capital Assets and Capital Replacement Programs

To effectively and safely carry out its various missions, three basic resources are required: Trained personnel, reliable firefighting equipment, and strategically placed fire stations. The most essential capital assets for use in emergency operations are facilities and apparatus (response vehicles). This section of the report assesses PFRD's capital facilities, apparatus, vehicles, and specialty equipment.

Fire Stations & Other Facilities

A strategically located fire station helps ensure rapid response to the greatest number of citizens and community assets, and also provides timely back up response to other areas when resources are already committed on other incidents. Fire stations also need to be designed to adequately house equipment and apparatus, as well as meet the needs of the organization and its personnel—as well as administrative support staff where applicable. It is important to research needs based on service demand, response times, types of emergencies, and projected growth before making a station placement commitment.

Consideration should be given to a fire station's ability to support the fire department's mission well into the future. During the design process, the programmatic needs, potential future staffing, and response roles must be realistically addressed to ensure the structure is adequate in both size and function. Examples of these functions include the following:

- The housing and cleaning of apparatus and equipment; including decontamination and disposal of biohazards
- Residential living space and sleeping quarters for on-duty personnel (all genders)
- Kitchen facilities, appliances, and storage
- Bathrooms and showers (all genders)
- Administrative and management offices; computer stations and office facilities for personnel
- Training, classroom, and library areas
- Firefighter fitness area
- Public meeting space

In addition, contemporary fire stations are now designed to limit the spread of hazardous contaminants into the station's living spaces.

The PFRD operates out of five fire stations that are strategically located throughout the City. Another station is located at the Provo Municipal Airport, and is staffed by Provo firefighters. ESCI evaluated the information provided by the Department and briefly toured each facility. ESCI asked PFRD staff to rate the condition of each of its fire stations using the criteria in the following figure.

Figure 20: Criteria Used to Determine Fire Station Condition

Excellent	Like new condition. No visible structural defects. The facility is clean and well maintained. Interior layout is conducive to function with no unnecessary impediments to the apparatus bays or offices. No significant defect history. Design and construction match the building's purposes. Age is typically less than 10 years.
Good	The exterior has a good appearance with minor or no defects. Clean lines, good workflow design, and only minor wear of the building interior. Roof and apparatus apron are in good working order, absent any significant full-thickness cracks or crumbling of apron surface or visible roof patches or leaks. Design and construction match the building's purposes. Age is typically less than 20 years.
Fair	The building appears structurally sound with weathered appearance and minor to moderate non-structural defects. The interior condition shows normal wear and tear but flows effectively to the apparatus bay or offices. Mechanical systems are in working order. Building design and construction may not match the building's purposes well. Showing increasing age-related maintenance, but with no critical defects. Age is typically 30 years or more.
Poor	The building appears to be cosmetically weathered and worn, potentially with structural defects, although not imminently dangerous or unsafe. Large, multiple full-thickness cracks and crumbling of concrete on apron may exist. The roof has evidence of leaking and/or multiple repairs. The interior is poorly maintained or showing signs of advanced deterioration, with moderate to significant non-structural defects. Problematic age-related maintenance and/or major defects are evident. May not be well suited to its intended purpose. Age is typically greater than 40 years.

ESCI toured the PFRD stations, and combined with the Department's observations, produced the following overview for each facility.

Fire Station 21

Physical Address: 80 South 300 West

General Description:
Houses the Department's administrative offices, the City's Development Services Department, and a two bay fire station. Houses a medic unit, a heavy rescue unit, a brush truck, and a Battalion Chief. Located on civic campus adjacent to Police Station, City administrative offices, and Arts Center.

Survey Component	Observations
Structure	
Construction Type	Wood frame/masonry
Date of Construction	1972
Seismic Protection/Energy Audits	Yes
Auxiliary Power	Yes
Condition	Fair
Special Considerations (ADA, gender, etc.)	Yes
Square Footage	18,150
Facilities Available	
Exercise/Workout	Yes
Kitchen/Dormitory	Yes
Lockers/Showers	Yes
Training/Meeting Rooms	No
Washer/Dryer	Yes
Safety Systems & Assignments	
Sprinkler System	Yes
Smoke Detection	Yes
Decontamination/bio-hazard disposal	No
Security	Yes
Apparatus Exhaust System	Yes, but in poor condition

Fire Station 22

Physical Address: 2737 North Canyon Road

General Description:

Three bay station under construction.

Includes a community meeting room.

Survey Component	Observations
Structure	
Construction Type	Commercial Metal Frame
Date of Construction	2020
Seismic Protection/Energy Audits	Yes
Auxiliary Power	Yes
Condition	Excellent
Special Considerations (ADA, gender, etc.)	Yes
Square Footage	14,000
Facilities Available	
Exercise/Workout	Yes
Kitchen/Dormitory	Yes
Lockers/Showers	Yes
Training/Meeting Rooms	Yes
Washer/Dryer	Yes
Safety Systems & Assignments	
Sprinkler System	Yes
Smoke Detection	Yes
Decontamination/bio-hazard disposal	Yes
Security	Yes
Apparatus Exhaust System	Yes

Fire Station 23

Physical Address: 601 West Columbia Lane

General Description:

Two bay station that houses a 109'quint company and a cross-staffed medic unit. The Department's five-story training tower, roof prop, and modular training building is located at the rear of the property. Several special response equipment storage trailers are also stored in the rear parking lot**.**

Survey Component	Observations
Structure	
Construction Type	Masonry
Date of Construction	1977
Seismic Protection/Energy Audits	Unknown
Auxiliary Power	Yes
Condition	Fair
Special Considerations (ADA, gender, etc.)	Unknown
Square Footage	7,500
Facilities Available	
Exercise/Workout	Yes
Kitchen/Dormitory	Yes
Lockers/Showers	Yes
Training/Meeting Rooms	No
Washer/Dryer	Yes
Safety Systems & Assignments	
Sprinkler System	Yes
Smoke Detection	Yes
Decontamination/bio-hazard disposal	No
Security	Yes
Apparatus Exhaust System	Yes

Fire Station 24

Physical Address: 95 South, 2050 West

General Description: Three bay station, houses an engine company that cross-staffs an engine, medic unit, and brush truck.

Survey Component	Observations
Structure	
Construction Type	Masonry/Wood frame
Date of Construction	1994 (remodel 1997)
Seismic Protection/Energy Audits	Yes
Auxiliary Power	Yes
Condition	Fair
Special Considerations (ADA, gender, etc.)	Unknown
Square Footage	5,832
Facilities Available	
Exercise/Workout	Yes
Kitchen/Dormitory	Yes
Lockers/Showers	Yes
Training/Meeting Rooms	No
Washer/Dryer	Yes
Safety Systems & Assignments	
Sprinkler System	Yes
Smoke Detection	Yes
Decontamination/bio-hazard disposal	No
Security	Yes
Apparatus Exhaust System	Yes

Fire Station 25

Physical Address: 275 South, 700 East

General Description:
Three bay station that houses a 105' quint company, medic unit, and heavy rescue unit.

Survey Component	Observations
Structure	
Construction Type	Wood frame
Date of Construction	2002
Seismic Protection/Energy Audits	Yes
Auxiliary Power	Yes
Condition	Good
Special Considerations (ADA, gender, etc.)	Unknown
Square Footage	11,282
Facilities Available	
Exercise/Workout	Yes
Kitchen/Dormitory	Yes
Lockers/Showers	Yes
Training/Meeting Rooms	Yes
Washer/Dryer	Yes
Safety Systems & Assignments	
Sprinkler System	Yes
Smoke Detection	Yes
Decontamination/bio-hazard disposal	No
Security	Yes
Apparatus Exhaust System	Yes

Fire Station 26

Physical Address: Provo Municipal Airport

General Description: Airport ARFF Station. Houses one ARFF apparatus. Station only staffed during commercial aircraft takeoffs and landings. No living/sleeping facilities.

Survey Component	Observations
Structure	
Construction Type	Metal frame/cladding
Date of Construction	Unknown
Seismic Protection/Energy Audits	Unknown
Auxiliary Power	Yes
Condition	Fair
Special Considerations (ADA, gender, etc.)	No
Square Footage	5,000 (estimated)
Facilities Available	
Exercise/Workout	No
Kitchen/Dormitory	No
Lockers/Showers	No
Training/Meeting Rooms	Yes
Washer/Dryer	No
Safety Systems & Assignments	
Sprinkler System	No
Smoke Detection	Yes
Decontamination/bio-hazard disposal	No
Security	Yes
Apparatus Exhaust System	Yes

Capital Facilities Discussion

At the time of this study, significant fire department capital improvements were either planned or underway. A new Station 22 opened in October 2020 on the site of the old station. The new station includes a community meeting room for public use. The crew was relocated to temporary housing approximately 1.5 miles north of the station site during construction.

The current Station 21 and PFRD headquarters building is located on a civic campus housing the City's administrative facility, Police Department headquarters, and the Civic Arts facility. A recently passed capital construction bond included funding for constructing a new public safety building and a new fire station on this campus. During the site visit, ESCI noted construction was underway on a portion of the campus. However, this study will be used to determine if the proposed location of Station 21 is appropriate given the anticipated growth in population and development in the southwest, northwest, and central business district areas.

ESCI also noted the fluidity of capital planning within the City, particularly related to the ongoing expansion of the Provo Municipal Airport, and development in the northwest and southwest city areas.

Capital Apparatus & Vehicles

Fire suppression apparatus and medic units (ambulances) are unique and expensive pieces of equipment customized to operate within a specific community, specific hazards, and defined mission. The next two figures summarize the Department's fire, EMS, and specialized apparatus inventory.

Figure 21: Provo Fire & EMS Apparatus

Apparatus	Type	Make	Year	Condition	Status
Pumpers					
Engine 22	Pumper (4x4)	Pierce	2019	Excellent	Frontline
Engine 23	Quint (55')	Pierce	2006	Fair	Reserve
Engine 24	Pumper	Rosenbauer	2018	Excellent	Frontline
Engine 25	Quint (55')	Pierce	2006	Fair	Reserve
Ladder 23	Quint (109')	Rosenbauer	2019	Excellent	Frontline
Ladder 23 (old)	Quint (55')	Pierce	2006	Fair	Reserve
Ladder 25	Quint (105')	Pierce	2018	Excellent	Frontline
Ambulances					
MA 21	Type I	Wheeled Coach	2016	Good	Frontline
MA 22	Type I	Wheeled Coach	2016	Good	Frontline
MA 23	Type I	Wheeled Coach	2017	Good	Frontline
MA 24	Type I	Wheeled Coach	2017	Good	Frontline
MA 25	Type I	Wheeled Coach	2016	Good	Frontline
MA 26	Type I	Wheeled Coach	1999	Fair	Reserve
MA 27	Type I	Ford	2003	Fair	Reserve
MA 28	Type I	Freightliner	2006	Fair	Reserve

The Department also has specialized response apparatus, as summarized in the following figure.

Figure 22: Provo Specialized Response Apparatus

Apparatus	Type	Make	Year	Condition	Status
Specialized					
HazMat 22	HazMat	Pierce	2002	Good	Frontline
Brush 21	Type 6 Engine	Dodge	2018	Excellent	Frontline
Brush 22	Type 6 Engine	Ford	2005	Good	Frontline
Brush 24	Type 6 Engine	Ford	2005	Good	Frontline
Brush 25	Type 6 Engine	Ford	2005	Good	Frontline
Heavy Rescue 21	Rescue	Rosenbauer	2020	New	Frontline
Mule	4x4 ATV				
ARFF Apparatus					
Red 1	ARFF	Oshkosh	2014	Excellent	Frontline

The Department also has specialized 4x4 all-terrain vehicles that are used for mountain rescue situations in the canyon and mountain areas immediately north and east of the city.

The Department also has a fleet of Command and Staff vehicles, as summarized in the following figure.

Figure 23: Provo Command & Staff Vehicles

Vehicle	Type	Make	Year	Condition	Status
Command					
BC 21	Command	Chevrolet 2500	2015	Good	Frontline
BC 22	Command	Chevrolet 2500	2017	Good	Frontline
BC 23	Command	Chevrolet 2500	2015	Good	Frontline
BC 24/FM 21	Fire Marshal	Chevrolet 2500	2015	Good	Frontline
BC 25	Training	Chevrolet 2500	2015	Good	Frontline
DC 22	Deputy Chief	Chevrolet Tahoe	2014	Good	Frontline
Capt. 29	EMS Captain	Chevrolet Tahoe	2013	Good	Frontline
DFM 22	Deputy FM	Chevrolet 1500	2011	Good	Frontline
DFM 23	Deputy FM	Chevrolet 1500	2011	Good	Frontline
EM 21	Emergency Manager	Chevrolet 1500	2010	Good	Frontline

Future Apparatus Serviceability

The future cost associated with the replacement of apparatus is a major consideration. Apparatus service lives can be readily predicted based on factors including vehicle type, call volume, age, and maintenance considerations such as down-time and cost of repairs. Maintenance and replacement planning of PFRD apparatus is the responsibility of the City's Fleet Maintenance Division.

NFPA 1901: *Standard for Automotive Fire Apparatus* recommends that fire apparatus 15 years of age or older be placed into reserve status, and apparatus 25 years or older should be replaced.[8] This is a general guideline, and the standard recommends using the following objective criteria in evaluating fire apparatus lifespan:

- Vehicle road mileage.

- Engine operating hours.

- The quality of the preventative maintenance program.

- The quality of the driver-training program.

- Whether the fire apparatus was used within its design parameters.

- Whether the fire apparatus was manufactured on a custom or commercial chassis.

- The quality of the craft by the original manufacturer.

- The quality of the components used in the manufacturing process.

- The availability of replacement parts.

Age is *not* the only factor for evaluating serviceability and replacement. Vehicle mileage, engine hours, and pump hours on engines must also be considered. A two-year-old engine with 250,000 miles may need replacement sooner than a 10-year-old one with 2,500 miles. The following figure represents a relatively simple example that the Department can use for determining the condition of fire apparatus and vehicles.

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[8] NFPA 1901: Standard for Automotive Fire Apparatus; Section D.3.

Figure 24: Example Criteria & Method for Determining Apparatus Replacement

Evaluation Components	Points Assignment Criteria
Age:	One point for every year of chronological age, based on in-service date.
Miles/Hours:	One point for each 10,000 miles or 1,000 hours
Service:	1, 3, or 5 points are assigned based on service-type received (e.g., a pumper would be given a 5 since it is classified as severe duty service).
Condition:	This category takes into consideration body condition, rust interior condition, accident history, anticipated repairs, etc. The better the condition, the lower the assignment of points.
Reliability:	Points are assigned as 1, 3, or 5, depending on the frequency a vehicle is in for repair (e.g., a 5 would be assigned to a vehicle in the shop two or more times per month on average; while a 1 would be assigned to a vehicle in the shop an average of once every three months or less.

Point Ranges	Condition Rating	Condition Description
Under 18 points	Condition I	Excellent
18–22 points	Condition II	Good
23–27 points	Condition III	Consider Replacement
28 points or higher	Condition IV	Immediate Replacement

ESCI noted that PFRD's frontline fire apparatus fleet is less than five years old on average, and the delivery of the new Heavy Rescue 21 unit will reduce the average to only two years. Rescue 21 is the oldest piece of fire apparatus at 18 years of age, and MA 26 is the oldest medic ambulance at 21 years of age. The overall frontline ambulance fleet is older, with an average of 3.5 years. Ambulance mileage and usage are typically much higher than fire apparatus, and the average age (14 years) of the reserve ambulance fleet is a concern.

The Fleet Department annually assesses the age, condition, mileage, and repair history of each fire vehicle and apparatus, and assigns a point value using a similar methodology as noted above. They also perform a three-year "look-back" vehicle maintenance and operations expenses, including fuel costs, in developing the annual vehicle maintenance and operations costs for each city department's budget.

ESCI noted that fleet managers attempt to replace vehicles in a timely manner to maximize resale or auction value. The money from these transactions is then placed into a designated revenue budget line item for each city department called the "Fleet Vehicle Emergency Fund," which is used to pay for unanticipated expensive vehicle repairs.

Fire apparatus repairs were previously made by a certified Emergency Vehicle Technician (EVT). However, this person recently retired, and efforts are underway to train and certify a replacement as an EVT and National Institute for Automotive Service Excellence (ASE) certification.

Capital Fleet Discussion

According to the City's Fleet Manager, the City has a capital vehicle replacement plan but does not have a corresponding capital vehicle replacement fund. Vehicle and apparatus purchases are budgeted as part of the annual budget process, and General Fund money is used to purchase vehicles. The Department's apparatus replacement plan attempts to replace an engine or quint every eight years and move the replaced apparatus into reserve status for up to 20 years. Ambulances are planned for replacement every seven years.

Overall, the condition and maintenance of PFRD apparatus and vehicles appear to be excellent. Given the age of the reserve ambulances, the City should consider replacing at least one of the front-line ambulances within the next 1–2 years, and move the old front-line units into reserve status to ensure reliability.

Staffing Information

In this section of the report, ESCI evaluated the administrative and operations staffing levels, job duties, and work rules, with the intent of identifying best business practices and areas where improvements may be necessary.

Administrative Staffing

No progressive fire department can operate without strong and expert administrative support. Efficient management and administration require personnel with specific administrative and technical skills to effectively support the organization's core mission. However, fire agencies must strike a balance between having enough administrative resources to efficiently support all of the Department's programs, while also ensuring the assigned staff maintain a healthy workload.

The following figure summarizes PFRD's administrative uniformed positions.

Figure 25: Administrative Uniformed Positions

Administrative Uniformed Positions	Number of Positions
Fire Chief	1
Deputy Chief	1
Administrative Battalion Chief	1
Administrative Captain	1
Fire Marshal	1
Fire Inspector/Investigator	2
Total	**7**
Ratio of Uniformed Staff to Operations Staff	**9.8%**

In addition, several non-uniformed administrative positions are necessary to manage the Department effectively. The following figure summarizes these positions.

Figure 26: Administrative Non-Uniformed Positions

Administrative Non-Uniformed Positions	Number of Positions
Emergency Manager	1
Executive Assistant	1
Administrative Assistant	2
Communications Center Manager	1
Communications Operations Supervisor	1
Communications Center Shift Supervisor	6
Call Taker/Dispatcher	18
Total	**30**

Emergency Operations Staffing

ESCI evaluated the overall number of personnel and staffed stations against Western Region comparable fire departments as identified by the NFPA. The following figures summarize these comparisons.

Figure 27: Comparison of PFRD Firefighters per 1,000 Population
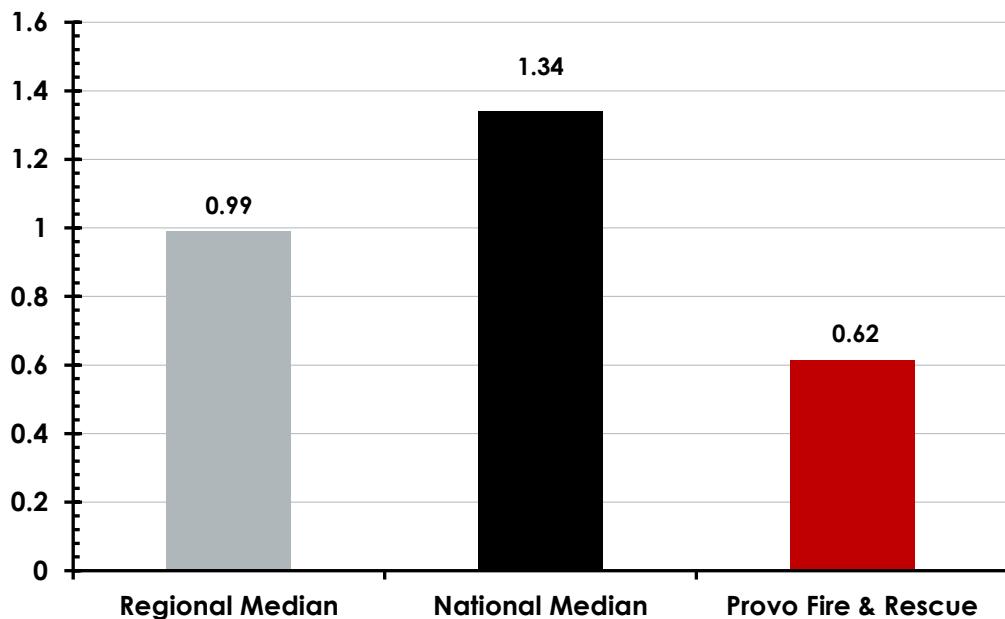
As shown in the preceding figure, PFRD operations staffing is significantly under the national and regional (Western states) median for comparable communities and fire departments as surveyed by NFPA.

ESCI also evaluated the type and number of PFRD career operations staff positions, which are summarized in the following figure.

Figure 28: Emergency Operations Staff Positions

Operations Positions	Number of Positions
Battalion Chief	3
Captain	12
Engineers	12
Firefighter/EMT/Paramedic	44
Total Operations Positions	**71**

ESCI then calculated the theoretical total number of full-time employees required to meet the various average leave hours used by employees and compared the results to the current number of operations employees assigned to 24-hour staffed units.

The analysis compared the average available scheduled weekly work hours per employee, subtracted the average various leave types—based on 2017–2019 historical leave-use data—and calculated sick and vacation relief factors. ESCI then multiplied the number of personnel needed to cover a single position at 24-hours daily, with the relief factor, to determine the total number of employees theoretically required to meet daily minimum staffing. Personnel working a 40-hour work schedule were not included in this calculation.

ESCI consolidated unscheduled leave usage, including sick, FMLA, Funeral, Military, and workers compensation leaves in calculating the sick leave relief factor. To estimate vacation leave usage, ESCI averaged the vacation hours used between January 1, 2017, and December 31, 2019, and divided by the number of operations employees. The following figure summarizes the results of these calculations.

ESCI understands that operations assigned employees receive seven "Kelly Days" per year to reduce their average workweek hours from 56 hours to 53 hours. To account for this, ESCI simply used the 53-hour average weekly hours total as part of the staffing relief factor calculation.

Figure 29: Theoretical Relief Factor Calculation (2019)

Leave Type	Relief Factor
Sick Leave	1.11
Vacation Leave	1.22
Total Relief Factor	**1.23**

The *Total Relief Factor* was multiplied by the minimum number of operations personnel needed to cover one 24-hour position seven days a week, and then multiplied by the minimum number of positions required on a 24-hour basis. The following figure compares the theoretical number of employees needed with the current number of employees assigned to the PFRD operations work schedule.

Figure 30: PFRD Calculated Operational Staff Shortage/Overage

No. Positions Required 24/7	Total No. of authorized Operations FTE	Theoretical No. FTE Required	Shortage/Overage
19	72	69	**3**

Note, this is a theoretical assessment. Leave factors are typically dynamic from year to year depending on attrition, long-term injury or illness, and changes to the overall number of operations employees.

Emergency Operations Staffing Discussion

Reconciling the results of this staffing resource analysis with current PFRD staffing levels and resource allocation strategies should be approached carefully. In ESCI's experience, the theoretical analysis does not necessarily account for any inherent scheduling or staffing flexibility by a department, which potentially can be leveraged to reduce workload and personnel costs.

Nor does it consider the ongoing costs of providing the various benefits to full-time employees, which can be as high as approximately 55% of the total cost of salaries, or the one-time cost of selecting, hiring, and outfitting new employees. These inherent expenses must be considered when analyzing the cost of adding full-time employees versus using overtime or part-time employees who do not receive benefits.

However, ESCI understands that PFRD is experiencing increasing situations where they are unable to find personnel willing to work overtime to fill unscheduled vacancies due to sickness and injury, resulting in employees being "mandated" to work the vacant shifts. Department leadership is rightfully concerned about the impact on morale and overall health of the operations staff if this dynamic continues.

Fatigue is another factor that must be taken into consideration when examining the work schedule of operations firefighters. While the 48 hours on, 96 hours off rotating work schedule results in significant blocks of time off, it also introduces the potential for significant fatigue during the second half of the shift, especially if a high workload and lack of sleep were experienced during the first 24-hour shift.

The 24-hour shift followed by at least 24 hours off duty on a rotating schedule remains the predominant schedule for fire departments in the Western United States. Typical examples of the various rotating shift schedules include:

- 24-hours on, 48-hours off.
- 24-hours on, 24-hours off, 24-hours on, 24-hours off, 24-hours on, 96-hours off

However, some departments, like PFRD, transitioned to a 48-hours on, 96-hours off shift schedule, citing research suggesting longer periods of off duty time allows for full restoration of healthy sleep patterns.

During the site visit, ESCI learned that operations personnel are allowed to swap shifts or work overtime shifts that result in the employee working up to 96 consecutive hours (4 24-hour shifts). This practice should be reexamined, with consideration given to reducing the maximum consecutive work hours threshold to 72 hours.

Current Service Delivery Objectives

PFRD has not formally adopted any of the response performance goals and objectives described in NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*.

In subsequent sections of this report, response time objectives will be further discussed and analyzed in the context of the Department's actual response time performance elements, where available, with the goal of assisting the Department in formally adopting realistic response time goals, and periodically measure its response performance against these goals.

Stakeholder Input

The goal of any emergency service delivery system is to provide sufficient resources (personnel, apparatus, and equipment) to the scene of an emergency in time to take safe, efficient, and effective actions to resolve the situation. Obtaining and understanding the desires and expectations of the fire department by various internal and external stakeholders is an important aspect of this study, as it helps provide context and areas of emphasis for study.

Although no structured community input was sought specifically for the purpose of this study, key community leaders, elected officials, and department heads were interviewed.

For this report, ESCI relied on information provided in interviews of key City department managers, internal fire department employees and officers, the Mayor, and an ex-long standing City Council member. The purpose of these interviews was to understand better the internal and external issues facing PFRD, especially as it relates to growth in the community, and identify potential challenges and opportunities in addressing these issues.

In general terms, the questions asked in each interview were tailored to gather specific detailed information about the interviewee's role in the organization or community, and learn more about:

- Perceived strengths of the current service delivery system, especially within their sphere of influence,
- Current challenges and gaps within their program area(s),
- Opportunities and ideas for enhancement and improvement, and
- Challenges that need to be addressed to move the Department forward in improving overall service delivery, especially within their sphere of influence.

ESCI compiled and analyzed the interview notes and noted the following general themes beyond specific operational, programmatic issues and constraints discussed in detail throughout this report:

- The Fire Department enjoys strong community support and is held in high regard.
- The Fire Department senior leadership is held in high regard by internal and external stakeholders.

- The recent significant growth—and characteristics of this growth (gentrification)—presents challenges in planning to maintain or enhance the delivery of emergency services throughout the community, especially as it relates to current and future station coverage needs.

- Significant development and growth are anticipated to continue, especially in the City's westside.

- Commercial growth and development are taxing the Department's ability to pro-actively engage businesses and property owners in fire prevention and code enforcement efforts.

- The community has an inherent culture of resiliency and self-reliance that results in lower demand for emergency services than other comparable communities.

- Financial prudence, even in an environment of an increasing tax revenue base, is a priority for the Fire Department and City Administrators.

Section II: Community Risk Assessment

Community Risk Assessment

This section provides an "all-risks; all-hazards" perspective of PFRD's service area. It is intended to assist in: (1) Identifying hazards and risks within the community; (2) prioritizing risks in order to develop effective risk reduction strategies; and (3) determining the appropriate resources necessary to reduce risk and attain desired outcomes. This assessment relies on the use of both quantitative and qualitative data to describe the fire/EMS protection needs of the community. Where available, physical, economic, and demographic data were utilized to assess the fire/EMS-related hazards and risks.

Characterizing Risk

Simply stated, community risk assessment (CRA) is "the identification of potential and likely risks within a particular community, and the process of prioritizing those risks." This concept is consistent with the FEMA concept of "whole community" and shared responsibility for emergency preparedness.[9] Thus, CRA is a critical component of the core capabilities, or phases, of emergency management—prevent, prepare, respond, recover, and mitigate, as shown here.

Figure 31: CRA and the Core Capabilities of Emergency Management

- **Prevention** focuses on preventing human hazards, primarily from potential natural disasters or terrorist (both physical and biological) attacks.

- **Preparation** is a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action.

- **Response** is the coordination and management of resources in an all-hazards approach with measures taken for life/property/environmental safety.

- **Recovery** is the group of activities to restore critical community functions and begin to manage stabilization efforts.

- **Mitigation** is the effort to reduce the loss of life and property by lessening the impact of disasters and emergencies.

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[9] National Planning Frameworks, U.S. Department of Homeland Security, FEMA, 2018.

ESCI performed a Community Risk Assessment to determine community characteristics, vulnerabilities, special hazards, and community risks. ESCI gathered the information utilized in performing this assessment through interviews with key City and PFRD staff, the 2017 *Mountainland Pre-Disaster Hazard Mitigation Plan* (MPDHMP), the City's *General Plan*, and other sources.

Contemporary risk management efforts include assessing the chance of a significant emergency event occurring, the impact of the event on the organization and community, developing strategies to mitigate the risk and impact of occurrence, and continually assessing these risks and mitigation strategies as changes occur in the community.

Risk management also should consider a community's fiscal and political environment, as policymakers must ultimately determine service priorities and funding levels to support these services.

At-Risk Populations

The *Journal of General Internal Medicine* defines "populations at-risk" broadly and includes the poor, frail, disabled, economically disadvantaged, homeless, racial and ethnic minorities, and persons with low literacy.[10] The National Fire Protection Association (NFPA) *Urban Fire Safety Report* further reinforces the "at-risk" groups as:[11]

- Males
- Children under 5 years of age
- Adults over the age of 65 years
- Persons with disabilities
- Persons with language barriers
- Persons in low-income communities

The U.S. Census Bureau's 2017 *American Community Survey* (ACS) identified benchmark data for the at-risk population groups in Provo and the Provo-Orem metropolitan area. Unless otherwise mentioned, the figures in this section are adapted from the U.S. Census Bureau. The findings are illustrated in the following sections.

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[10] Populations at Risk. A Critical Need for Research, Funding, &75 Action. Journal of Internal Medicine (2005).
[11] Community Risk Reduction: Doing More with More. NFPA Urban Fire Life Safety Task Force (2016).

Benchmark Risk

The following figure provides a comparative analysis of the risk groups between Provo and the State of Utah. One can quickly see that Provo has a larger percentage of the population that lives below the poverty line and poses a unique challenge to overcome the inherent risks associated with it. We will discuss this finding in further detail in a subsequent section.

Figure 32: Comparative "At Risk" Groups as Percentage of Population
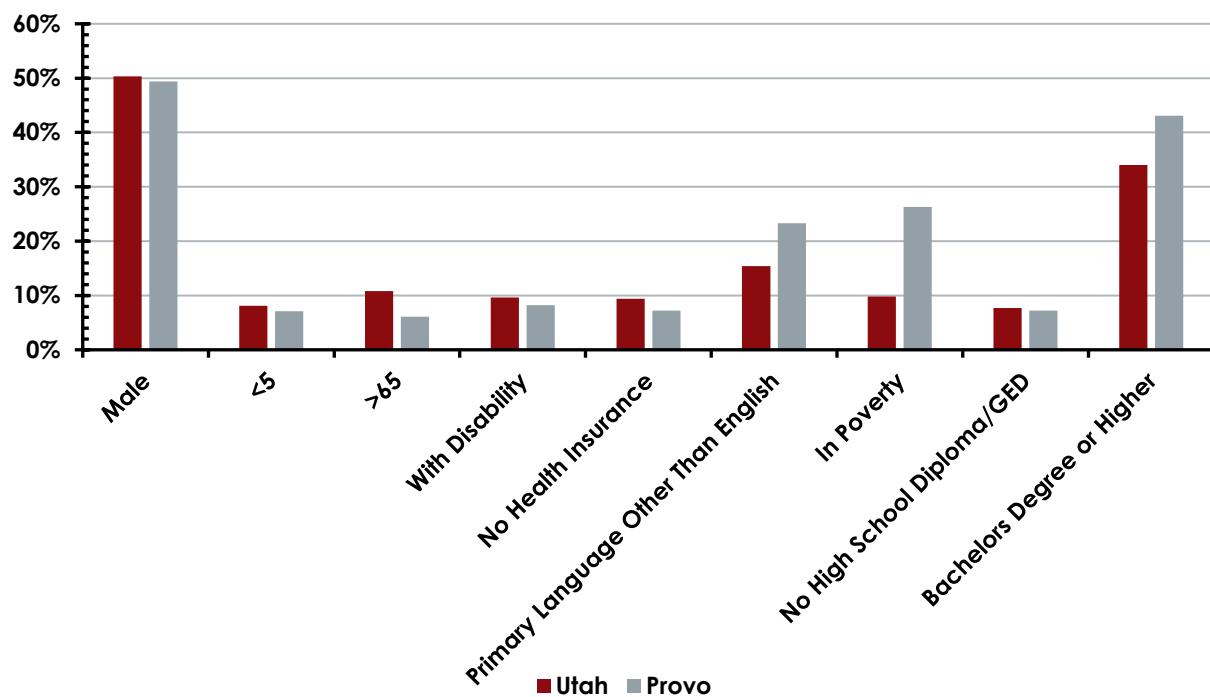
Males

Males make up just under one-half of Provo's population. Males, especially those under 25-years of age, are more prone to engage in risky activities and may require higher levels of emergency response. Additionally, males are 1.7 times more likely to die in fires than females. There is no significant difference between the percentage of males in Provo compared to the State's population.

Persons by Age Risk

As shown in the preceding figure, the difference in Provo's under-five age population with the State of Utah is not statistically significant. The very young represent a vulnerable population, as they may have limited mobility and ability to escape a structure fire as well as their susceptibility to serious medical ailments such as asthma, traumatic events, choking, or injury from vehicular accidents.

Provo has a younger overall population compared to the State, with 5% fewer residents who are 65 years or older. In addition, the median age of Provo's residents is 23.7, compared to the statewide median of 31 years of age. There is an increase in demand for service as a community ages and a corresponding increase in community risk, especially in the use of EMS services. Quality of life issues and increased reliance on assisted living could affect service delivery and the number of resources required due to an increase in service demand for emergency medical services.

Persons with Disabilities

People living with a disability under 65 years of age may have difficulty or be incapable of self-preservation during an emergency. Likewise, people under 65 with no health insurance are more prone to chronic illness or exhibit poor physical condition simply because they do not seek treatment promptly. Thus, they may require a higher level of fire-rescue and EMS responses. Six and one half of Provo's population has some sort of disability, as compared to 6.8% of the overall State population.

Persons without Health Insurance

Although access to health insurance is not included in the NFPA at-risk categories, it is well documented and known that persons without health insurance are more susceptible to developing chronic health conditions and/or dependence on emergency services. The percentage of Provo residents without health insurance is slightly higher than the State (13% vs. 11%).

Persons Living in Poverty

Individuals living in poverty experience an increased risk from fire or medical condition due to age or condition of housing level, inability to pay for routine medical care, lack of medical insurance, and general health conditions. Sometimes, the lack of access to transportation leads to increased use of care and transport. Those living below the poverty line are the most at-risk. The low-income category is often combined with other factors such as education, disability, and work status. In rural communities, low-income residents may live far from treatment centers and require extended response times.

The level of poverty measured in Provo (26%) is significantly greater than the State average (9%). A 2014 *Provo Daily Herald* article reviewed a Brookings Institute brief, titled; *The Growth and Spread of Concentrated Poverty, 2000 to 2008–2012.* The article discussed the overall status and growth of poverty in the U.S., which identified Provo as having one of the largest poverty percentages in the country. The *Daily Herald* article also discussed the potential influence of the Brigham Young student population on the poverty rate. However, no definitive research or objective conclusions were identified.

The root cause of the high percentage of poverty in Provo is likely multi-faceted, and is certainly worthy of additional study. Regardless, this aspect of population risk vulnerability is likely a significant factor in the use of PFRD's emergency services.

Persons with a Language Barrier

Nearly 25% of the population in Provo uses a foreign language as their primary language to communicate in the home. Singularly, speaking a language other than English at home may not directly contribute to difficulties in communicating with others. However, if a person has difficulty speaking English, it may contribute to negative outcomes during an emergency.

Education Level

Although education level is not included in the NFPA at-risk categories, several studies link educational attainment to financial security and poverty levels. Provo's high school/GED graduation rate of 8% is consistent with Utah's overall graduation rate of 9%. However, Provo's higher education graduation rate is 43%, which is 10% higher than Utah's overall Bachelor graduation rate. This is likely due to the presence of Brigham Young University.

Housing

Although housing type is not included in the NFPA at-risk categories, certain housing types, such as older multi-family units and/or mobile homes, pose a higher risk due to potential loss of life or lack of fire protection features. When compared to the State of Utah, the Provo-Orem area has a lower percentage of homeownership. This may be influenced by the Brigham Young student population. Over 50% of the Provo-Orem population rent their homes. Conversely, 29.5% of the State of Utah's overall population rent their homes.

Figure 33: Home Ownership Type, 2018
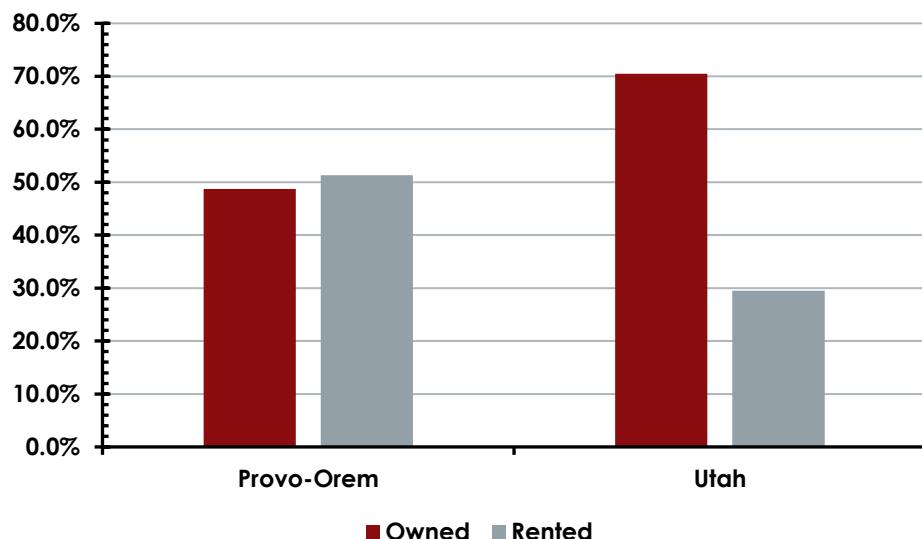
The Provo-Orem area has a much lower percentage of single-family detached homes, and slightly higher percentages of multi-family residential structures than the rest of the State of Utah. Fires in multi-family structures have a much higher fire risk than single-family structures, especially if the structures lack built-in fire alarm or sprinkler systems.

Figure 34: Provo-Orem Occupancies Per Structure, 2018
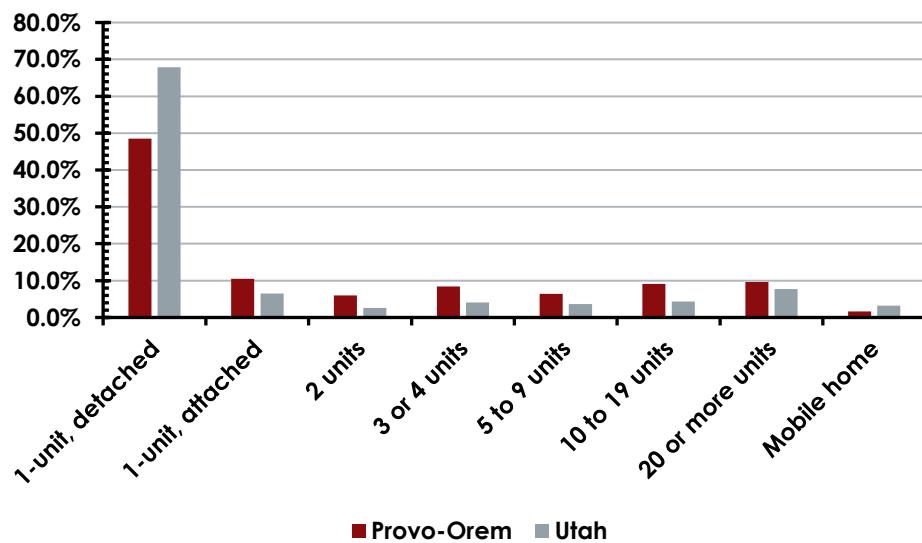
Newer construction is typically considered to have a lower fire risk due to newer construction standards and fire protection safety features. When compared to the State of Utah, the Provo-Orem area has a larger percentage of housing that has been constructed in the 1960s and earlier.

Figure 35: Age of Residential Housing in Provo-Orem Area
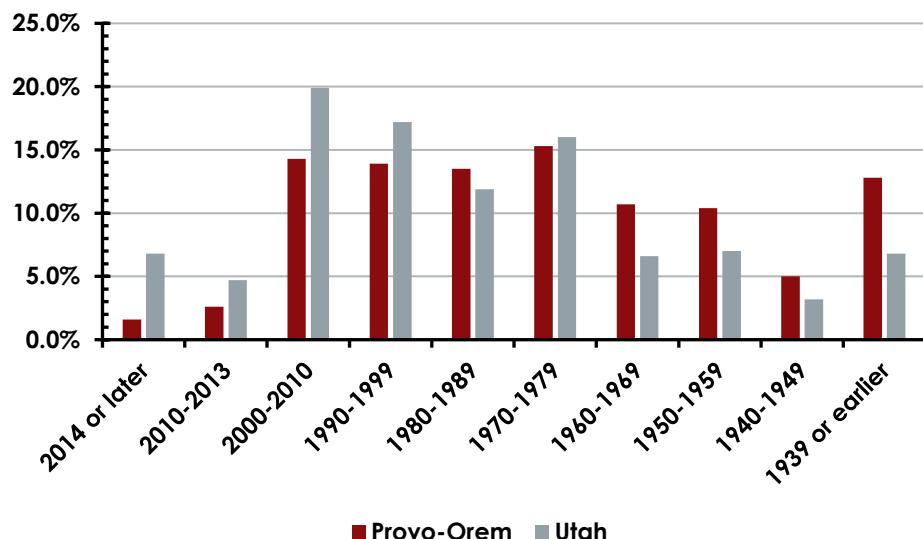
Hazard Classification

The Department is susceptible to a variety of hazards, which can be grouped into one of two categories:

- **Natural hazards**: Result from acts of nature.

- **Technological/Human-caused hazards**: Result from accidents or failures of systems and structures; or from the actions of people, both accidental and intentional.

The demographics of the population can affect the amount of service demand and the nature of risk within a community. A detailed discussion of the City's demographics is included in the "Description of Community Served" section of this report.

Natural Hazards

Natural hazards include the following.[12]

Figure 36: Examples of Natural Hazards

- Avalanche
- Animal Disease
- Dam/Levee Failure
- Drought Earthquake
- Extreme Temperature
- Flood
- Hurricane/Tropical Storm

- Landslide/Sinkhole
- Thunderstorm/Hail/Lightning
- Tornado
- Tsunami
- Volcanic Eruption
- Wildfire
- Winter Storm

ESCI reviewed the 2017 *Mountainland Pre-Disaster Hazard Mitigation Plan* (MPDHM) as part of this study. The document provides a detailed analysis of the natural hazards and associated risks specific to Utah County. The following figure summarizes the most likely hazards in the County as identified in the Plan.

Figure 37: Utah County Hazard Matrix

Probability	Negligible	Limited	Critical	Catastrophic
Highly Likely	Hail	Fire, Winter Weather, Wind, Avalanche		
Likely	Lightning, Tornado	Flood, Drought, Landslide		
Possible				
Unlikely				Earthquake, Dam Failure

Severity

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[12] SCPG 201: Threat and Hazard Identification and Risk Assessment Guide—2nd Edition, U.S. Office of Homeland Security, FEMA, August 2013.

The Federal Emergency Management Agency (FEMA) assists states, counties, and localities that experience significant hardship during and after a natural disaster. Accordingly, FEMA maintains a database that documents federally supported and declared disasters. The following list summarizes the number and type of declared disasters in Utah County since 1983 as reported by FEMA's Data Visualization tool.

- 1983   Severe storms, landslides, and flooding
- 1984   Severe storms, mudslides, landslides, and flooding
- 2004   Mollie Fire (wildfire)
- 2005   Hurricane Katrina Evacuation
- 2011   Flooding
- 2012   Dump Fire (wildfire)
- 2018   Bald Mountain Fire (wildfire)
- 2020   Covid-19 Pandemic (2 declarations)

As can be seen in the preceding list, Utah County had 9 previous federal disasters since 1983, two of which are related to the 2020 COVID-19 Pandemic. It is not ESCI's intent to regurgitate the natural hazard details as identified in the MPDHM. Rather, attention is placed on assessing the technological and human hazards found in Provo that are not addressed in the MPDHM.

Technological (Human-Caused) Hazards

Technological or human-caused hazards result from accidents or failures of systems and structures; or the actions of people, either accidental or intentional. Intentional actions are always deliberate; however, the intent may differ (e.g., a deliberate action may be planned, careless, reckless, or with the intent to cause harm). In careless or reckless acts, or those that are poorly planned and or executed, the outcome may have unintended consequences.

Transportation

Transportation corridors provide necessary access and egress for the public, commercial enterprise, and emergency service providers. For this study, ESCI used geographic information systems (GIS) data supplied by the City, and other national databases to evaluate and display the City's transportation network.

The configuration of transportation systems can significantly adversely affect a fire department's ability to respond to an incident quickly. Limited access freeways and rail lines can interrupt street connectivity, forcing apparatus to negotiate a circuitous route to reach an emergency scene. More recently, traffic calming devices, including speed humps and lane restrictions, have become much more prevalent, resulting in slower response speeds and increased wear and tear on emergency apparatus.

Pipeline, trucking, and rail routes also pose unique hazards, most often associated with hazardous materials releases or fire.

Freeways

U.S. Interstate 15 (I-15) bisects the City from north to south. This major thoroughfare presents a major east-west travel barrier in the City. Significant amounts of hazardous materials cargo are transported via I-15. Additionally, the freeway speed limit is 70 miles per hour, which frequently results in high-speed vehicle collisions. Due to the limited access, the City of Orem Fire Department responds to vehicle incidents on the southbound portion of the freeway past the Provo city limits, and PFRD responds to vehicle incidents northbound into the Orem city limits.

Additional state highways, including State Highways 89 and 189, also bisect the City. These routes present significant response barriers as well, resulting from the installation of jersey barriers in the medians, which limits the routing ability of responders.

Railroad

Transportation by rail is generally considered one of the safest transit modes. The National Transportation Safety Board (NTSB) maintains responsibility for investigating railroad-related accidents and the subsequent investigation report(s). According to the NTSB Railroad Accident Reports portal, the state experienced 214 railway accidents between 2010 and 2019. The portal does not list any major incidents in Provo during this timeframe.

Figure 38: Railway Accidents in Utah (2010–2019)
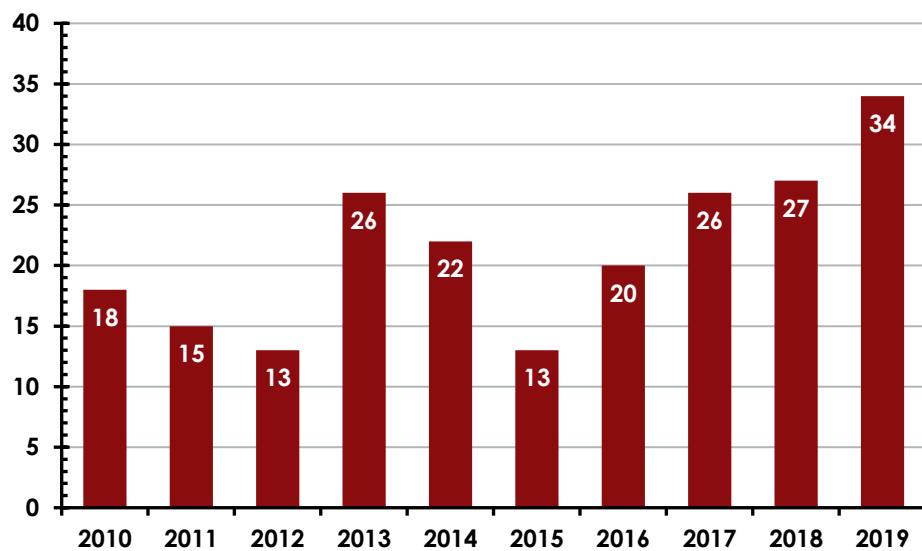
Aircraft

The Provo Municipal Airport (PVU) is in the southwest section of the City. According to the City's Airport Master Plan, the airport has two active runways, which are 8,600 feet and 6,600 feet long. The City manages the airport, which is also overseen by a seven-member ad hoc advisory board. The City recently launched a $40 million terminal expansion project, and projects it will attract up to 20 commercial airline passenger flights a day, which would be an increase from the four current flights per day performed by Allegiant Airlines.

A review of the National Traffic Safety Board (NTSB) crash records reveals 22 incidents between 1984 and 2015, with the most recent incident involving a non-injury landing gear mishap of a light airplane in August 2019.[13,14]

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[13] www.planecrashmap.com.

[14] Fox 13 News, Salt Lake City, August 16, 2019.

Land Use & Zoning

Current and future land use plans have a direct impact on determining the probability and risk of occurrence. For example, open space zoning and low-density residential development are considered low-risk. Moderate-risk zoning would include medium-density residential development, low-intensity retail, and professional office or business. High-risk zoning includes mixed-use areas, high-density residential, industrial, warehousing, and large retail and mercantile centers. The following figure illustrates the current zoning and land use plan for the City of Provo.

Figure 39: Provo General Plan Land Use Map
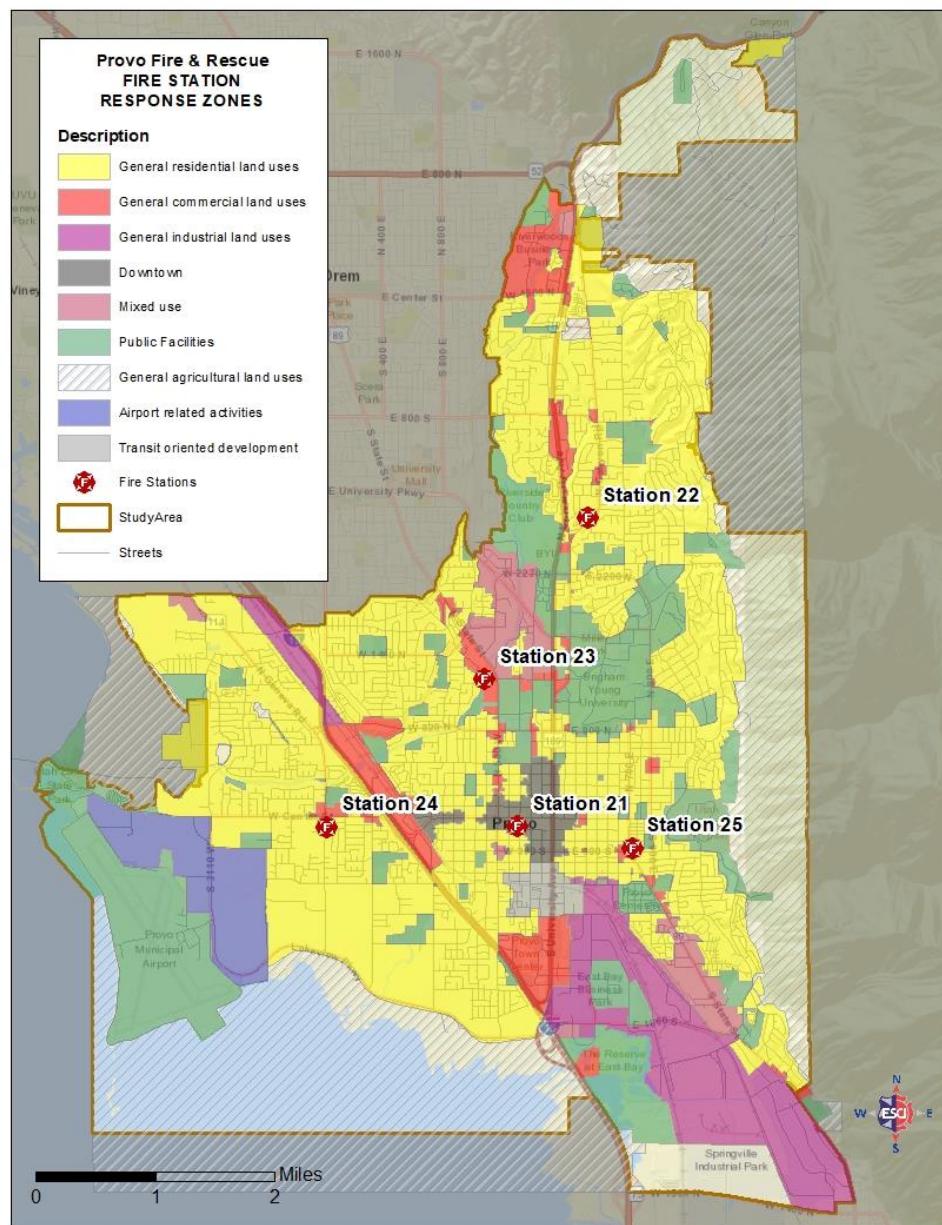
Target Hazards/Critical Infrastructure and Key Resources (CIKR)

The following section of the report highlights the location of infrastructure that may pose a unique response hazard and intensive resource requirements to safely and effectively mitigate an incident. The infrastructure is categorized by use/occupancy type as follows:

Figure 40: Listing of Community Target Hazards

Occupancy/Hazard Area	Description
Large Buildings	Sprinklered vs Non-Sprinklered MF, HR, > 50,000 square feet
Public Assembly	Churches, Restaurants, Bars, Libraries, Sports Stadiums
Educational	Public/Private K–12, University, Day Care
Medical/Congregate Care	Hospitals, Urgent Care, Dependent Care Facilities
Government	Detention Centers, Jails, Court, Local/State/Federal Offices
Energy Systems	Pipeline, Major Power Grids
Communication	Cell Towers, Radio Towers, Broadcast Facilities
Tier II Facilities	Facilities (Superfund Amendments & Reauthorization Act)
Major Employers	Major Employment Centers
Largest Tax Generators	Facilities with High Sales/Property Tax Contributions
Distribution Centers	Large Distribution and Fulfillment Centers
Dam & Flood Prone Areas	Dam or Levee Sites with Flood-Prone Areas
Wildfire Risk	Wildland-Urban Interface Locations

The following pages and figures illustrate some of the target-hazard locations in the preceding figure. Note that data and information were unavailable to develop a wildland-urban interface map at the time of this study.

Commercial and Public Assembly Occupancies

There are numerous buildings within the city where large numbers of people gather for education, entertainment, or worship. A variety of nightclubs, theaters, and other entertainment venues exist, along with recreational, religious, and cultural sites, and sporting and other event venues. These occupancies present additional risk due to the large number of people and the economic and social impacts on the community from a loss due to fire or some other event. These sites may also pose greater risks to first responders due to size and/or configuration. Fire, criminal mischief, and potentially terrorism could cause a major medical emergency requiring significant emergency service resources.[15]

The largest public assembly buildings in Provo reside mostly on the BYU campus. BYU is a unique hazard in this regard, as it has dozens of large public assembly and educational buildings of various occupancy loads, including Lavell Edwards Stadium, with a seating capacity of 63,470. The largest educational building on campus is Lee Library, with over 715,000 square feet of space, and another 13 educational buildings are all over 100,000 square feet in size. Several other athletic facility buildings are also over 100,000 square feet, including the Richards Building, Smith Fieldhouse, and Marriott Center.

However, several other large public assembly occupancies, including places of worship, are located throughout the service area. Covey Center, Provo Town Center, and the Utah County Conventions Center are examples of large footprint public assembly buildings located outside of the BYU campus.

Schools

As noted previously in this report, Brigham Young University is located in the heart of Provo. This large four-year university campus is located on 560 acres, with over 300 buildings. The University, created in 1875, has buildings that vary in age from the early 1900s to brand new construction. Each has unique life safety hazards as a result of varying building code requirements at the time of construction, construction techniques, built-in fire protection systems, and usage types. A significant additional risk is introduced periodically with the influx of large numbers of spectators at large sporting events, concerts, and other cultural events on campus.

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[15] There are many other businesses with the characteristics as an assembly occupancy but have an approved occupancy load of less than 50 people. These are not included in this category.

The Provo School District is the local kindergarten through high school public education provider. The District, formed in 1898, operates two high schools, an alternative high school, two middle schools, and thirteen elementary schools, serving over 16,000 students annually.[16]

Other private schools and daycares are located throughout the City. The following figure shows the location of the schools, colleges, and pre-schools.

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[16] Provo City School District website.

Figure 41: Educational Facilities
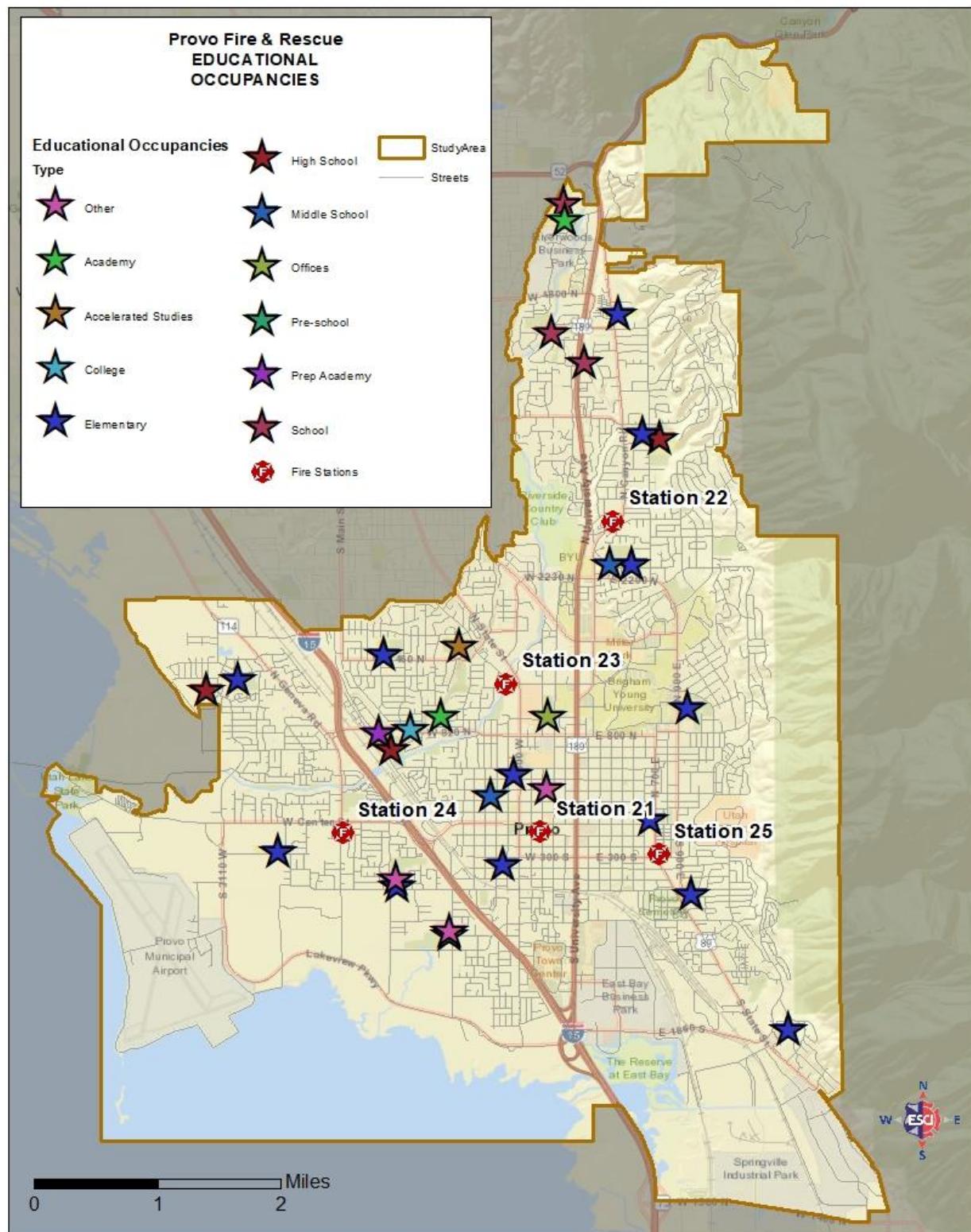
Hospitals and Congregate Care Facilities

Utah Valley Hospital is the main regional medical facility serving the City. The facility, operated by *Intermountain Healthcare®*, is a Level II Trauma Center with a 395-bed capacity and a 24/7 emergency department. The hospital is surrounded by various laboratories, physician offices, and ancillary medical care facilities.

Several nursing homes and other congregate care facilities are located throughout the City. The following figure illustrates the location of the hospital and congregate care facilities.

Figure 42: Medical & Congregate Care Facilities
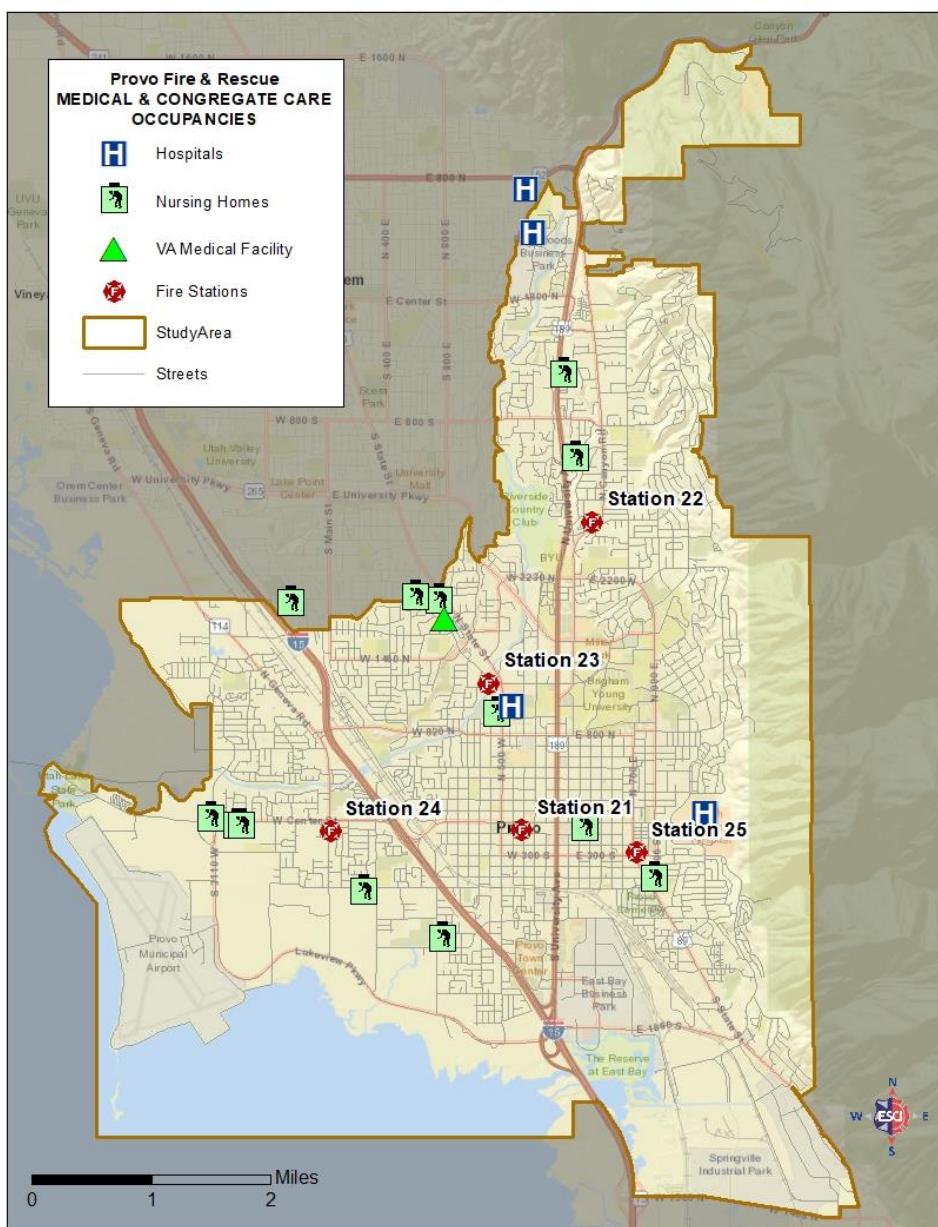
Government Buildings

Government-owned structures and properties are located throughout the City. Some are open for public use, including business activities, recreation, and cultural enrichment. Others are key facilities providing non-public service to the community. This includes, public safety buildings, communication hubs, public works facilities, correctional institutions, and military installations. Most of these are considered critical public assets, as unanticipated disruption or damage to a governmental facility may have a far reaching impact on delivering essential services. The following figure shows the location of key government buildings in Provo.

Figure 43: Key Government Buildings
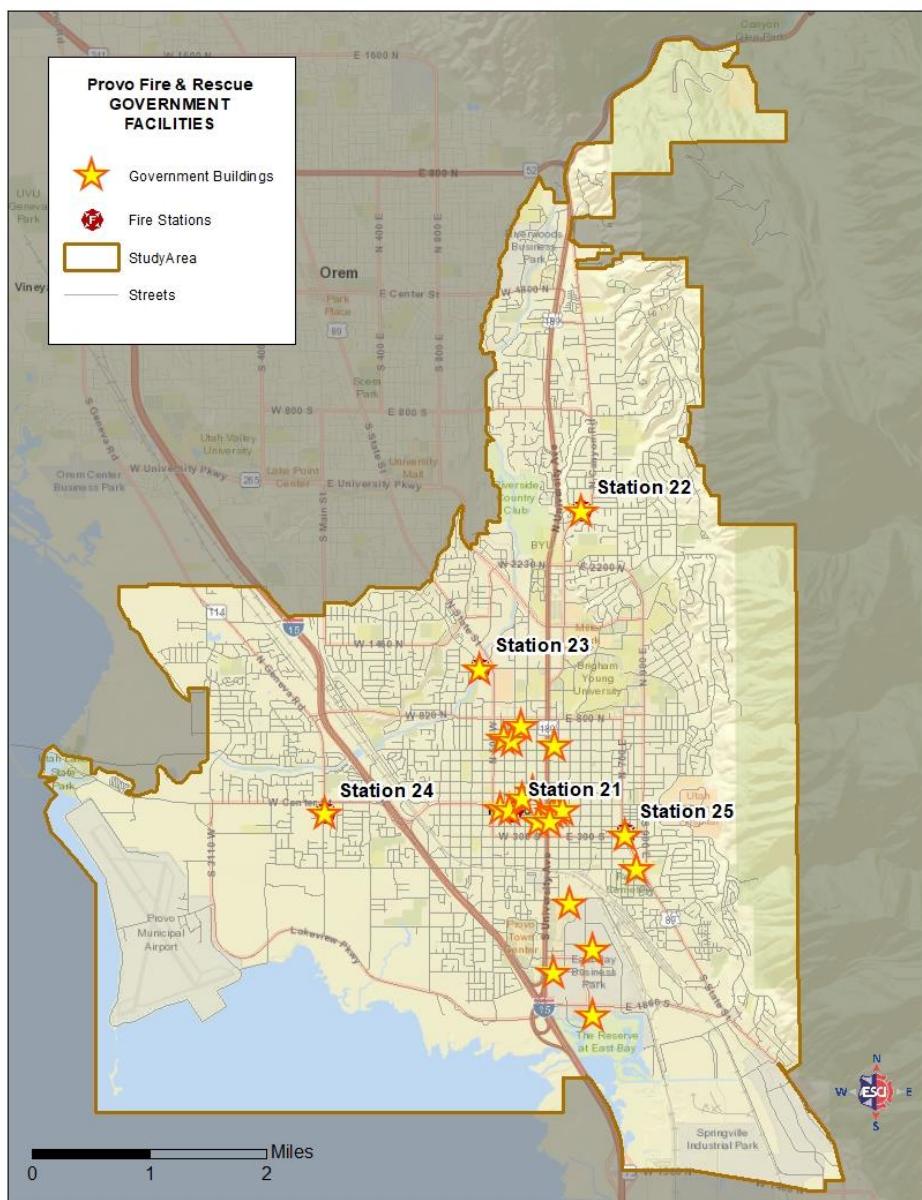
Communication Infrastructure

Emergency communication centers and related transmission equipment are critical emergency response infrastructure. The City's 911 Center is operated by the Provo Fire Department, providing call receipt and dispatch service for fire, police, and EMS.

There are other communication facilities and equipment located throughout the City that are equally important to community and government operations. These include telephone company central switching stations, voice and data transmission lines of local telephone and internet service providers, including *CenturyLink®*, *Veracity Networks®*, *US Dish®*, and *Google Fiber®*

Lastly, local and regional microwave and radio station transmission equipment is located on remote West Mountain, located approximately 15 miles southwest of Provo. This site is vulnerable to wildfire, vandalism, and sabotage. The following figure shows the location of various communications facilities in Provo.

Figure 44: Communications Infrastructure
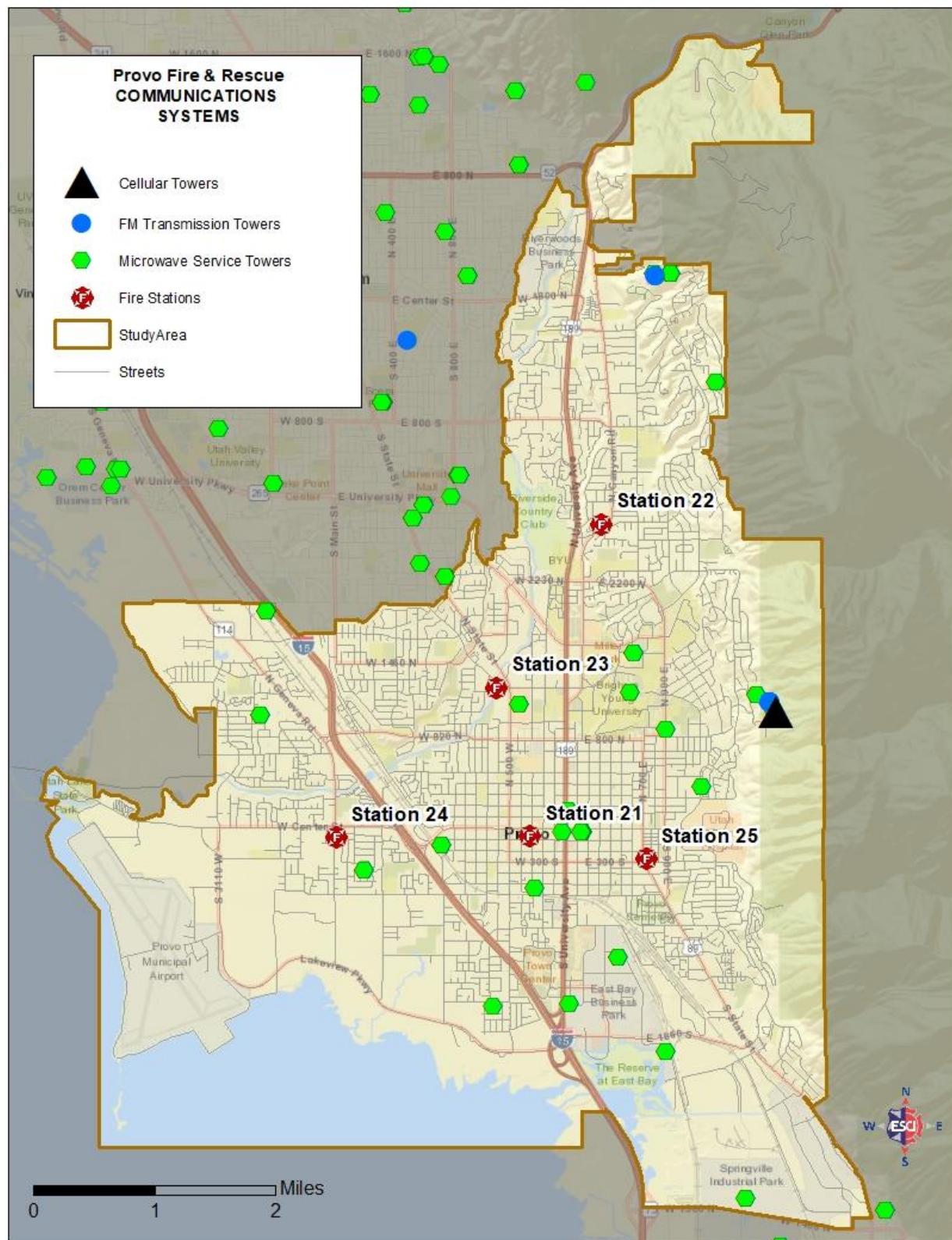
Energy

Every community depends on the delivery of reliable energy; electricity, natural gas, and petroleum products such as gasoline and diesel fuel. The transmission and delivery of this energy are dependent on various transmission routes, including above and below ground electrical grids, underground pipelines, and above and below ground storage systems. All of these systems have inherent risks and potential for failure that can lead to community disruption.

Electrical power for the City is provided by Provo City Power (PCP), a locally-owned, controlled, and operated not-for-profit municipal utility that has been operating since 1940.[17] It is the largest municipal electric utility in the State of Utah, operating over 380 miles of distribution lines, 48 miles of high voltage distribution lines, and 18 substation transformers that deliver power to over 35,000 electric meters.

Questar Gas® is Provo's local natural gas provider, which maintains a network of underground gas distribution lines.

Geographical Restrictions

The National Fire Protection Association Standard for the Organization and Deployment 1710 Standard was updated in 2020 and included a new reference—*geographical restriction zone*.[18] These zones are defined as a "condition, measure, or infrastructure design such as a railroad crossing, drawbridge, [or] narrow street that is inaccessible by fire apparatus, traffic demand pattern, long supply line lay, or other similar circumstance that impedes an apparatus' travel to an incident."

Lastly, bridge locations may be the site of flood-related incidents due to high water—road closures, washouts, or risk of people being swept into rising or swift water. The area occasionally experiences flash flooding due to strong thunderstorms or rapid snowmelt as well. The following figure identifies the vulnerable bridge locations in the study area.

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[17] Provo City Power website
[18] Standard for the Organization and Deployment of Fire Suppression Operations to the Public by Career Fire Departments. National Fire Protection Association (2019).

Figure 45: Geographic Restrictions—Rivers & Bridges

Rail transportation corridors and configurations also can directly impact emergency service provider response capabilities. Trains blocking major response routes will force emergency vehicles to utilize alternative, and sometimes lengthier, routes to an emergency scene. The following figure illustrates the main rail transportation corridors in Provo.

Figure 46: Geographic Restrictions—Rail Lines & Railroad Crossings

Water Distribution & Wastewater

Potable water and wastewater treatment systems are owned, operated, and maintained by the City's Public Works Department. The water system is comprised of 12 storage tanks and distribution reservoirs that gather water from various springs, wells, and rivers, 384 miles of water mains, and over 18,000 water connections. Approximately 15 million gallons of wastewater is treated daily at the City's wastewater treatment plant located in South Provo. This plant is fed by 16 lift stations throughout the City.

Structural Risks

Hazardous Materials

High-hazard occupancies include facilities that involve the manufacturing, processing, generation, or storage of hazardous materials in sufficient quantity or type as to create significant risk to the public or first responders. Examples include Tier II and other Class H occupancies.

In these facilities, a significant uncontrolled release would require specialized personnel trained and equipped to isolate, identify, control, and clean up. These facilities are highly regulated and monitored through the City's fire prevention and hazardous materials programs. These facilities are required to regularly report the types and quantities of the hazardous materials, be familiar with these hazards, and have appropriate emergency procedures in place. Over 30 Tier II sites are located in and around Provo, as identified in the following figure.

Figure 47: Hazardous Materials Tier II Sites
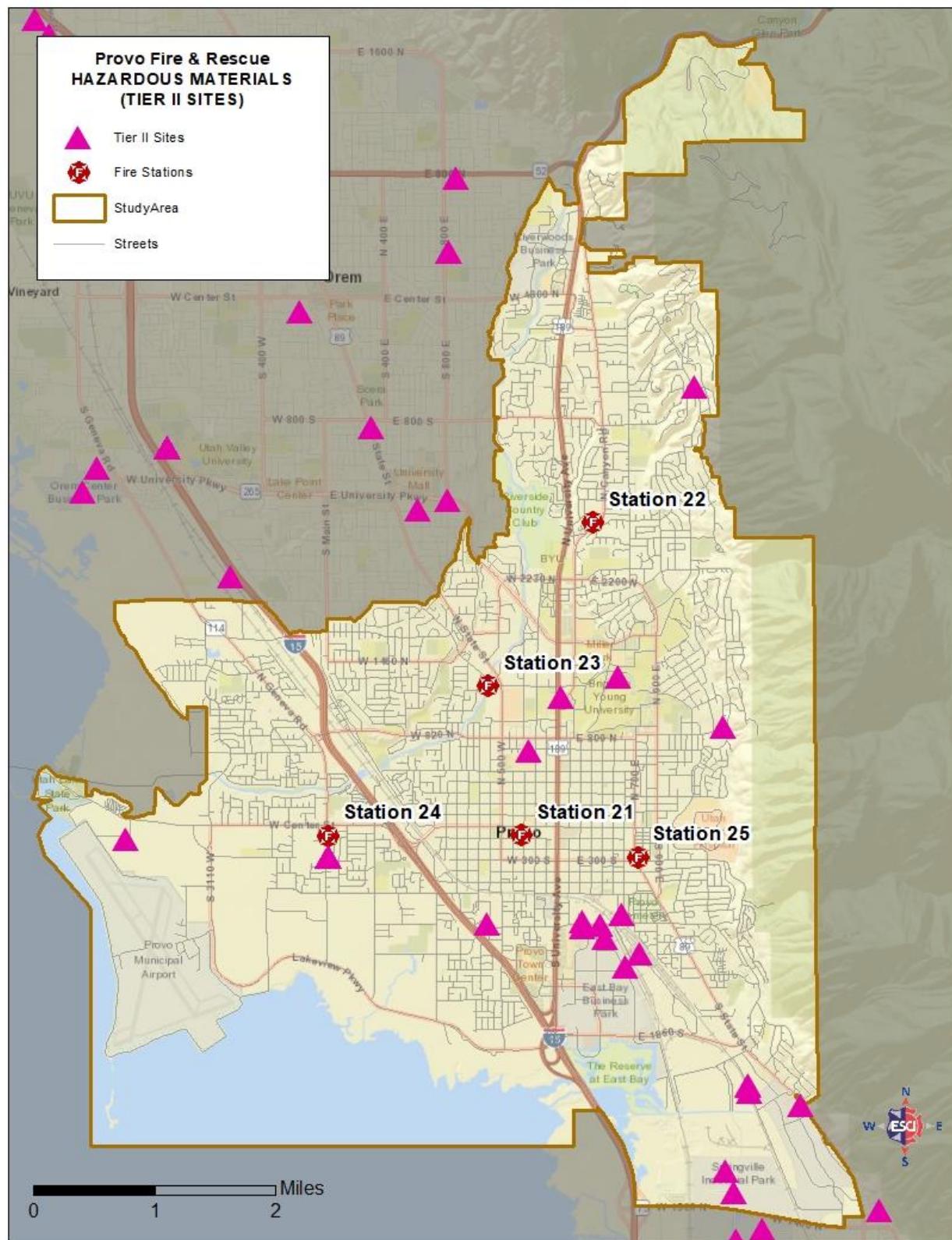
Dams & Levees

Dams and levees systems are typically constructed of earth, concrete, or steel, and are designed to control, contain, or divert water. The following map shows the location of upstream dams that could impact the community in the event of failure or emergency release of high volumes of water.

Figure 48: Regional Dams
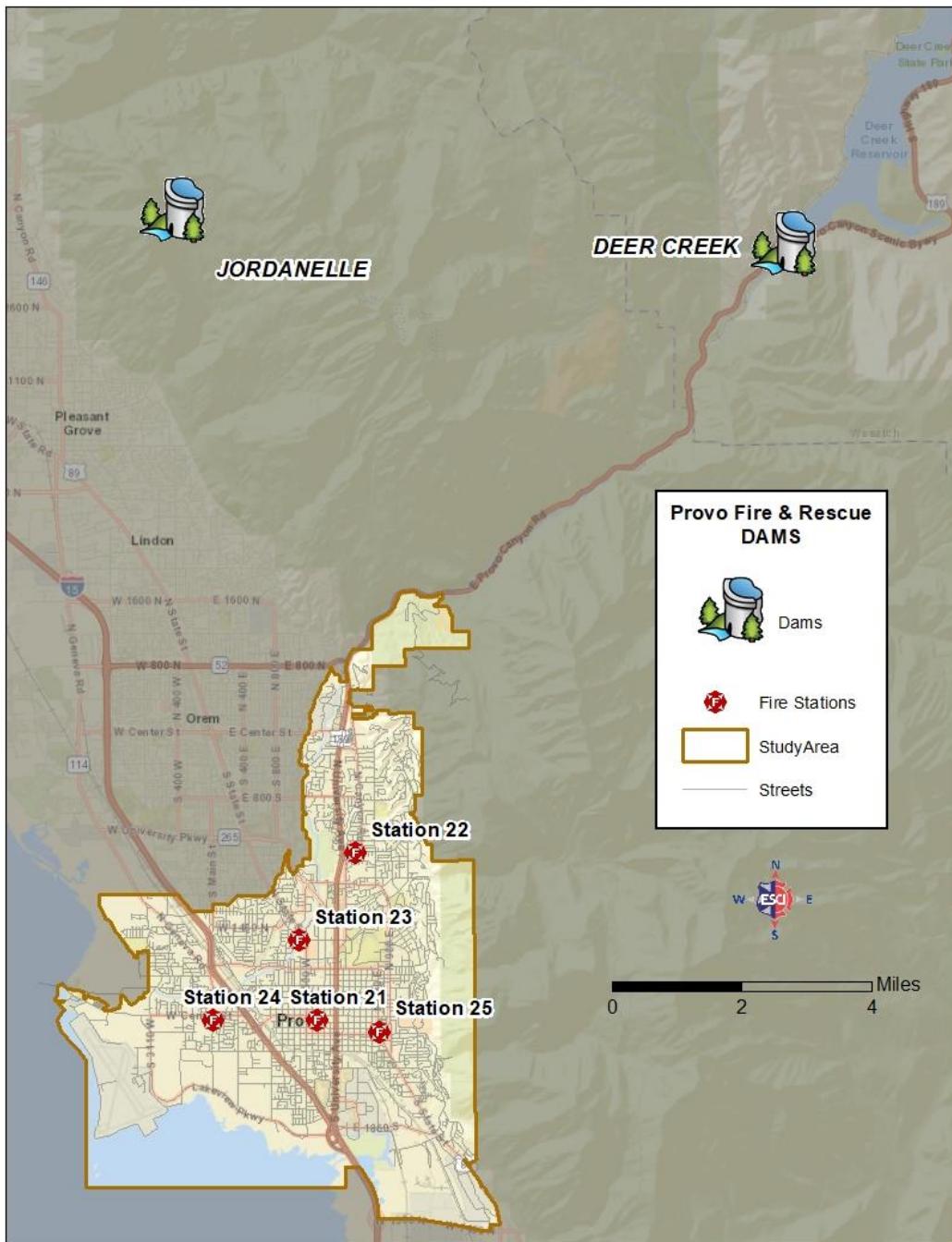
Although the likelihood of dam or levee failure is remote in the PFRD service area, there is a specific flood risk upstream of the Provo River in the Rock Canyon area along the City's eastern border. This vulnerable flood area has been the focus of federal flood mitigation efforts since the late 1930s. Even then, the area experienced significant flooding in 1983, and additional flood mitigation efforts were undertaken.[19] There are other drainage areas located in the eastern areas of the City as well. Additionally, the Provo River flows through the middle of the City before terminating in Utah Lake, as shown in the following flood plain map provided by the City of Provo. The following figure shows the location of dams that can impact the study area, and the FEMA designated flood zones in the City.

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[19] www.rockcanyonutah.com.

Figure 49: Provo Flood-Prone Areas
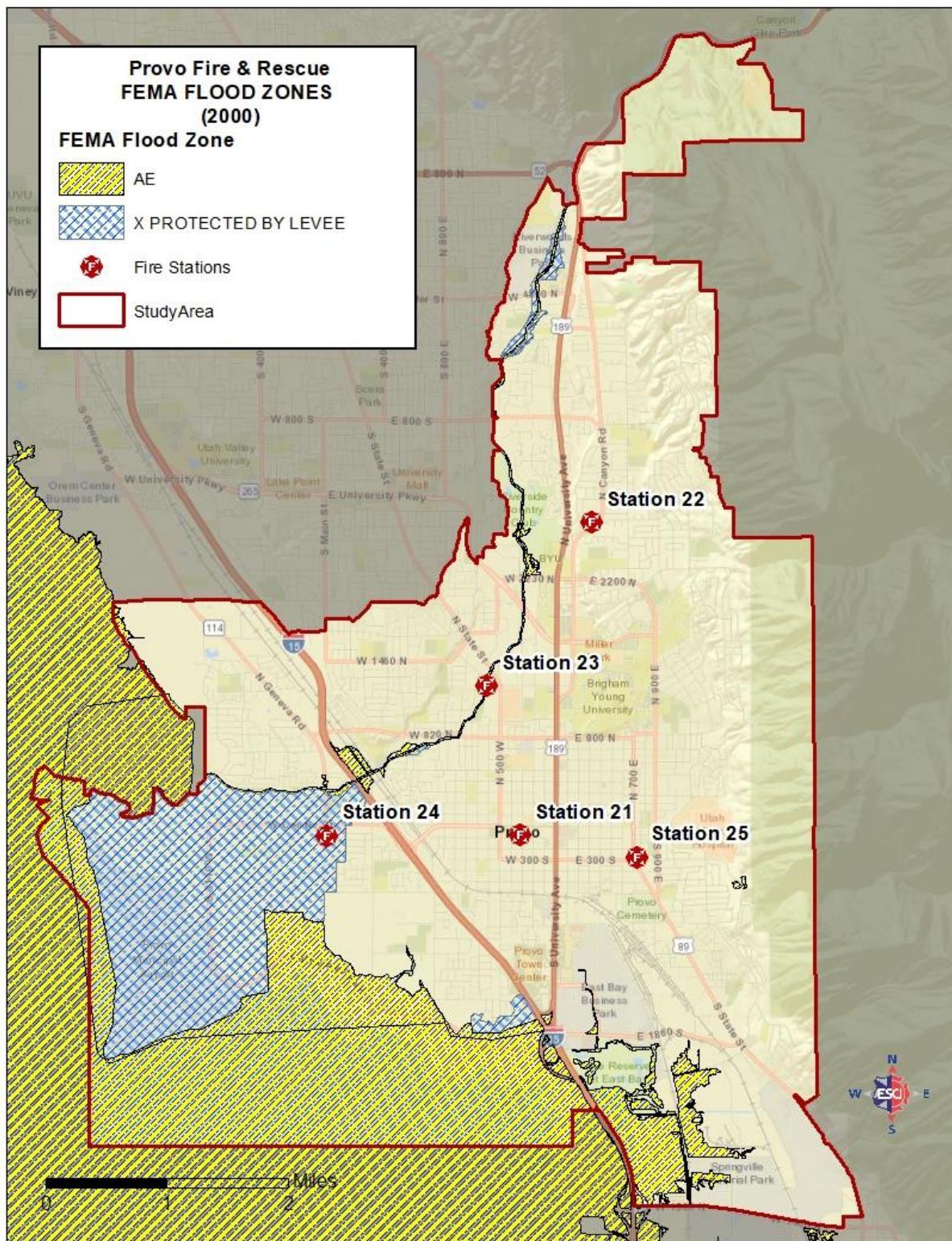
Note, in the preceding flood plain figure, the highlighted yellow "AE" FEMA category identifies the base floodplain areas within the City.

Buildings Three or More Stories in Height

In November 2016, the NFPA authored a report entitled *High-Rise Building Fires.* Within this report, the author evaluated more than 14,500 structure fires that occurred in high-rise buildings between 2009 and 2013.[20] For this community report, a *high-rise* is defined as a building that is taller than 7 stories in height. The following national data helps determine Provo's large structure fire risk, and the effectiveness of built-in fire protection/suppression features in these structure types. Nearly three-quarters (73%) of high-rise fires occur within one of five occupancy types: apartments, hotels, dormitories, office, and infirmary facilities. The following figure further illustrates that within the previous five categories, apartments carry the largest probability (85%) of fire occurrence.

Figure 50: High-Rise Fire Occupancy Types (2009–2013)
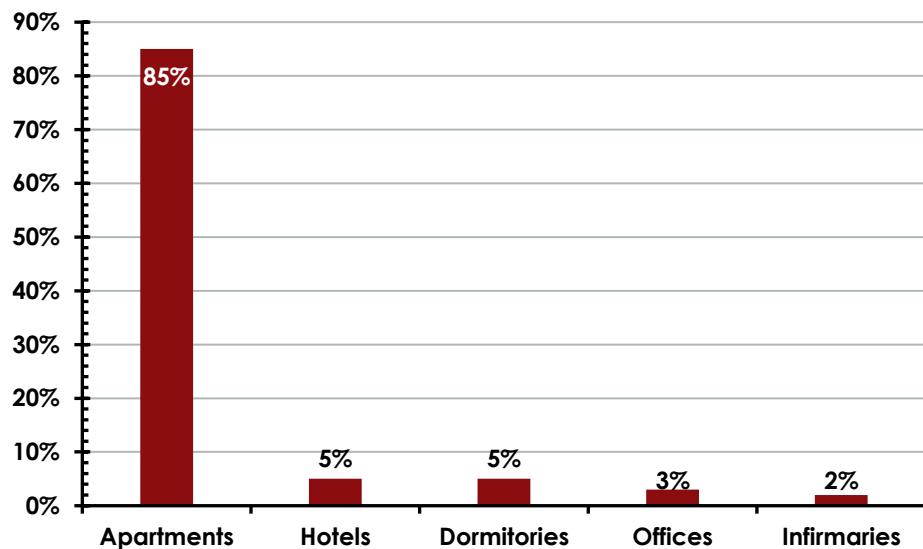
Multi-story buildings were further compared to evaluate fire spread beyond the room of origin and beyond the floor of origin. Three key factors influence a fire's ability to spread in these structure types: Building construction materials, functional fire detection and alarm systems, and functional built-in fire suppression (sprinkler) systems. Older buildings located in Provo most likely lack these three factors, which means that a fire in these structure types will likely require much higher fire flow and significant fire department resources to contain and extinguish. The following figure compares the fire spread experience between low-rise and high-rise commercial occupancies.

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[20] High-Rise Building Fires. National Fire Protection Association (2016).

Figure 51: Percent of Fires with Fire Spread Beyond Room of Origin (2009–2013)
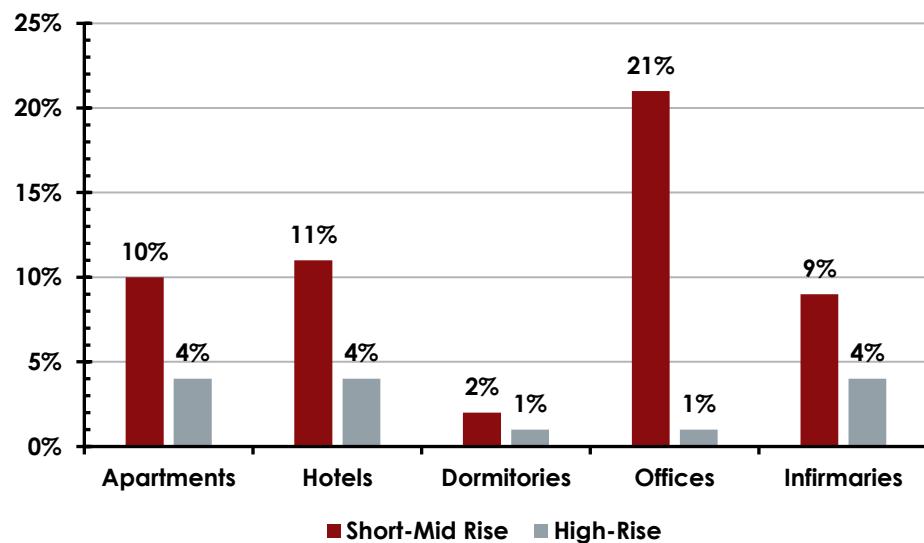
ESCI identified the locations of buildings taller than three stories, as shown in the following figure.

Figure 52: Provo Buildings Three Stories & Higher
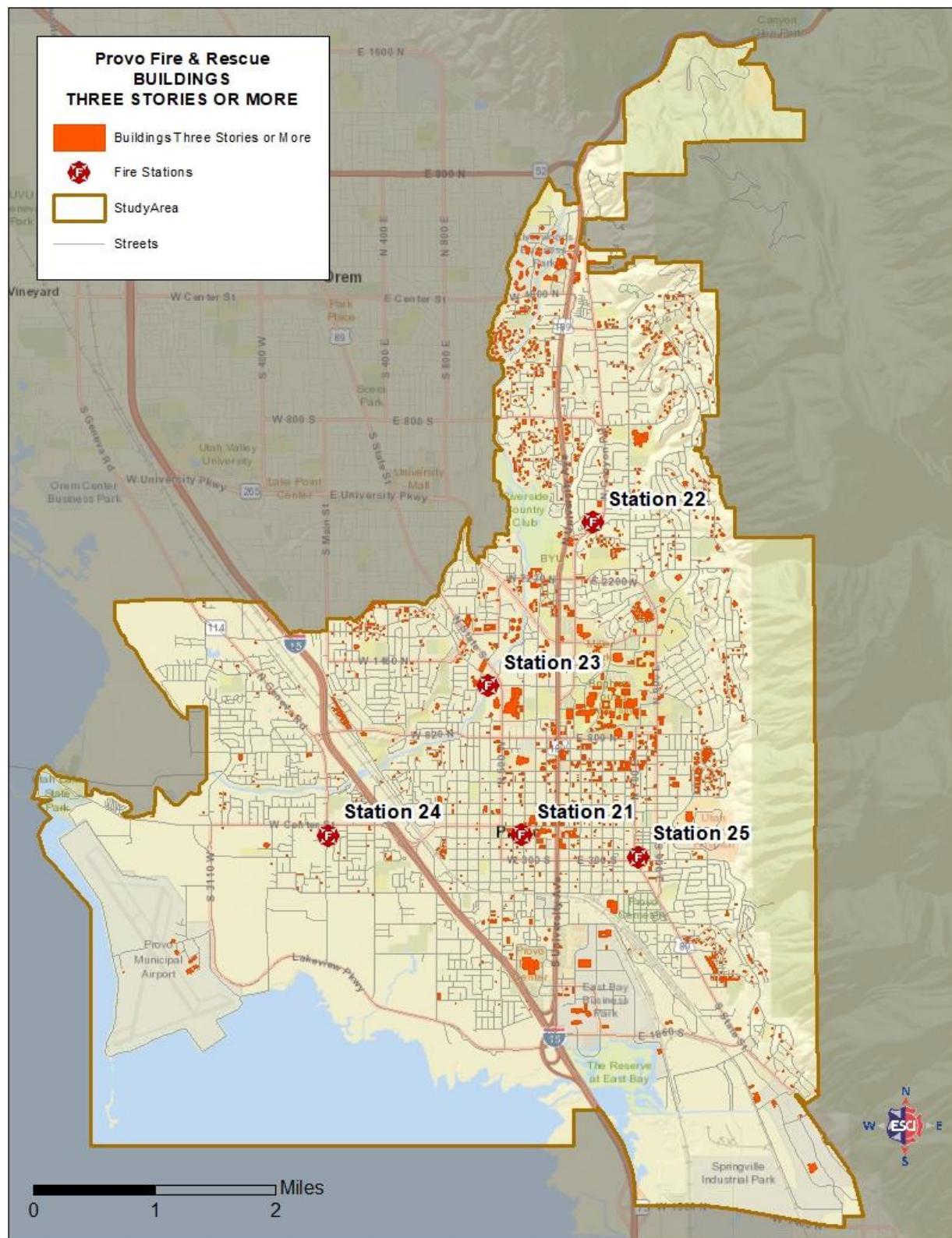
Residential Structures

In December 2018, the National Fire Protection Association (NFPA) authored a research report, *Home Structure Fires*, which summarized the causation, confinement, and occupancy related data for residential structure fires that occurred from 2012 to 2016.[21] The following figures are adapted from this report and illustrate the correlation between cooking fires and fire containment in single and multi-family occupancies. Note that there was a 39% containment rate for residential cooking fires and this closely aligns with the fire causation/origin of cooking fires at 38%. Multifamily has a similar correlation with a 70% confinement rate and 72% causation to cooking related items.

Figure 53: Residential Structure Fire Cause (2012–2016)
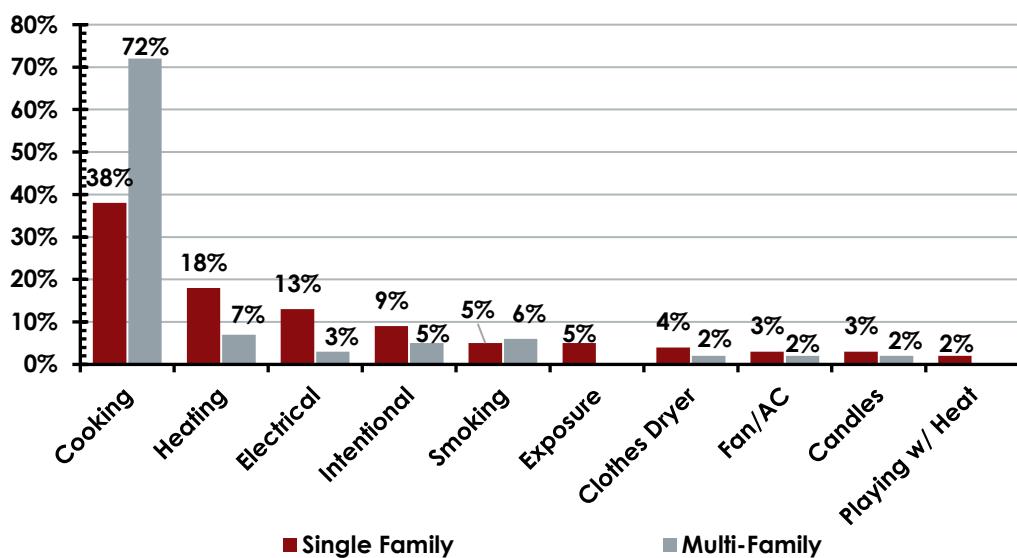
Figure 54: Single-family versus Multi-family Fire Containment (2012–2016)

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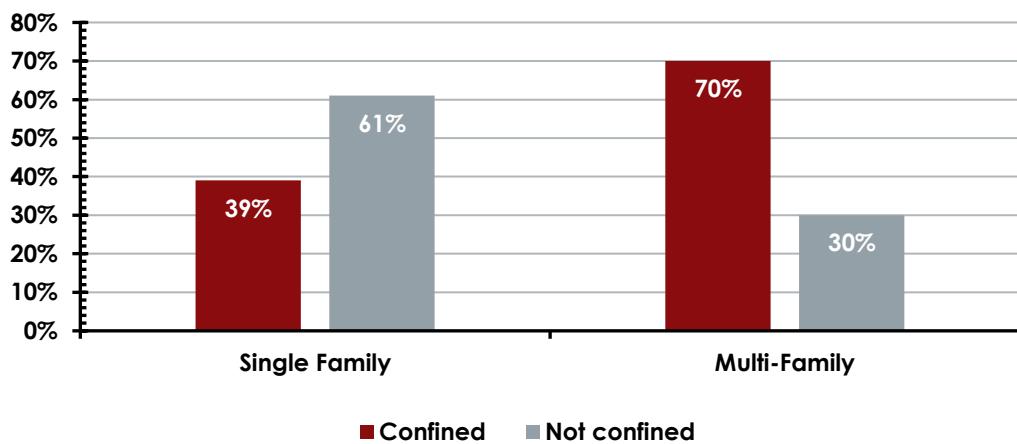
[21] Home Structure Fires: Supporting Tables. National Fire Protection Association (2018).

Comparison of Fire Risk in Other Communities

The most recent available (2018) NFIRS incident summary data was retrieved from the State of Utah Fire Marshal's Office. ESCI compared this data with the Provo specific NFIRS data from the same source. The following figure summarizes the comparison as it relates to the fire experience in Provo and the State of Utah.

Figure 55: 2018 State of Utah & Provo Incident Comparison
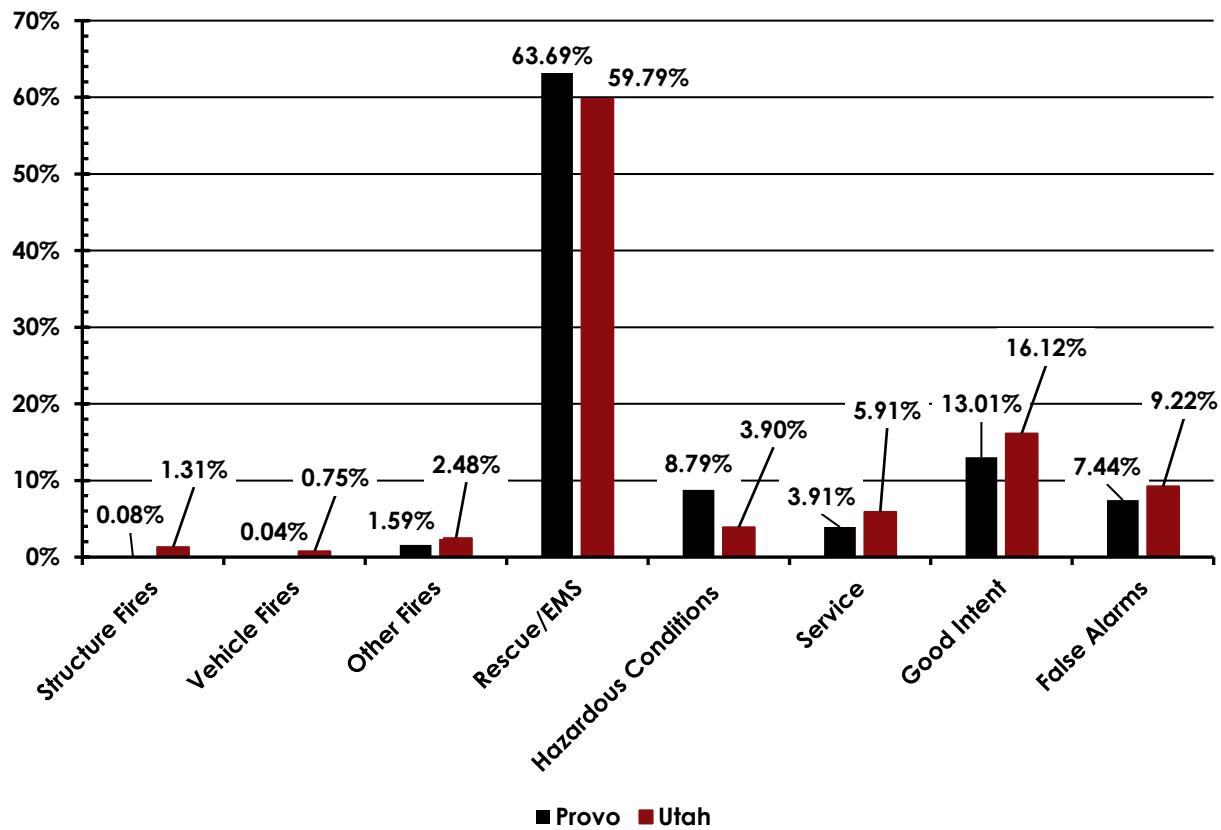
As shown in the preceding figure, the City experienced a lower percentage in each incident category when compared to the overall number of incidents in the State, except for EMS and Hazardous Condition responses, where PFRD had approximately 4% and 5% more incidents than the rest of the State respectively.

Section III:
Standards of Cover

Historical System Response Workload

With an understanding of the community, the department, and the potential risks, the next consideration is to look at actual response and workload over a given period of time. This enables department leadership to review the current response and standards of cover and extrapolate for future service demand and the ability to provide that service in a timely and efficient manner.

Incident Type Analysis

In a simplistic fashion, a department may choose to simply look at the total number of incidents within a specific timeframe to determine the service demand. However, through the use of a categorization system, the department is provided with a more detailed view of the actual incidents and thus will be more able to plan the resources needed to respond to those incidents. The National Fire Incident Reporting System (NFIRS) has developed a system that categorizes incidents and is utilized by departments across the country. Each classification code is a three-digit number that is grouped into series by the first digit, as illustrated below.

Figure 56: NFIRS Incident Types

Incident Series	Incident Heading
100-Series	Fires
200-Series	Overpressure Rupture, Explosion, Overheat (No Fire)
300-Series	Rescue and Emergency Medical Service (EMS) Incidents
400-Series	Hazardous Condition (No Fire)
500-Series	Service Call
600-Series	Canceled, Good Intent
700-Series	False Alarm, False Call
800-Series	Severe Weather, Natural Disaster
900-Series	Special Incident Type

PFRD collects data for incident response using ImageTrend®, an NFIRS compliant software. The following figure illustrates the PFRD service demand as categorized within the NFIRS series. From 2017 to 2019, there was an increase of 0.62% in overall demand for service. The greatest increases by specific incident type were motor vehicle collisions (31.19%), alarms (31.89%), and hazardous conditions (20.07%). In contrast, the greatest decreases by specific incident type were other (42.86%) and service calls (38.2%).

Figure 57: Service Demand by Incident Type (2017–2019)
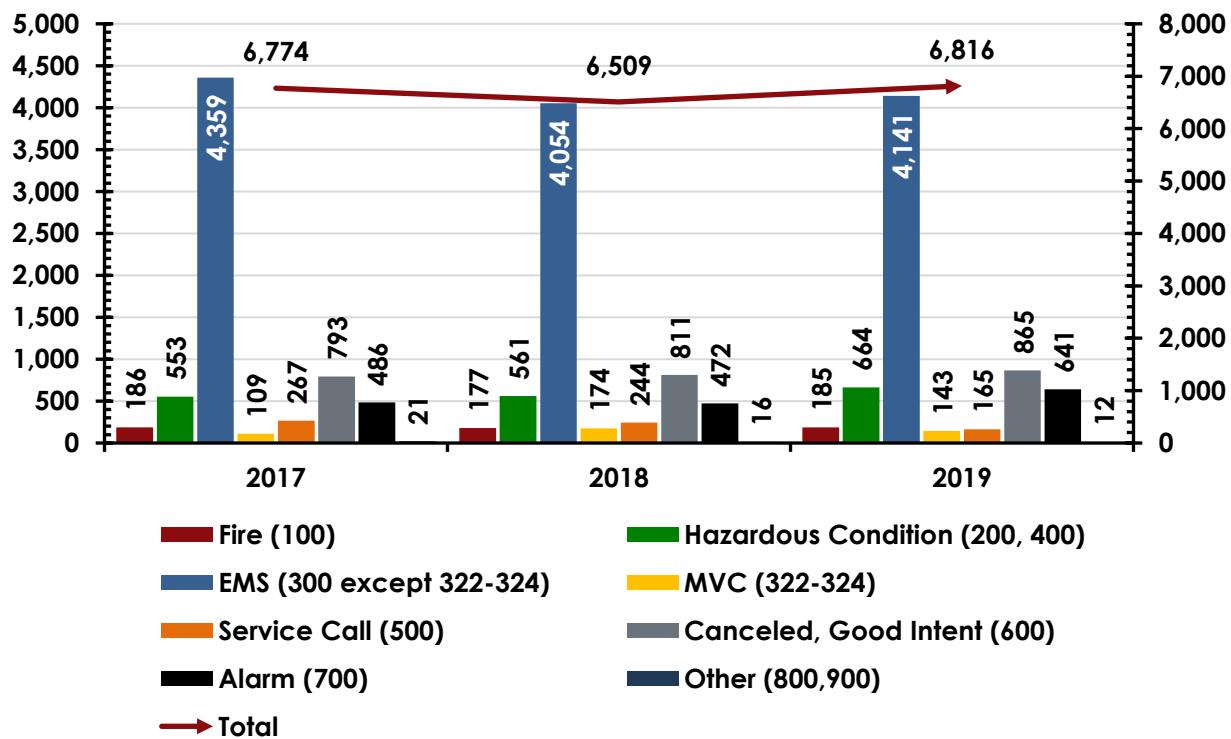
Service demand is illustrated in the preceding figure by specific counts of each NFIRS incident series. It is also valuable for leadership to evaluate the same service demand data to illustrate how each NFIRS incident series compares as part of the whole, as is illustrated in the following figure. For PFRD, the greatest demand for service was for emergency medical service incidents at 62.5%—which is consistent with the percentages found in most all-hazard fire departments studied by ESCI.

Figure 58: Service Demand by Incident Type (2017–2019)
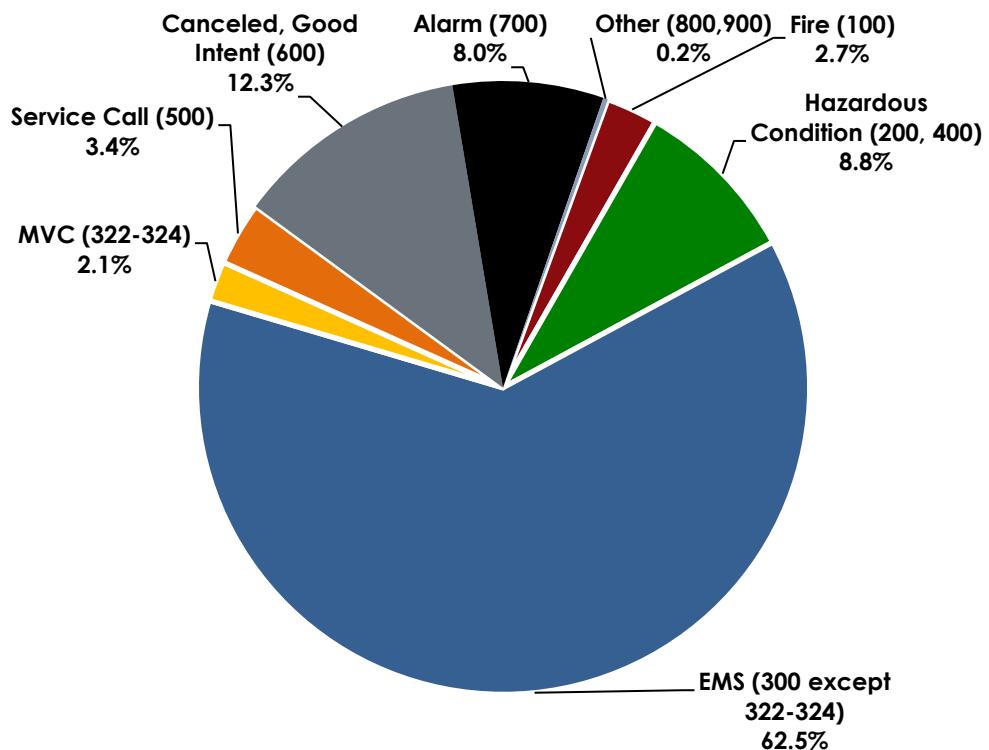
Temporal Analysis

The next component when evaluating historical service demand and delivery is the temporal analysis of the historical data. Through analysis of each temporal component, leadership is provided the ability to plan for future service demand and which resources may be required to provide that service. Also, a thorough understanding of the temporal nature of service demand enables leadership to consider the scheduling of non-response activities during periods when service demand is at lower levels. Examples of non-response activities include training, apparatus maintenance, hydrant testing, pre-planning target hazards, and hose testing.

The following figure illustrates the service demand by month for PFRD. The greatest demand for service occurs May through September. The lowest demand for service occurs October through December and February.

Figure 59: Service Demand by Month (2017–2019)
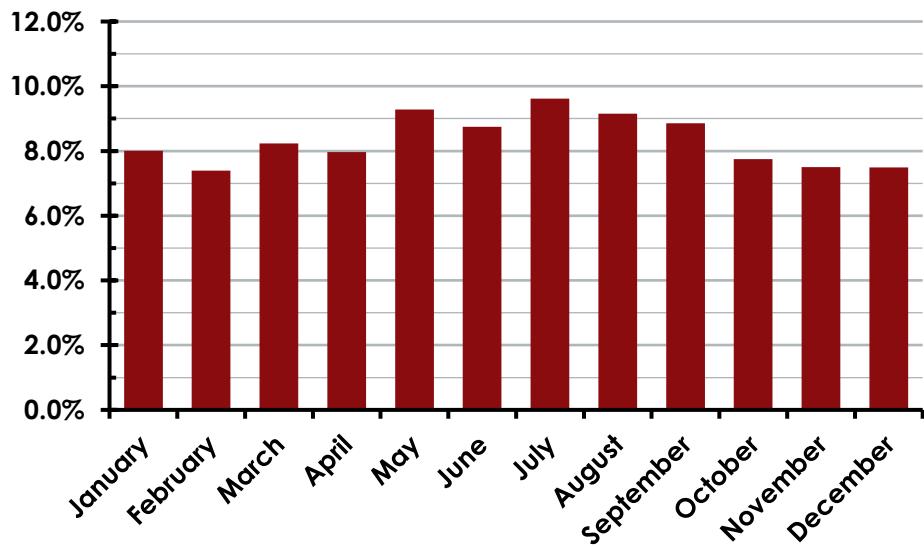
The following figure illustrates the service demand by day for PFRD. Demand for service is at its lowest on Sunday and then gradually increases until reaching the greatest demand on Friday.

Figure 60: Service Demand by Day (2017–2019)
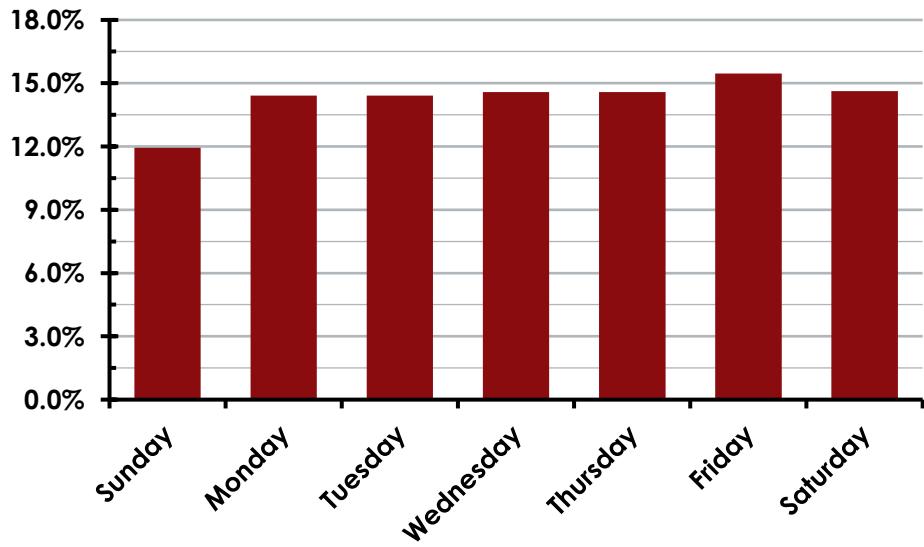
The following figure illustrates the PFRD service demand by time-of-day. Demand for service begins to increase at 5 a.m. and follows an increasing slope for the next two hours. This timeframe coincides with the population awakening and preparing for their daily activities. There is a sharper increase in service demand throughout the morning, reaching a peak at 2 p.m. This continual increase coincides with the population's movement from their homes to various destinations throughout the community. Throughout the afternoon, demand for service remains level until beginning to decrease at 6 p.m. This decrease continues throughout the afternoon and evening and coincides with the movement of the population to their evening activities and eventually to their homes. After midnight, the demand for service continues to decrease, until reaching its lowest level at 4 a.m.

Figure 61: Service Demand by Time-of-Day (2017–2019)
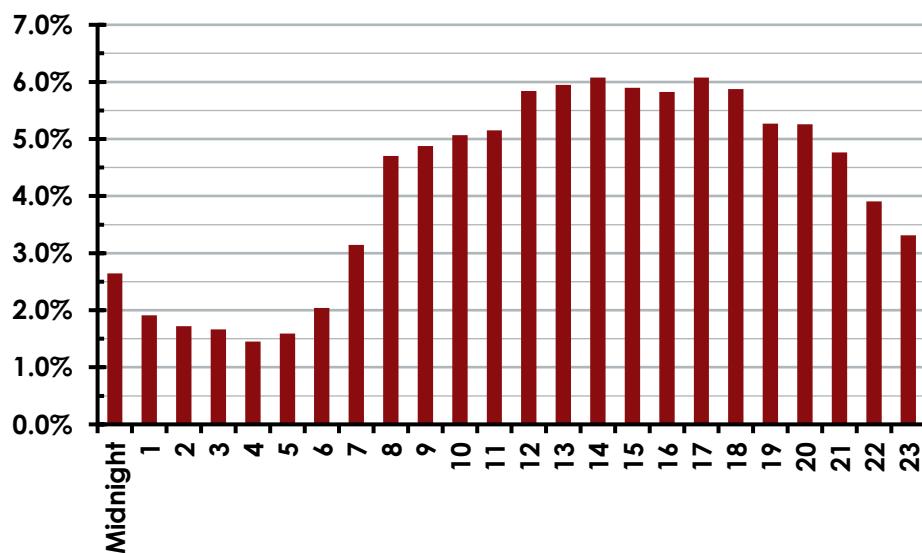
While service demand is lowest during those early morning hours, it should be noted that most fatal residential fires occur most frequently late at night or early in the morning. Based on findings from a national study, from 2014 to 2016, fatal residential fires were highest between 1:00 a.m. to 2:00 a.m., and 4:00 a.m. to 5:00 a.m. The 8-hour peak period (11 p.m. to 7 a.m.) accounted for 48% of fatal residential fires.[22]

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[22] Fatal Fires in Residential Buildings (2014–2016), Topical Fire Report Series Volume 19, Issue 1/June 18, U.S. Department of Homeland Security, U.S. Fire Administration, National Fire Data Center.

Spatial Analysis

The next component when evaluating historical service demand and delivery analyzes the geographical location of incidents. With knowledge of where incidents occur, leadership is more capable of ensuring the best placement of resources to provide services. For purposes of this evaluation, ESCI utilized geographic information system (GIS) software to plot the location of incidents and then calculated the mathematical density of incidents (incidents per square mile).

As illustrated in the following figure, when viewing all incidents, the highest demand for service occurs in the central portion of the service area—with an epicenter near Station 21. The density of service demand then radiates out from that epicenter, with the lowest demand for service occurring near Station 24 and Station 22.

Figure 62: PFRD Incidents per Square Mile (2018–2019)
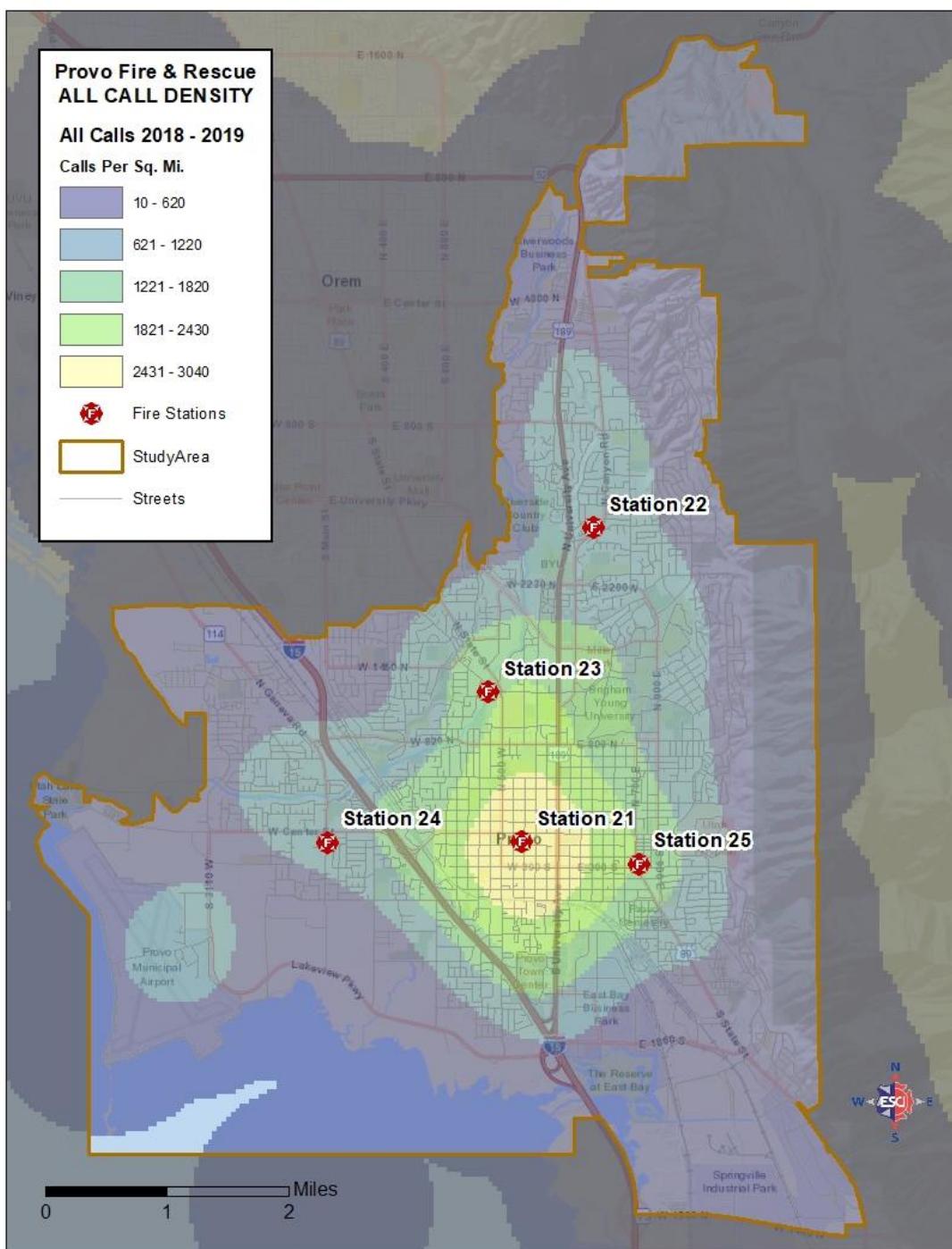
While the figure above illustrates the incident density of all incidents, the following figures illustrate the same incident data by emergency medical incidents and fire incidents. As illustrated, the incident density for emergency medical incidents follows a pattern similar to that illustrated in the preceding figure and the incident density for fire incident epicenter is slight west of Station 21.
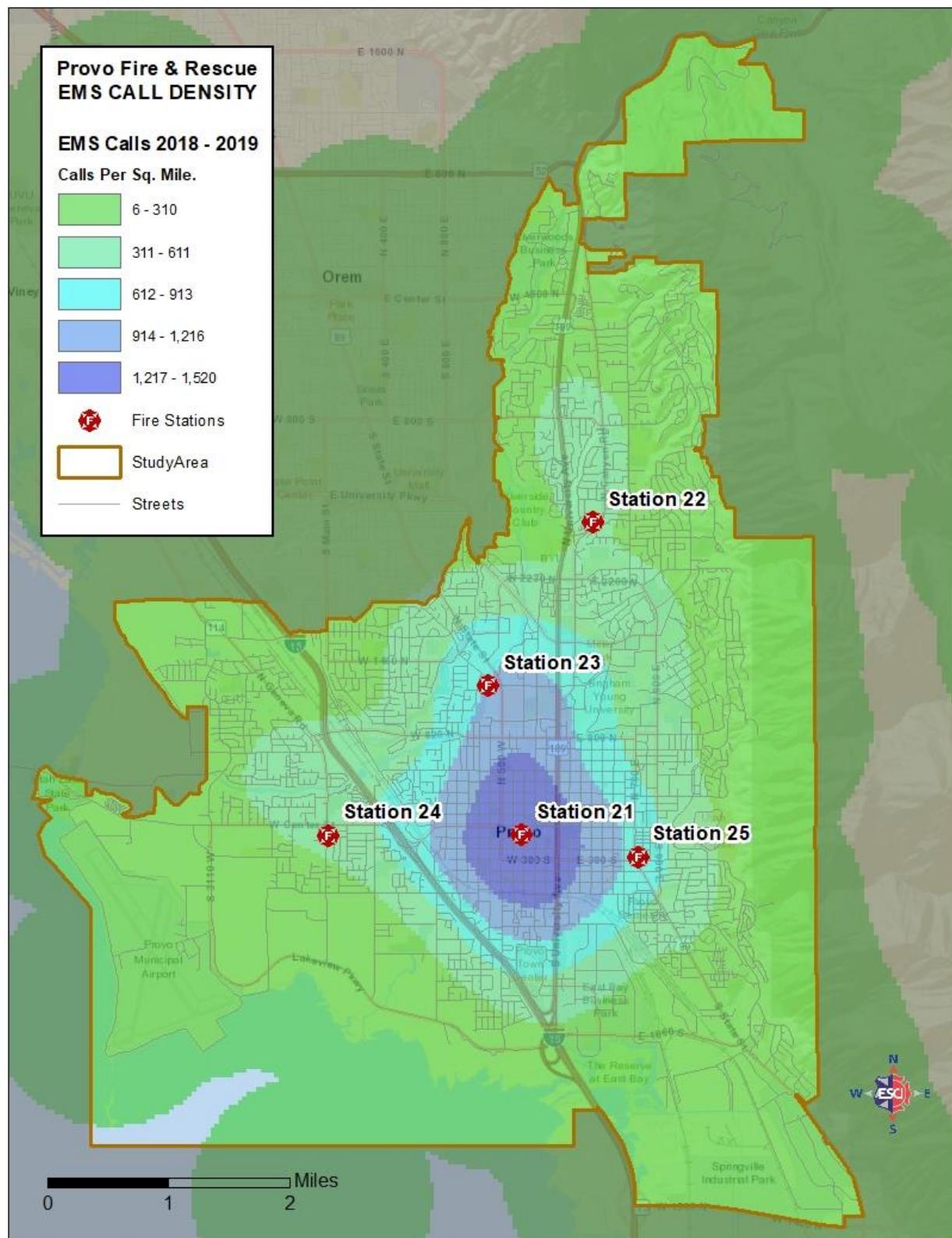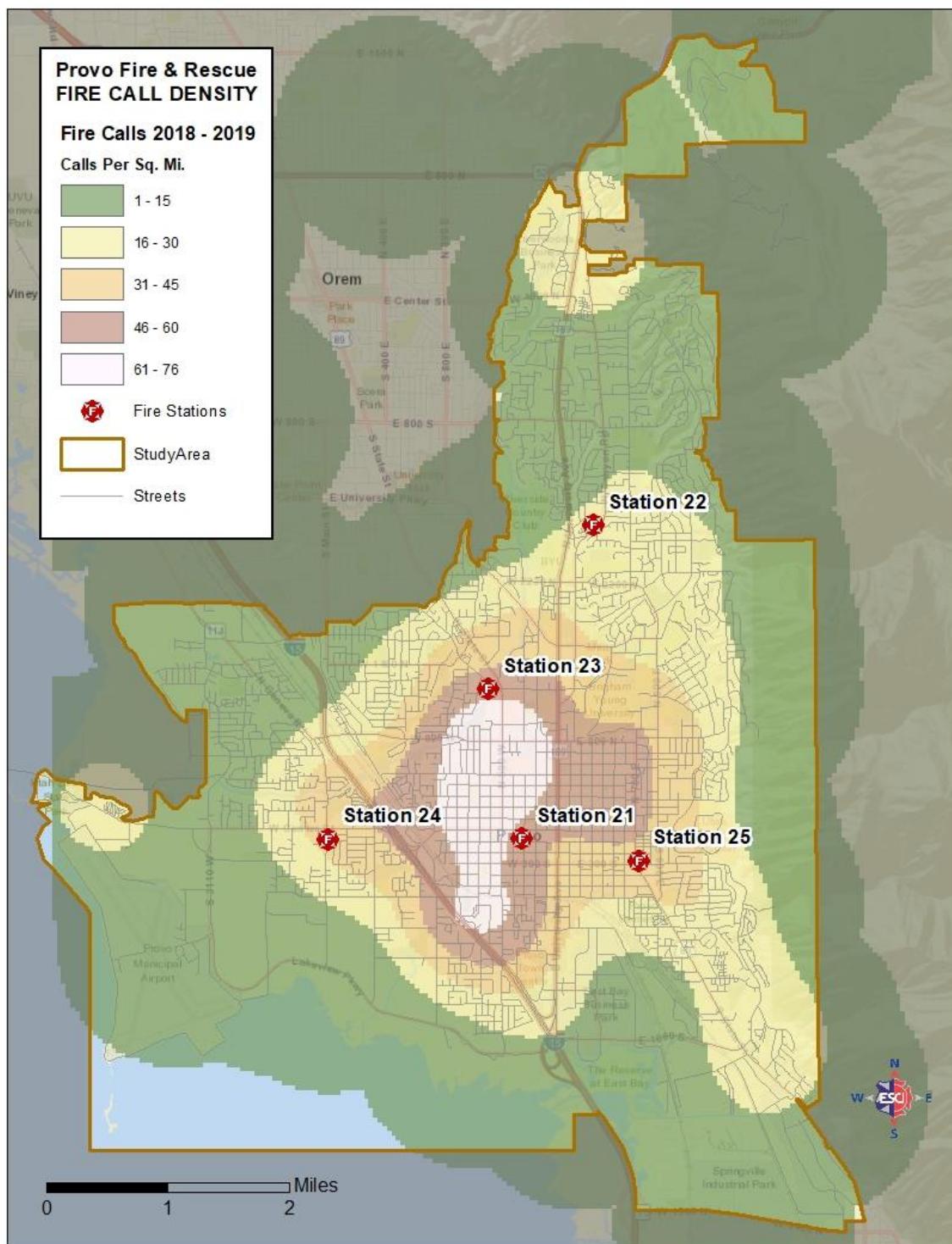
Figure 63: PFRD EMS Incidents per Square Mile (2018–2019)

Figure 64: PFRD Fire Incidents per Square Mile (2018–2019)

The spatial analysis for the Department includes not only the incident density but also the distribution of resources within the community. This distribution of resource analysis is compared to various industry standards.

ISO Distribution

The first standard related to the geographic distribution of resources is published by the Insurance Services Office (ISO). ISO is a national insurance industry organization that evaluates fire protection for communities across the country. ISO assesses all areas of fire protection as broken down into four major categories, including emergency communications, fire department, water supply, and community risk reduction. Following an on-site evaluation, an ISO rating, or specifically, a Public Protection Classification (PPC®) number is assigned to the community ranging from 1 (best protection) to 10 (no protection). The PPC® score is developed using the Fire Suppression Rating Schedule (FSRS), which outlines sub-categories of each of the major four categories, detailing the specific requirements for each area of evaluation.

A community's ISO rating is an important factor when considering fire station and apparatus concentration, distribution, and deployment due to its effect on the cost of fire insurance for the residents and businesses. To receive maximum credit for station and apparatus distribution, ISO evaluates the percentage of the community (contiguously built upon area) that is within specific distances of fire stations, central water supply access (fire hydrants), engine/pumper companies, and aerial/ladder apparatus.

Travel Distance from a Fire Station

ISO evaluates three different travel distance measures for each community. The first measure analyzed is the percentage of the service area that falls within a 1.5-mile travel distance of a fire station. The greater the percentage of service area within this distance, the greater the likelihood that fire department resources will arrive on the scene of an incident within a timely manner. As illustrated in the following figure, 60.7% of the PFRD service area falls within 1.5 miles of a fire station.

**Figure 65: PFRD 1.5-Mile Travel Distance per ISO Criteria**
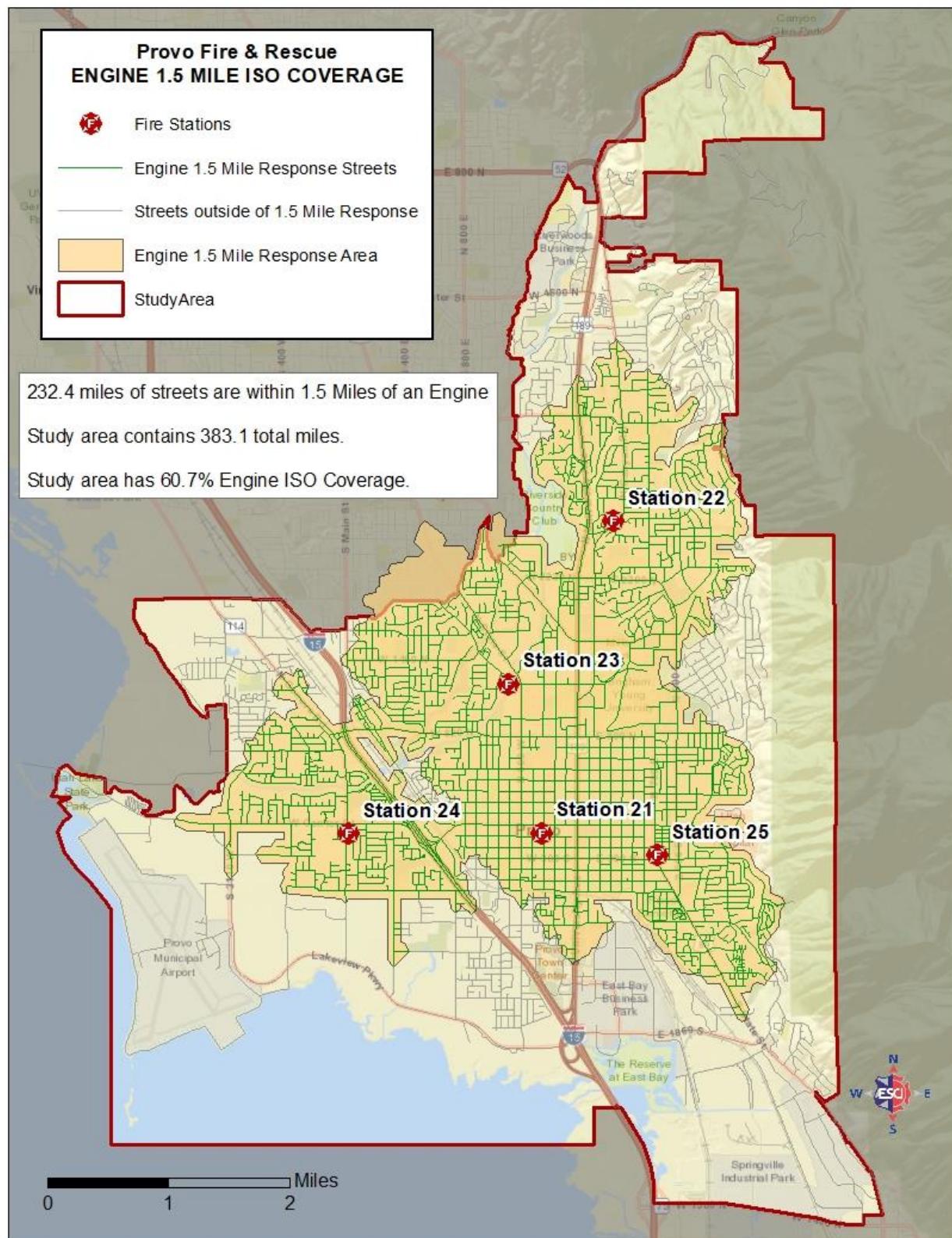
The second travel measure analyzed is the percentage of the service area that falls within a 2.5-mile travel distance of a station equipped with an aerial apparatus. PFRD has assigned aerial apparatus at Station 23 and Station 25. Response from these two locations provides aerial apparatus coverage within 2.5-miles to 63.2% of the service area, as illustrated in Figure 66.

Figure 66: 2.5-Mile Travel Distance per ISO Criteria
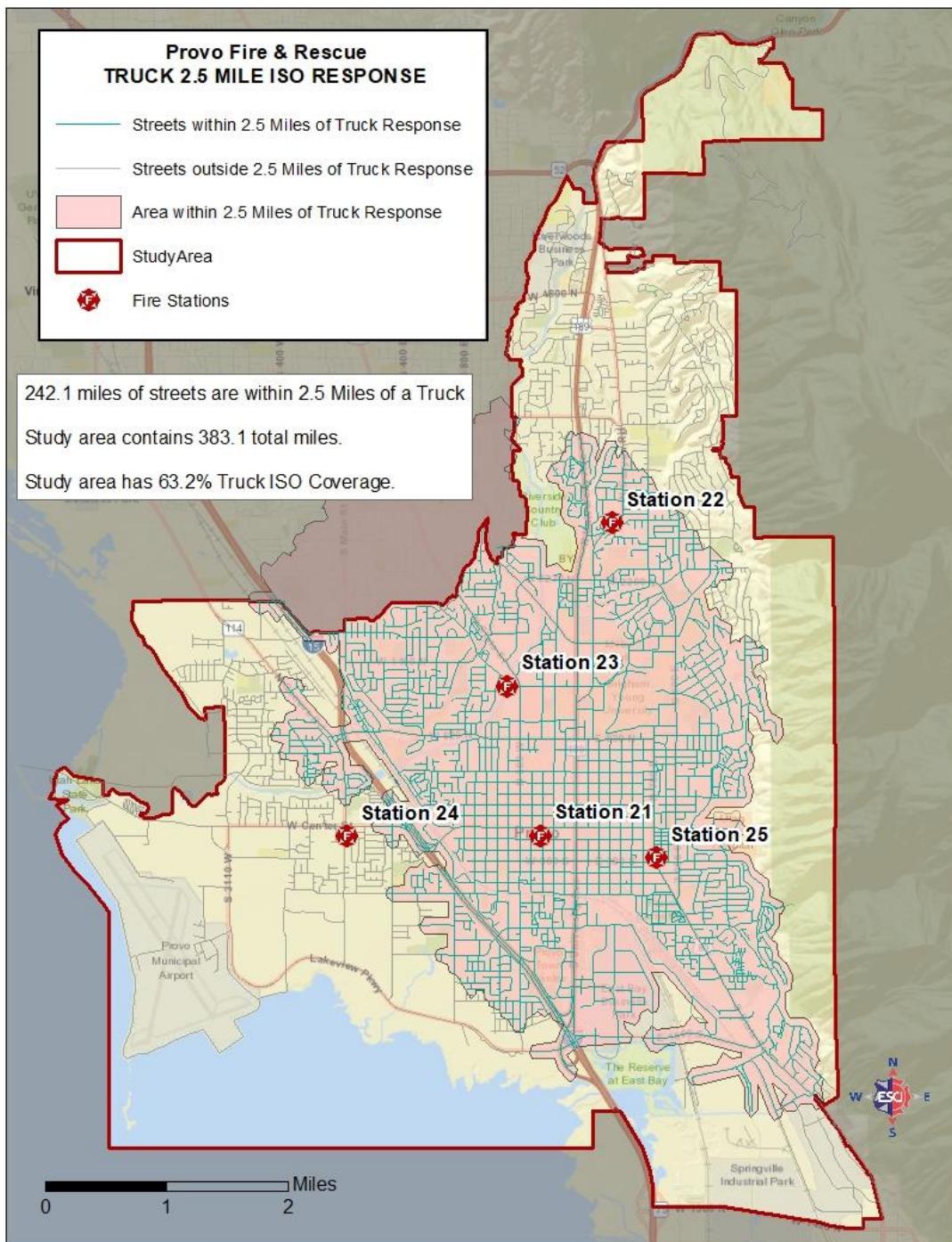
The final travel measure analyzed is the percentage of the service area that falls within a 5-mile travel distance of a station. As illustrated in Figure 67, PFRD has excellent coverage within this measure, with 97.1% of the service area falling within the 5-mile travel distance.

Figure 67: 5-Mile Travel Distance per ISO Criteria
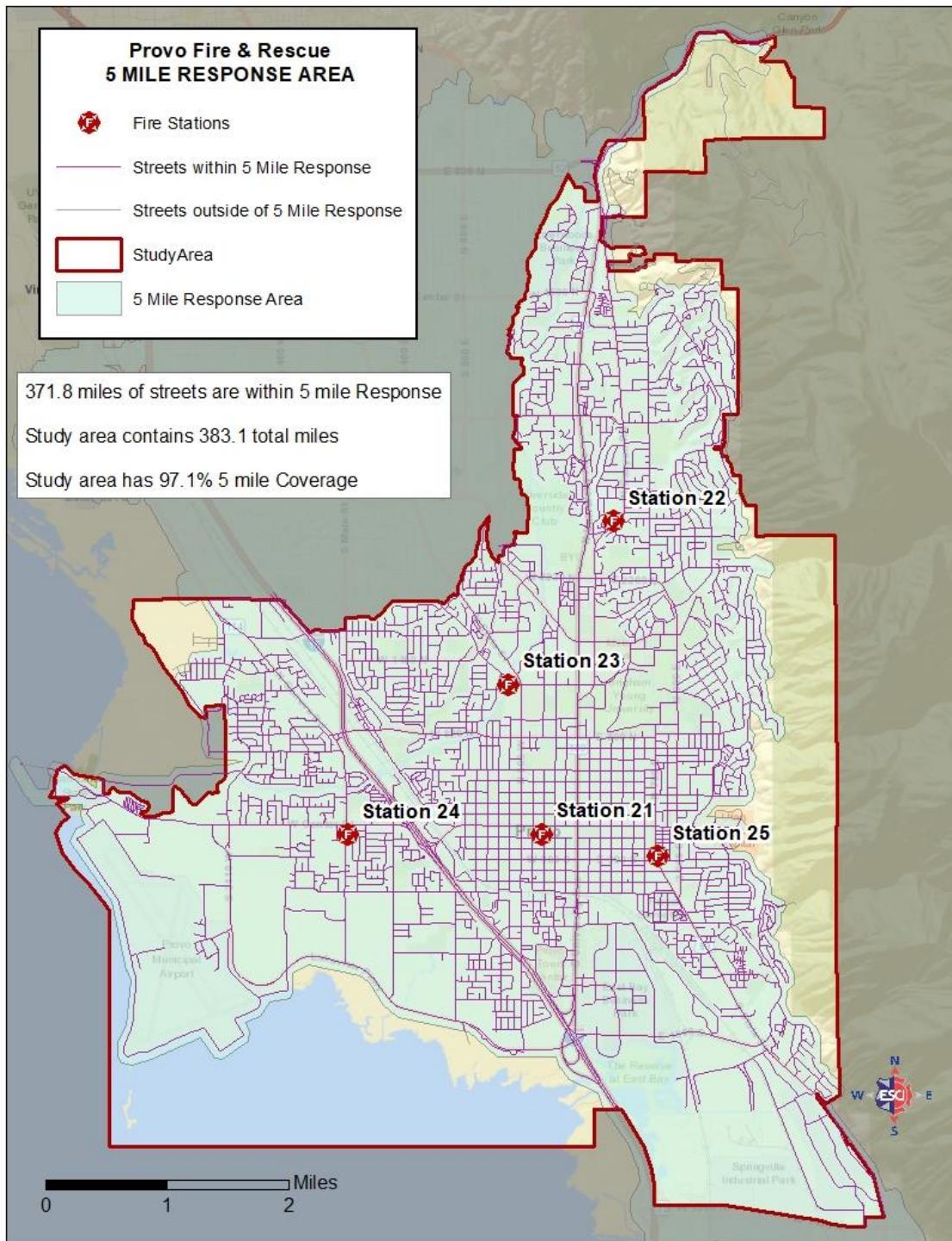
Water Supply Distribution

Another major component analyzed by ISO in developing the PPC rating for the community is the availability of a sufficient water supply, which is critical for the extinguishment of fires. Included in this evaluation are the geographic location and distribution of fire hydrants. Structures outside a 1,000-foot radius of a fire hydrant are subject to a lower Public Protection Classification® rating than areas with adequate hydrant coverage, thus signifying limited fire protection. Exceptions are made when a fire department can show that either a dry hydrant or a suitable water tanker operation is possible to provide the needed volume of water for fire suppression activities for a specific period. This is another measure where PFRD excels, with 93% of the service area falling within 5 miles of a hydrant, as illustrated in Figure 68.

Figure 68: Hydrant Coverage per ISO Criteria
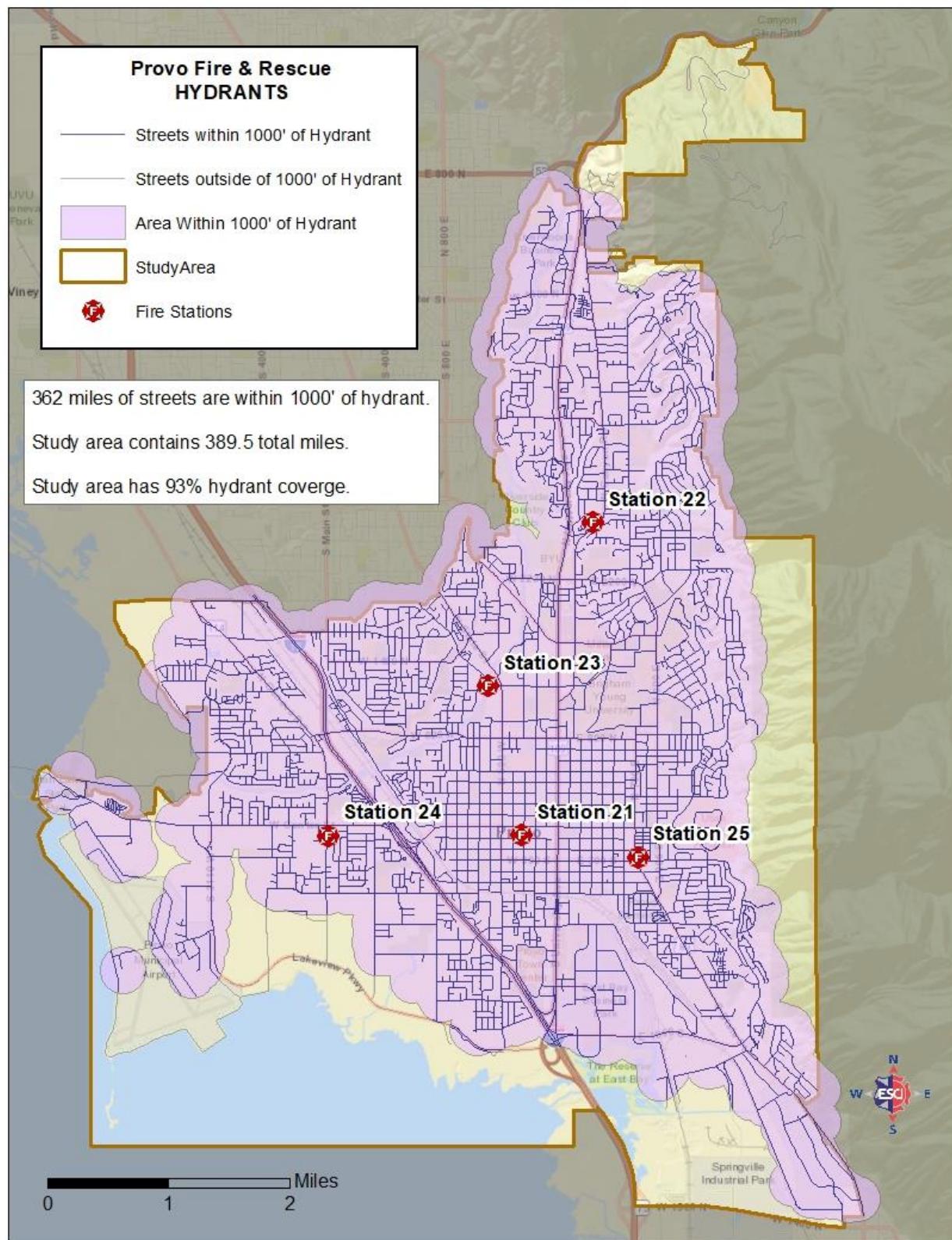
NFPA Distribution

National Fire Protection Association (NFPA) standards and the Center for Public Safety Excellence (CPSE) accreditation of fire departments both evaluate response time criteria to analyze resource distribution. For low/medium hazard incidents, the first unit should arrive within 4 minutes, and the full assignment should arrive within 8 minutes. Travel time is calculated using the posted speed limit and adjusted for negotiating turns, intersections, and one-way streets. As with the ISO distribution in the previous section, the distribution of resources to meet these standards increases the ability of the fire department to arrive on the scene in a timely manner and thus creates the opportunity to reduce injury/death of victims and damage to property. As illustrated in the figure below, PFRD meets the 4-minute and 8-minute criteria 72.7% and 96%, respectively.

Figure 69: 4-Minute/8-Minute Travel Time per NFPA Criteria
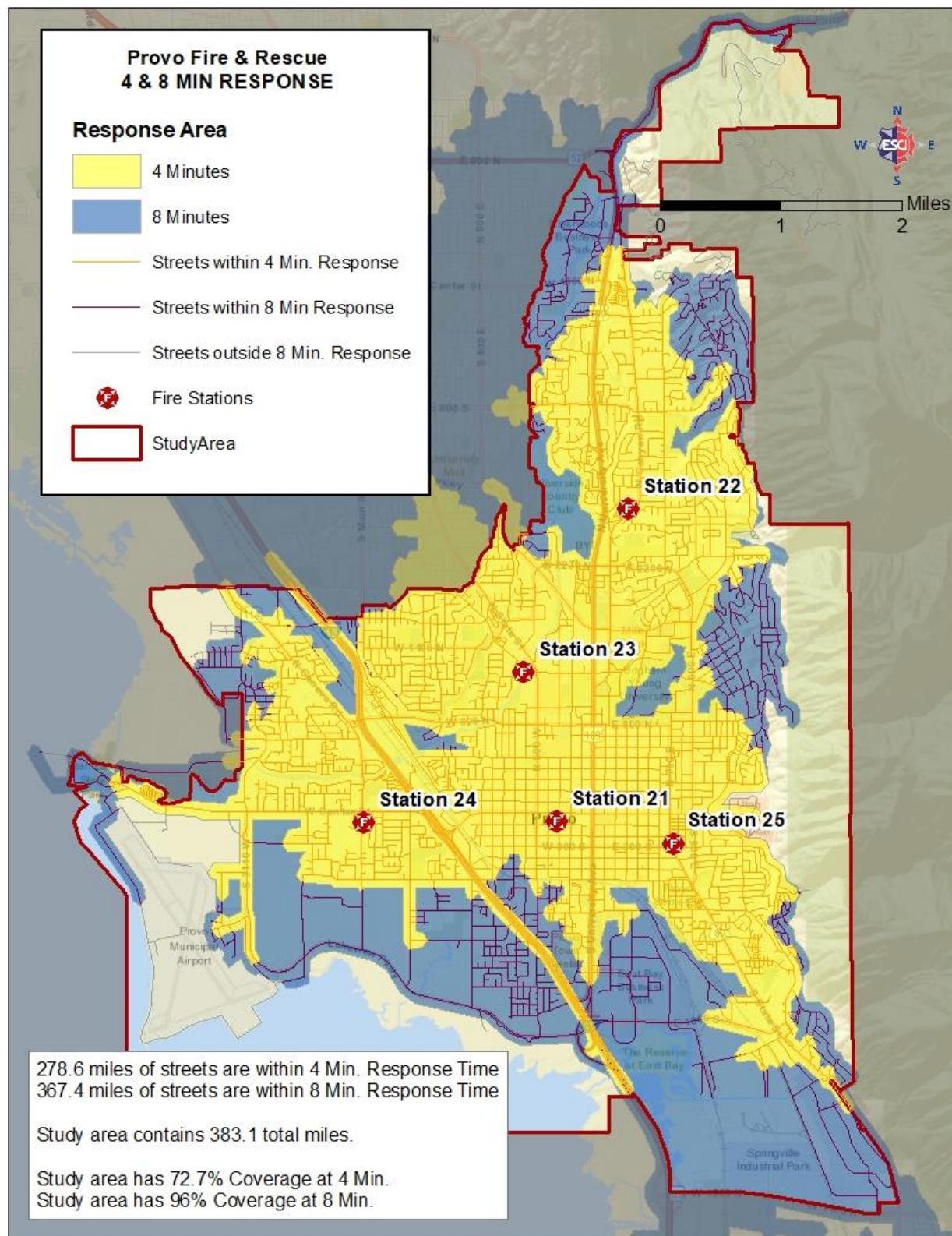
Population and Incident Workload Projection

To assist in projecting future emergency service demand, ESCI evaluated several factors that directly influence emergency workload activity. The most important factor is population growth, as EMS service demand is directly tied to the number of people living and working in a fire department's service area.

Future residential, business, and industrial developments are also important factors to consider in projecting future service demand, as additional build-out and in-fill, along with planned annexation expansion of the jurisdiction, can increase community risk and require additional resources and staff or redeployment of existing staff.

As noted previously in this report, Provo and the Provo-Orem metropolitan region has undergone significant population growth over the past several years, with Utah County identified as one of the top ten growing population areas in the United States, according to the U.S. Census Bureau. At the time of this study, the 2020 Census was underway, and officials are concerned about the impact of the COVID-19 pandemic on the census count, as many of the college students who would normally be counted in Utah County have gone home to their primary residences outside of the region.[23]

The following figure illustrates Provo's projected population through 2030. The population is forecast to grow to 120,609 by 2030, with an Upper Confidence Bound of 124,514 persons and a Lower Confidence Bound of 116,703 persons. The forecast adds approximately 3,300 new residents by 2030, which is an overall increase of 3.4%. Note, these projections are based on population estimates that started in 2011. The new 2020 Census may bring additional clarity and accuracy to the potential population changes over the next decade. These estimates do not account for any future annexations or large residential developments that may occur in the future.

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[23] Report: 3 Utah areas top nation in population growth, Associated Press, March 26, 2020.

Figure 70: Provo Population Forecast (2020–2030)
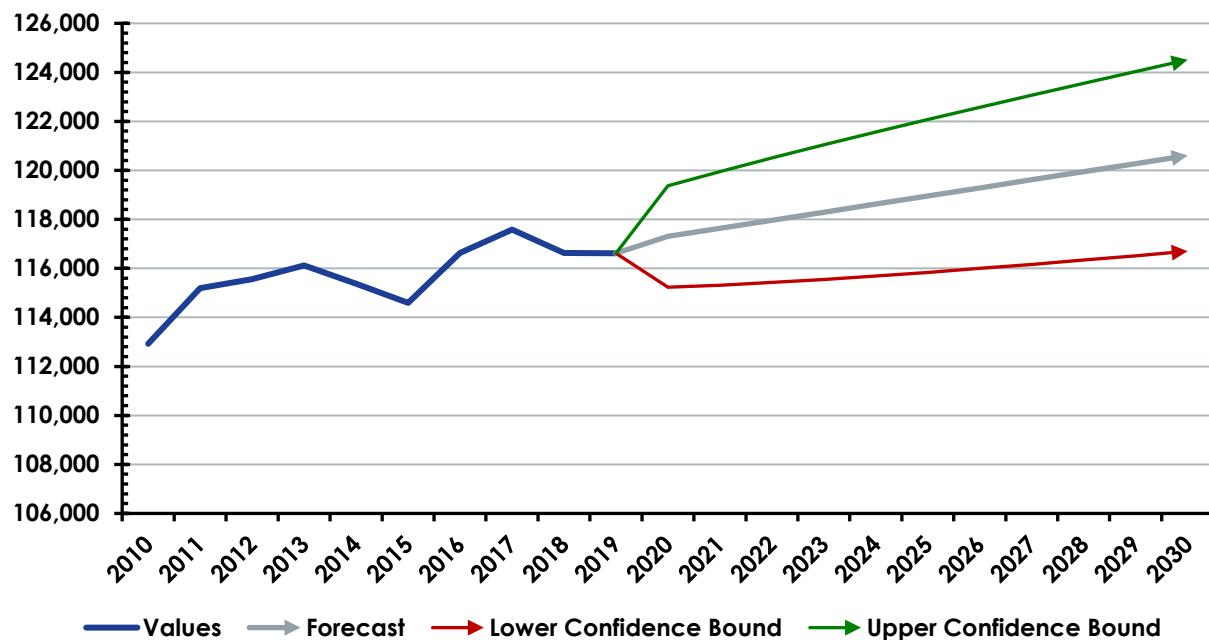
Residential, commercial, and industrial growth must also be considered in service delivery impact projections. It is no secret that Provo is one of the fastest-growing technology business communities in the United States, with almost 11% of the total workforce working in local technology industries.[24] Continued growth in these industries, along with job growth in education and health care occupations, results in more residents living in Provo and brings in a significant number of workers who commute from outside the city limits, increasing the transient population during the workweek. This dynamic also impacts demand for emergency services, especially during daylight hours during the workweek.

Interviews with the City's Development Services Department revealed that future planned growth and development will occur well into the foreseeable future. The significant growth is initially anticipated to occur mostly in three main areas:

1. West City Area
2. Downtown Core Redevelopment
3. Airport Expansion

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[24] Provo, Utah Boasts Nation's Fastest Growing Tech Employment, U.S. News and World Report, October 2, 2018.

In particular, residential development in the west side of the city is likely to occur within the next 2–3 years, upon lifting a development/building moratorium tied to completion of a significant upgrade to the City's wastewater treatment system. Many development and building permits on the City's west side have already been submitted to the City or approved.

West Provo Development

The City of Provo's Southwest Area Future Land Use map reveals that a significant amount of land is slated for future development in the area immediately east of the Provo Municipal Airport to the western edge of I-15. Of the total available acreage, approximately 1,000 acres are slated for development, with a potential of almost 4,000 housing units. The 2017 U.S. Census ACS five-year survey estimated that each Provo housing unit averages 3.2 residents per household, which would equate to approximately 12,800 residents moving into this area after full build-out. Additionally, approximately 430 additional acres are slated for airport/industrial support business development immediately surrounding the north and east side of the airport property, and another 78 acres of commercial development throughout the area.

Downtown Development

Over the past several years, significant redevelopment has been occurring in the downtown core, resulting in various levels of "gentrification" in the five downtown core neighborhoods. Much of this development resulted in the demolition of old occupancies or conversion into dense mixed-use commercial/residential properties, including apartments, condominiums, and small businesses. For example, a new mixed-use high-rise commercial and residential complex, called The Millrace at Provo Station, has been approved by the Provo Planning Commission. The complex will have a 13-story condominium tower and a 14-story office tower, along with adjacent commercial businesses. The complex is slated to have 436 residential units. According to the Development Services Department, developers are planning additional property conversions throughout the downtown area in the next several years, which will result in continued infill and higher population densities.

Airport Development

As previously noted, the Provo Municipal Airport is undergoing a significant expansion to accommodate additional commercial airline traffic. Four new passenger gates and related support facilities will be built over the next 2 to 3 years. City administrators project that the airport expansion will lead to additional industrial and hospitality business development immediately near the airport.

Service Delivery Projection

Given the population and growth projections previously discussed, ESCI estimates that the overall population could be upwards of 135,000 residents by the end of this decade. This estimate includes population increases resulting from the development of the west Provo area, the infill of new residents into the downtown core, and the estimated linear 3.4% overall population growth projection previously noted. In the following figure, ESCI estimated the potential incident rate increase based on the projected change in population.

Figure 71: Service Delivery Projection

2019 Population Estimate	2019 Incidents	2030 Population Projection	Estimated 2030 Incidents	Percentage Change
116,618	7,028	134,804	8,088	15%

Critical Tasking Assessment

Analysis of the critical tasking serves as the foundation of the deployment section of this report to encourage a stronger correlation between risk and resources. To determine this, ESCI reviewed the critical tasking to establish the personnel required to mitigate the incident. This is formally known as the *effective response force* (ERF). Additionally, the *reserve capacity* (RC) of the organization is determined by quantifying the remaining personnel available to respond to a concurrent incident(s). The following figure illustrates an example of critical tasking and personnel requirements for each fire risk category as recommended by NFPA 1710.

Figure 72: Critical Tasking & ERF for Fire Risk Categories

Task	Low-Risk (Dumpster Fire)	Moderate-Risk (House)	High-Risk (Apartment)	Extreme Risk (High-Rise)
Command	1	1	2	2
Apparatus Operator	1	1	2	1
Handlines (2 members on each)	2	4	6	4
Support Members	2	2	3	
Victim Search & Rescue Team		2	4	4
Ground Ladders/Ventilation		2	4	
Aerial Operator (if ladder used)		(1)	(1)	
Initial Rapid Intervention Team		4	4	
Initial Medical Care Component			2	
Building Fire Pump Monitor (if equipped)				(1)
Hoseline–Floor Above Fire				2
Rapid Intervention Team				4
Accountability Officers (fire floor & floor above)				4
Evacuation Management Teams				4
Elevator Operations Manager				1
Incident Safety Officer				1
Interior Staging Manager				1
Member Rehabilitation				2
Vertical Ventilation Crew				4
Lobby Control				1
Transport Equipment				2
External Base Operations				1
EMS Crews with Transport				4
Total Required:	**6**	**16 (17)**	**27 (28)**	**42 (43)**

Risk Assessment Methodology

In August 2020, ESCI analyzed information provided by the PFRD Fire Prevention Division, which was asked to identify and quantify fire response hazard risks in the City.

The Three-Axis Heron's Formula was used to calculate risk. This model was selected because it provided a more accurate means of communicating the organizational impact of the emergent responses. The formula considers the probability of occurrence, the severity of consequence, and the impact to fire department resources.[25]

Use of the Three-Axis Heron's Formula includes the following formula:

$$\text{Risk} = \sqrt{\frac{(PC)^2 + (CI)^2 + (IP)^2}{2}}$$

The risk is graphically illustrated through a three-axis model as follows:

- **P** = Probability (Y-Axis)
- **C** = Consequences (X-Axis)
- **I** = Impact (Z-Axis)

The *probability* of risk was determined through a discussion of PFRD's incident experience, including a review of incident records. The *consequences* to the community were determined through an evaluation of the incidents' impact on lives and property. The organizational *impact* was determined through a critical tasking and analysis of the PFRD personnel needed to mitigate the risk. The following figure illustrates the assessment model.

Figure 73: Risk Assessment Scoring Methodology

Score	Probability	Consequence	Impact
2	Rarely (annual or longer)	No life or property loss	< 4 personnel
4	Quarterly	Life or property impaired	4–7 personnel
6	Monthly	Life or property loss	8–11 personnel
8	Weekly	Loss > 1 life or property loss	12–17 personnel
10	Daily	Loss of > 3 lives or major building	> 17 personnel

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[25] Community Risk Assessment: Standards of Cover, 6th Edition. Center for Public Safety Excellence (2016).
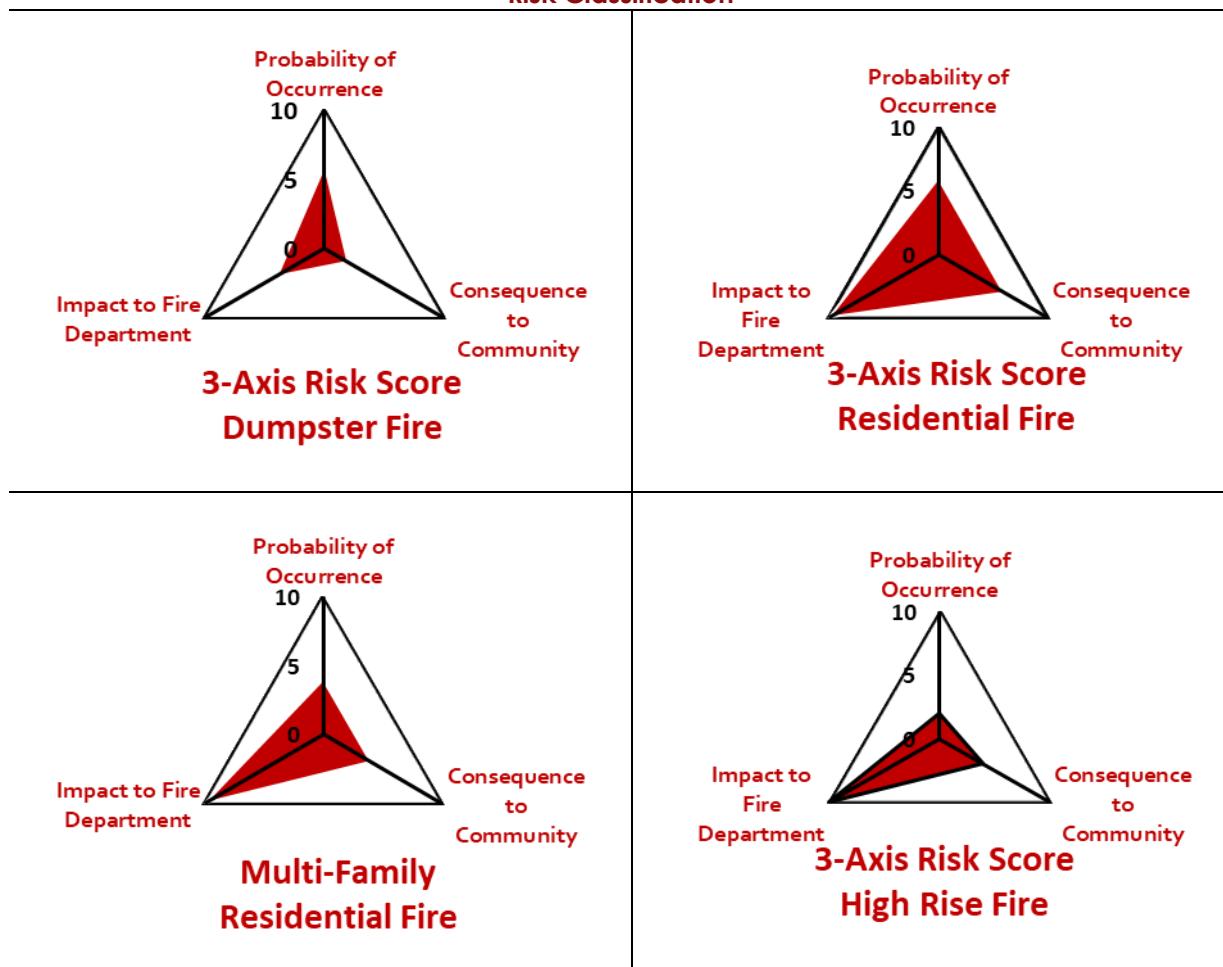
The PFRD is responsible for providing four major services that include (1) Fire Response, (2) Medical Response, (3) Rescue Response, and (4) Hazardous Materials Response. This risk assessment was applied to each of the aforementioned areas to calculate a risk category of (1) Low, (2) Moderate, (3) High, and (4) Extreme. The ranking scale was set to establish two (2) as the lowest score and ten (10) as the highest score to illustrate the risk score.

Fire Response

The PFRD mitigates a wide range of fire-related incidents, ranging from low-risk dumpster fires to the extreme risk associated with a high-rise fire. As was referenced previously, a standardized risk assessment scoring process was applied to a sample incident in each of the risk categories. The current daily Department operations staffing level is maintained to handle low and moderate fire risks. High and extreme risk fires will require additional resources and staff or aid from neighboring jurisdictions. The following figure illustrates the risks and illustrates the organizational and community impact during fire responses.

Figure 74: Fire Incident Risk Assessment

Description	Low			Moderate			High			Extreme		
Risk Score Range	0 to 24.99			25 to 49.99			50 to 69.99			70 to 100		
Incident Type:	Dumpster Fire			House Fire			Apartment Fire			High-Rise Fire		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	6	2	4	6	6	10	4	4	10	2	4	10
Score Assigned	19.79			65.17			41.56			32.14		
Max/Min Staffing	19		2	19		2	19		2	19		2
ERF Assigned:	3			15			15			15		
ERF Remaining:	16			4			4			4		

Risk Classification

3-Axis Risk Score
Dumpster Fire

3-Axis Risk Score
Residential Fire

Multi-Family
Residential Fire

3-Axis Risk Score
High Rise Fire

Medical Response

The PFRD is an EMS response and transport department. Almost all operations assigned personnel are trained to the EMT-Paramedic level. Positive outcomes of Myocardial Infarction (heart attack), stroke, cardiac arrest, and major trauma patients are heavily influenced by early detection, rapid response, fast application of definitive treatments, and rapid transport. The following figure illustrates the impact of various medical incident responses.

Figure 75: Medical Incident Risk Assessment

Description	Low			Moderate			High			Extreme		
Risk Score Range	0 to 24.99			25 to 49.99			50 to 69.99			70 to 100		
Incident Type:	Sick Person			Cardiac Arrest			MVC w/ 3 Patients			MCI		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	10	4	2	8	6	4	8	10	10	2	10	10
Score Assigned	32.12			44.18			106.77			73.48		
Max/Min Staffing	19		2	19		2	19		2	19		2
ERF Assigned:	3			5			9			15		
ERF Remaining:	16			14			10			4		

Risk Classification

3-Axis Risk Score
Sick Person

3-Axis Risk Score
Cardiac Arrest

3-Axis Risk Score
MVC with 3

3-Axis Risk Score
MCI
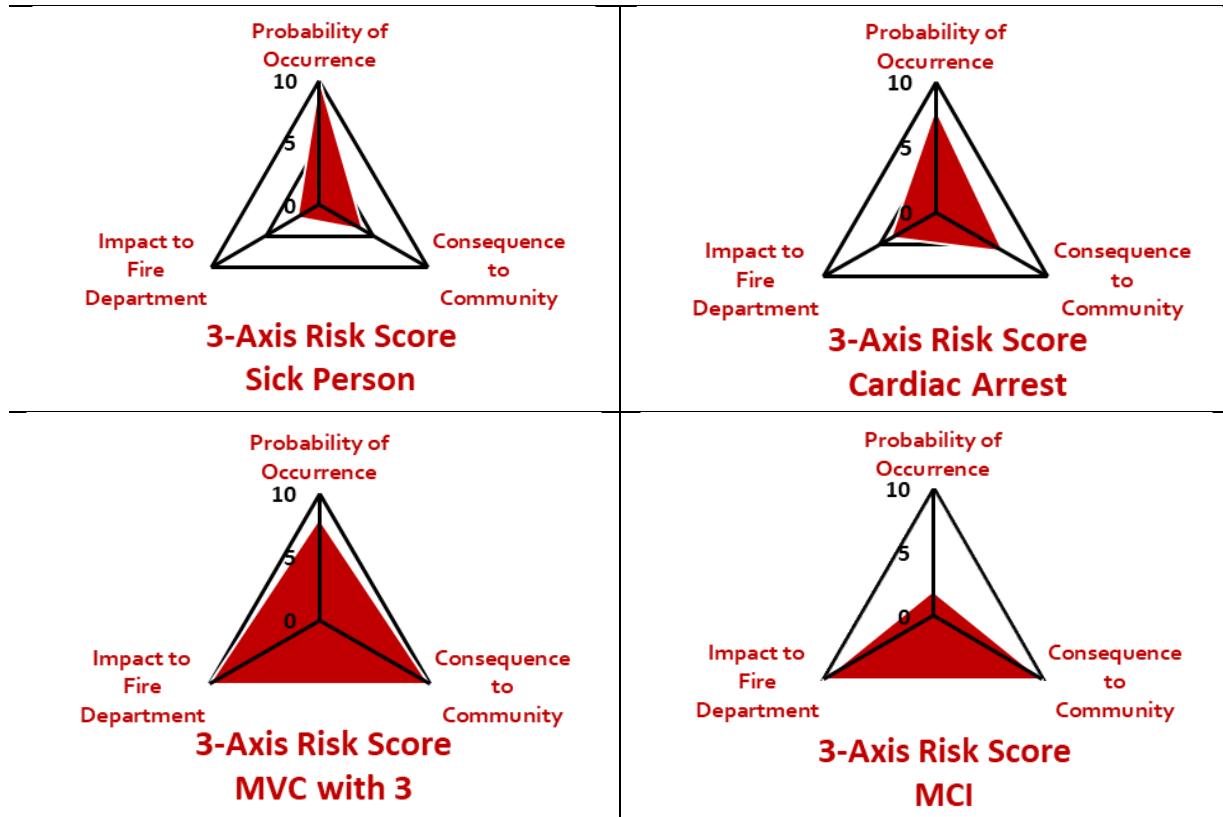
Rescue Response

The PFRD provides a wide range of technical rescue services, and is trained and equipped to manage low- to high-risk incidents that range from the routine elevator rescue to the more technical and resource-intensive confined space, swift water, and mountain rescues. The following figure highlights the rescue appraisal for each risk category.

Figure 76: Rescue Incident Risk Assessment

Description	Low			Moderate			High			Extreme		
Risk Score Range	0 to 24.99			25 to 49.99			50 to 69.99			70 to 100		
Incident Type:	**Elevator**			**MVC Extrication**			**Swift Water**			**Building Collapse**		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	8	2	4	6	4	6	2	10	10	2	7	5
Score Assigned	25.92			34.98			73.48			27.57		
Max/Min Staffing	19		2	19		2	19		2	19		2
ERF Assigned:	**3**			**9**			**15**			**15**		
ERF Remaining:	**16**			**10**			**4**			**4**		

Risk Classification

3-Axis Risk Score Elevator Rescue

3-Axis Risk Score MVC with Extrication

3-Axis Risk Score Technical Rescue

3-Axis Risk Score Technical Rescue
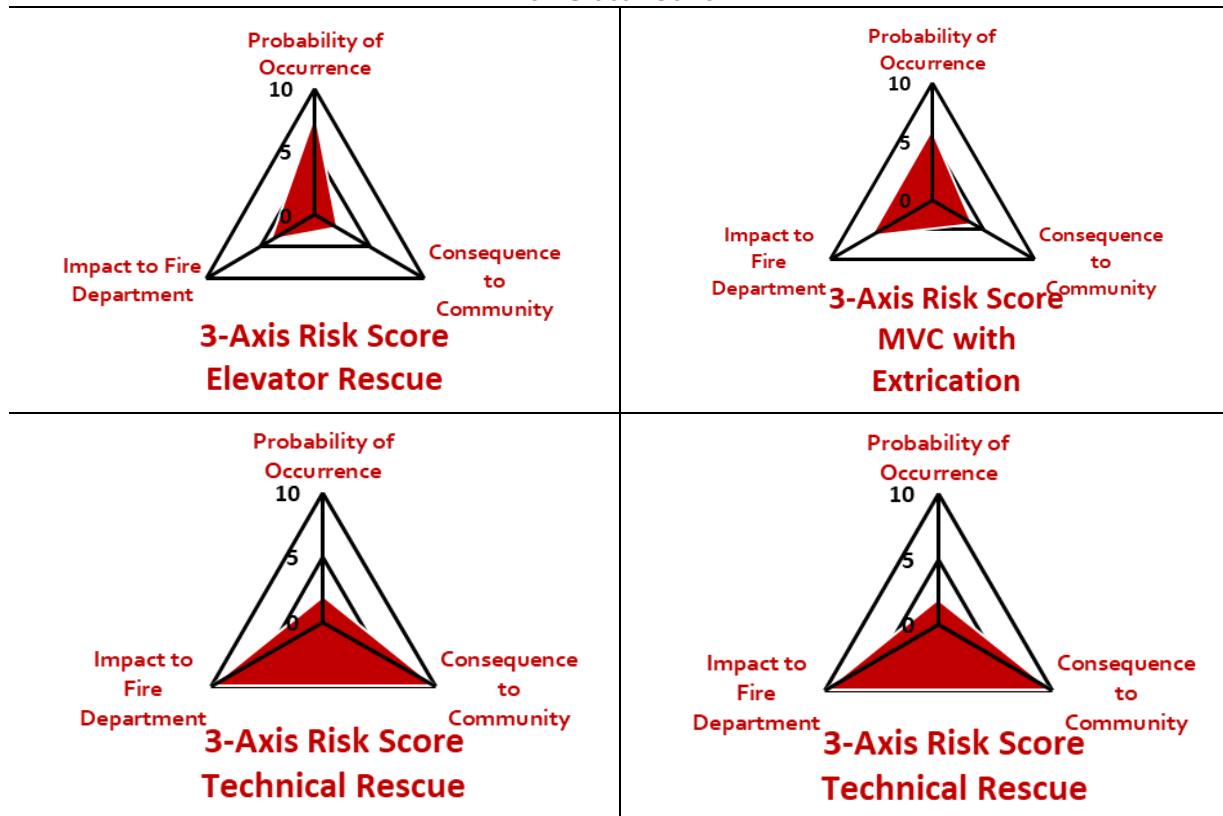
Hazardous Materials Response

As is common in the primary service area, hazardous materials responses range from the routine and low-risk fluid spill to the more extreme risk associated with a rail car incident involving unknown or dangerous commodities. In the early stages of a hazardous materials incident, it may be necessary to send additional PFRD resources to address life safety issues and coordinate mitigation efforts through specialized regional teams or private contractors as requested through the Utah County Sheriff's Emergency Services Division. The PFRD is trained and equipped to handle low to high-risk incidents. The following figure illustrates the risk matrix.

Figure 77: Hazardous Materials Incident Risk Assessment

Description	Low			Moderate			High			Extreme		
Risk Score Range	0 to 24.99			25 to 49.99			50 to 69.99			70 to 100		
Incident Type:	Fuel Spill			NG Gas Leak			18-Wheeler			Rail Car Incident		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	8	2	4	8	2	8	1	8	6	2	10	10
Score Assigned	25.92			48			34.66			73.48		
Max/Min Staffing	19		2	19		2	19		2	19		2
ERF Assigned:	3			4			15			15		
ERF Remaining:	16			15			4			4		

Risk Classification

3-Axis Risk Score
Fuel Spill

3-Axis Risk Score
Natural Gas Leak

3-Axis Risk Score
Tanker Truck Spill

3-Axis Risk Score
Rail Tank Car
Release
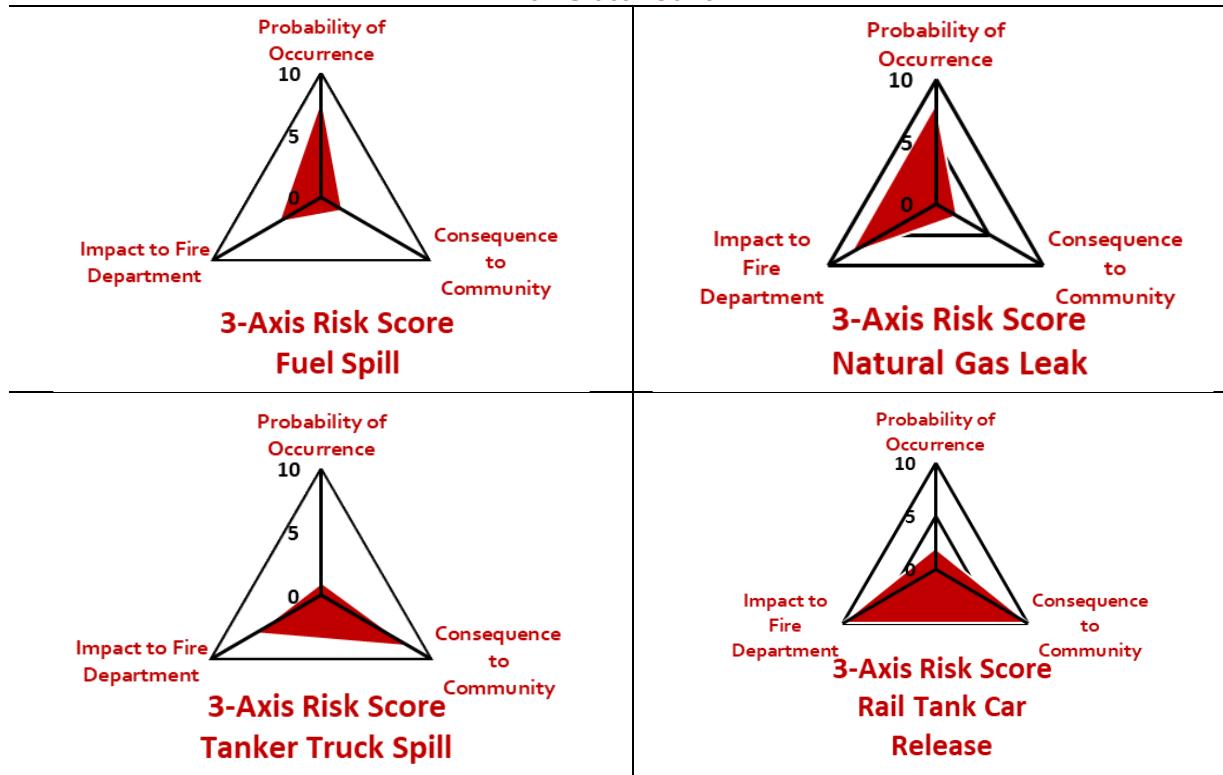
Summary Findings of the Community Risk Analysis

As noted in each of the various risk analysis, PFRD is configured and deployed to handle low to mid risk incident types. *Anything larger or more complex requires the deployment of additional resources through mutual aid or automatic aid agreements.* Further, this statement does not consider the impact of concurrent incidents, which can significantly diminish the Department's overall response capability and capacity at any given time.

ESCI understands the importance of balancing the ability to maintain an adequate emergency response capability for the most common incident types and the frequency in which they occur, within the constraints of available revenue streams and other City priorities. This Community Risk Assessment is ESCI's best attempt to objectively quantify these risks in a way that assists Department and City leadership in future planning to ensure adequate emergency response capacity and capability as the City continues to grow.

Historical System Performance

For most of the public, the measure of a fire department's performance is most often based on how fast and how many resources arrive on the scene. For the citizen calling for assistance, the time from the activation of 911 until the arrival of units is critical in mitigating the various risks analyzed in the preceding section. To accurately analyze and monitor response time performance, the various timestamps associated with the measures must be accurately recorded.

In analyzing response performance, ESCI generates percentile measurements of response time performance. The use of percentile measurements using the components of response time follows the recommendations of industry best practices, such as those noted in the Center for Public Safety Excellence (CPSE) Standards of Cover document and the National Fire Protection Association (NFPA) 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*.

The "average" percentile measure is a commonly used descriptive statistic, also called the mean of a data set. The most important reason for not using the average for performance standards is that it may not accurately reflect the performance for the entire data set and may be skewed by outliers, especially in small data sets. One extremely good or bad value can skew the average for the entire data set.

The "median" measure is another acceptable method of analyzing performance. This method identifies the value at the middle of a data set and thus tends not to be as strongly influenced by data outliers.

Fractile percentile measurements are a better measure of performance because they show that most of the data set has achieved a particular performance level. The 90th percentile means that 10% of the values are greater than the value stated, and all other data are at or below this level. This can be compared to the desired performance objective to determine the degree of success in achieving the goal.

It is important to keep in mind that each component of response performance is not cumulative. Each is analyzed as an individual component, and the point at which the fractile percentile is calculated exists in a set of data unto itself.

The *response time continuum*—the time between when the caller dials 911 and when assistance arrives—is comprised of several components:

- **Call Processing Time:** The time between a dispatcher receiving the call and the resources being dispatched.

- **Turnout Time:** The time between unit notification of the incident and when they are responding.

- **Travel Time:** The time the responding unit spends on the road to the incident.

- **Response Time:** A combination of turnout time and travel time, the most commonly used measure of fire department response performance.

- **Total Response Time:** The time from when the 911 call is answered until the dispatched unit arrives on the scene.

Figure 78: Response Time Components
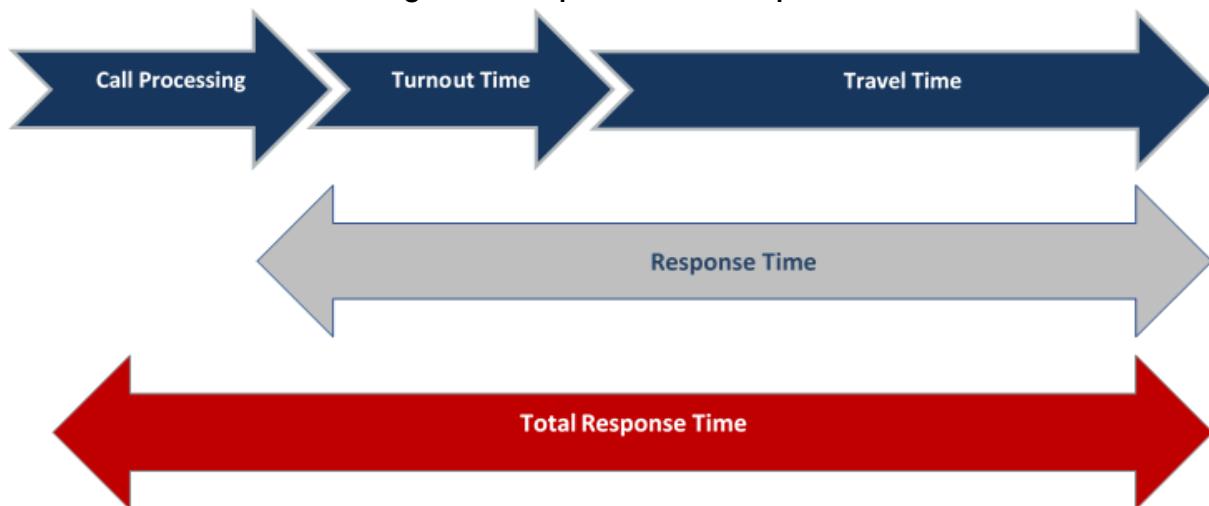
Total response time is the amount of time a resident or business waits for resources to arrive at the scene of an emergency, beginning when they first placed a 911 call. This process begins for the fire department once the appropriate unit is dispatched by the communications center. The NFPA standard for alarm handling and call processing is derived from NFPA 1221: *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* and provides for communication centers to have alarm handling time of not more than 15 seconds, 90% of the time and not more than 20 seconds, 95% of the time. Additionally, NFPA 1221 requires the processing of the call to occur within 64 seconds, 90% of the time for high-priority incidents. Similarly, NFPA 1710 requires the call processing time to be 60 seconds or less, 90% of the time, as does ISO.

Figure 79: NFPA 1710 Standards for Fire/EMS Responses

Response Interval	NFPA/CFAI Recommendations
Call Processing	60 seconds or less at 90% 90 seconds or less at 90% (EMS)
Turnout Time	60 seconds or less at 90% 80 seconds or less at 90% (Fire and Special Operations)
Travel Time	240 seconds

Tracking the individual components of response time enables jurisdictions to identify deficiencies and areas for improvement. In addition, knowledge of current performance for the components previously described is an essential element of developing response goals and standards that are relevant and achievable. Fire service best practice documents recommend that fire jurisdictions monitor and report the components of total response time.[26]

Provo Fire & Rescue Data Issues

The two primary sources of incident data provided by PFRD to ESCI were exported from the computer-aided dispatch (CAD) system and ImageTrend®. The following issues were identified and impacted ESCI's ability to accurately and completely assess the various response time components and effective response force performance.

- CAD records are purged regularly and did not contain all the timestamps needed for an accurate analysis.

- The documentation of timestamps in ImageTrend did not appear to occur consistently.

- The documentation of unit ID in ImageTrend did not appear to occur consistently.

- The incident numbers in the fire portion of ImageTrend did not match the incident numbers in the EMS portion of ImageTrend.

- Responses were not consistently coded as emergency/non-emergency. Response time performance analysis generally includes only emergency responses. As a result, ESCI included *all* incidents in this analysis.

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[26] *NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, Center for Public Safety Excellence Community Risk Assessment: Standards of Cover, 6th Edition.*

These issues prevented ESCI from performing even a basic analysis of the Department's response time performance. If the above issues are corrected in the future, the Department should implement data quality improvement measures to monitor and ensure accurate and detailed data entry into the RMS.

Concentration and Effective Response Force Capability Analysis

The ability to safely take action at a scene is impacted by the number of personnel that can arrive on the scene within a reasonable amount of time—referred to as "effective response force." The following figure illustrates examples of the number of personnel needed to handle structural fires in various sizes of buildings.

Figure 80: Recommended Initial First Alarm Assignment[27]

Functions/Tasks	Single-Family Residence (2,000 SF)	Open Air Strip Shopping Center (13,000–196,000 SF)	3-Story Garden Apartment (1,200 SF)
Command	1	2	2
Apparatus Operator	1	2	2
Handlines (2 members each)	4	6	6
Support Members	2	3	3
Victim Search and Rescue team	2	4	4
Ground Ladders/Ventilation	2	4	4
Aerial Device Operator (if ladder used)	(1)	(1)	(1)
Initial Rapid Intervention Team	4	4	4
Initial Medical Care Component	N/A	2	2
Total	**16 (17)**	**27 (28)**	**27 (28)**

The ability to assemble an effective response force is impacted by the geographical location of resources in relation to the incident. The following figure illustrates the theoretical effective response force analysis for PFRD and is based on units being at the station when the incident is dispatched.

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[27] NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*; and the Commission on Fire Accreditation (CFAI) Standards of Cover, 6th Edition.

Figure 81: Effective Response Force Coverage (8-Minute)
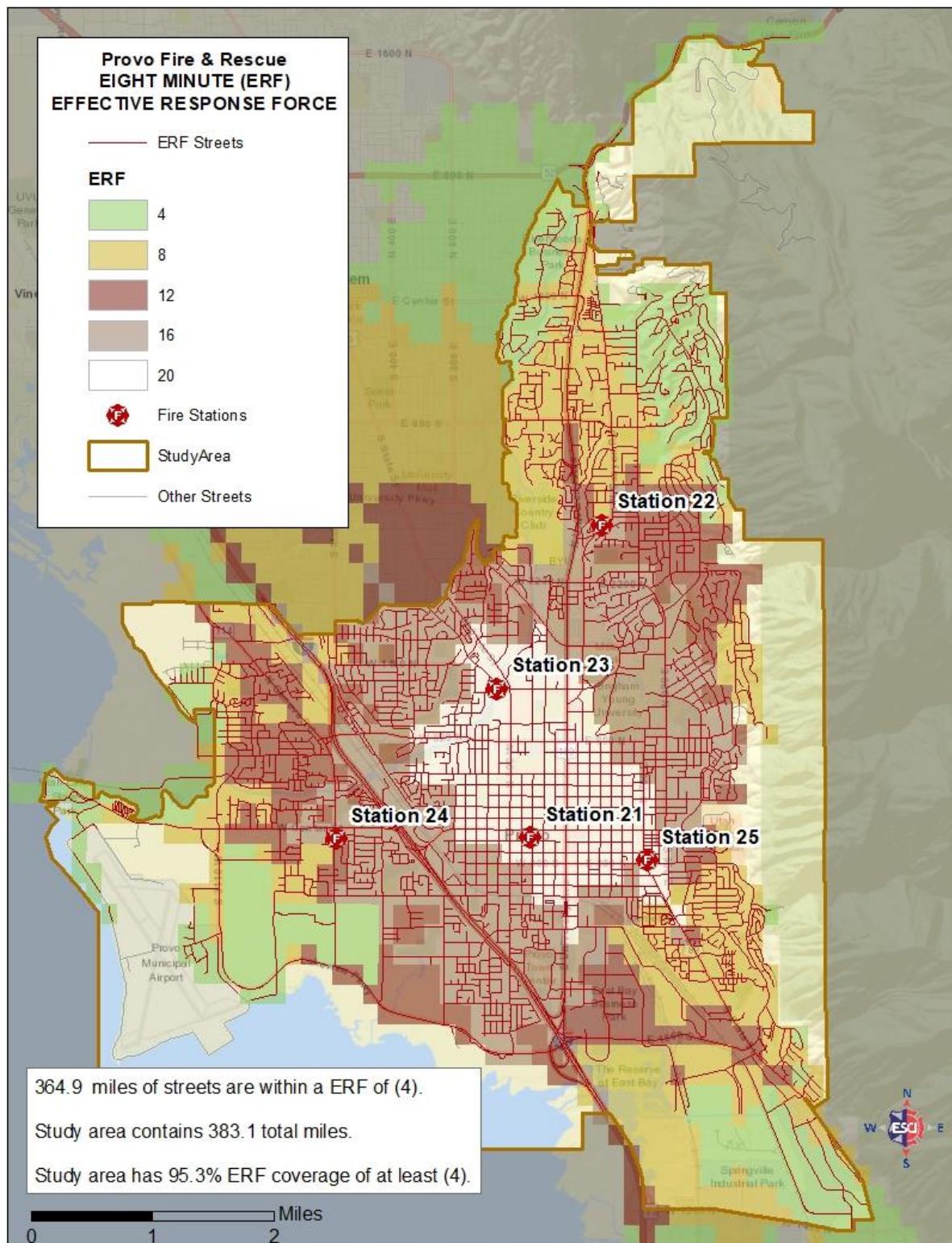
Not surprisingly, PFRD's stations and resources are deployed to provide the greatest ERF coverage to the area of the city with the densest population and built environment.

Incident Concurrency

The ability to effectively provide service to the community is also impacted by the number of incidents occurring simultaneously. This is referred to as "concurrency," and while there is no specific standard related to it, from a logical standpoint, the greater number of incidents occurring at the same time requires a greater number of resources to respond to those incidents. As the volume of concurrent incidents increases, the primary agency relies more on automatic aid and mutual aid resources and may see diminished total response time performance. As illustrated in the next figure, concurrency for PFRD is relatively low, with 98.69% falling within three incidents or less.

Figure 82: PFRD Incident Concurrency, 2017–2019

	Single Incident	Two Incidents	Three Incidents	Four Incidents	Five Incidents	More than Five Incidents
■ 2017	62.93%	28.67%	6.84%	1.43%	0.14%	0.00%
■ 2018	64.69%	28.31%	6.08%	0.81%	0.09%	0.02%
■ 2019	59.82%	31.59%	7.14%	1.36%	0.07%	0.01%
■ Average	62.48%	29.52%	6.69%	1.20%	0.10%	0.01%
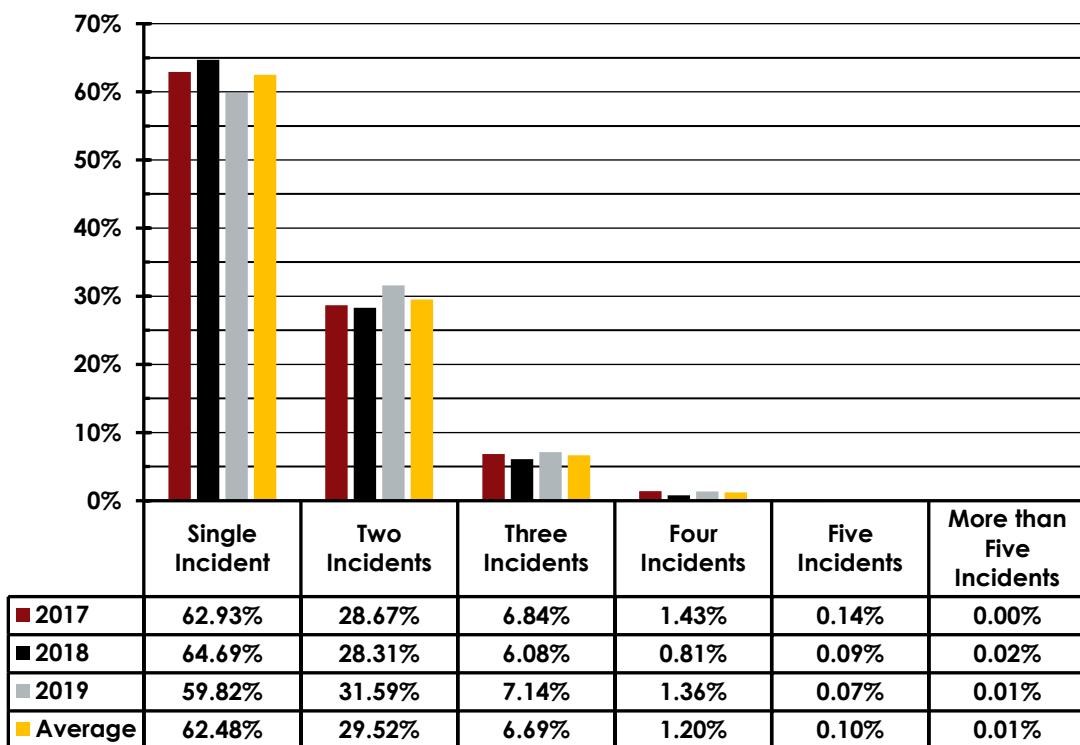
Performance Objectives & Measures

Dynamics of Fire in Buildings

Most fires within buildings develop predictably unless influenced by highly flammable material. Ignition, or the beginning of a fire, starts the sequence of events. It may take several minutes or even hours from the time of ignition until a flame is visible. This smoldering stage is very dangerous, especially during times when people are sleeping, because large amounts of highly toxic smoke may be generated during this phase.

Once flames do appear, the sequence continues rapidly. Combustible material adjacent to the flame heat and ignite, which, in turn, heats and ignites other adjacent materials if sufficient oxygen is present. As the objects burn, heated gases accumulate at the ceiling of the room. Some of the gases are flammable and highly toxic.

The spread of the fire from this point continues quickly. Soon, the flammable gases at the ceiling, as well as other combustible material in the room of origin, reach ignition temperature. At that point, an event termed "flashover" occurs; the gases and other material ignite, which, in turn, ignites everything in the room. Once flashover occurs, damage caused by the fire is significant, and the environment within the room can no longer support human life. Flashover usually occurs about five to eight minutes from the appearance of a flame in typically furnished and ventilated buildings. Because flashover has such a dramatic influence on the outcome of a fire event, the goal of any fire agency is to apply water to a fire before flashover occurs.

Although modern codes tend to make fires in newer structures more infrequent, today's energy-efficient construction (designed to hold heat during the winter) also tends to confine the heat of a hostile fire. In addition, research has shown that modern furnishings generally ignite more quickly and burn hotter (due to synthetics). In the 1970s, scientists at the National Institute of Standards and Technology found that after a fire broke out, building occupants had about 17 minutes to escape before being overcome by heat and smoke. Today, that estimate is as short as three minutes. The necessity of effective early warning (smoke alarms), early suppression (fire sprinklers), and firefighters arriving on the scene of a fire in the shortest span of time is more critical now than ever.

The prompt arrival of at least four personnel is critical for structure fires. Federal regulations (CFR 1910.120) require that personnel entering a building involved in fire must be in groups of two. Further, before personnel can enter a building to extinguish a fire, at least two personnel must be on scene and assigned to conduct search and rescue in case the fire attack crew becomes trapped. This is referred to as the two-in, two-out rule.

However, if it is known that victims are trapped inside the building, a rescue attempt can be performed without additional personnel ready to intervene outside the structure. Further, there is no requirement that all four arrive on the same response vehicle. Many fire departments rely on more than one unit arriving to initiate an interior fire attack.

Perhaps as important as preventing flashover is the need to control a fire before it does damage to the structural framing of a building. Materials used to construct buildings today are often less fire-resistive than the heavy structural skeletons of older frame buildings. Roof trusses and floor joists are commonly made with lighter materials that are more easily weakened by the effects of fire. "Lightweight" roof trusses fail after five to seven minutes of direct flame impingement. Plywood I-beam joists can fail after as little as three minutes of flame contact. This creates a dangerous environment for firefighters.

In addition, the contents of buildings today have a much greater potential for heat production than in the past. The widespread use of plastics in furnishings and other building contents rapidly accelerates fire spread and increases the amount of water needed to control a fire effectively. All of these factors make the need for early application of water essential to a successful fire outcome.

The following figure illustrates the sequence of events during the growth of a structure fire over time.

Figure 83: Fire Growth vs. Reflex Time
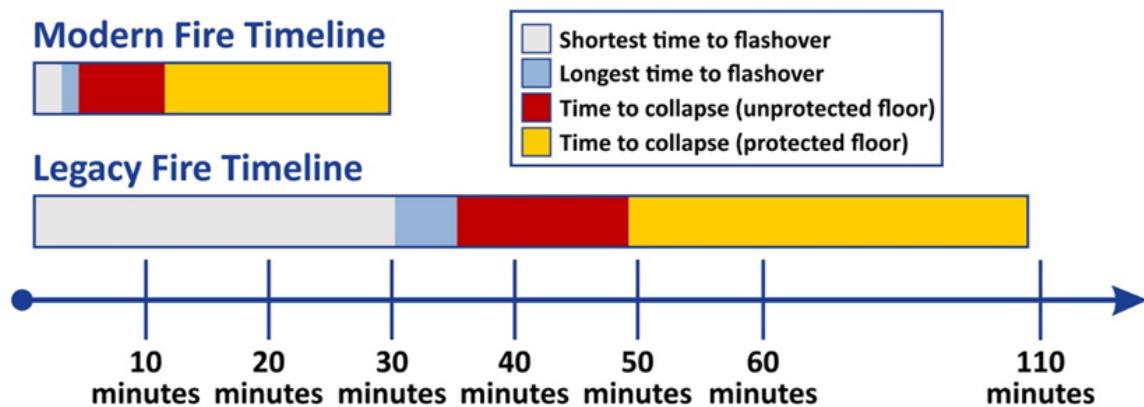
Source: Underwriters Laboratories

As is apparent by this description of the sequence of events, the application of water in time to prevent flashover is a serious challenge for any fire department. It is critical, though, as studies of historical fire losses can demonstrate.

The National Fire Protection Association found that fires contained to the room of origin (typically extinguished prior to or immediately following flashover) had significantly lower rates of death, injury, and property loss when compared to fires that had an opportunity to spread beyond the room of origin (typically extinguished post-flashover). As evidenced in the following figure, fire losses, casualties, and deaths rise significantly as the extent of fire damage increases.

Figure 84: Fire Extension in Residential Structures—United States, 2011–2015

	Rates per 1,000 Fires		
Extension	Civilian Deaths	Civilian Injuries	Average Dollar Loss Per Fire
Confined to room of origin or smaller	1.8	24.8	$4,200
Confined to floor of origin	15.8	81.4	$36,300
Confined to building of origin or larger	24.0	57.6	$67,600

Emergency Medical Event Sequence

Cardiac arrest is the most significant life-threatening medical event in emergency medicine today. A victim of cardiac arrest has mere minutes in which to receive lifesaving care if there is to be any hope for resuscitation. The American Heart Association (AHA) issued a set of cardiopulmonary resuscitation guidelines designed to streamline emergency procedures for heart attack victims and to increase the likelihood of survival. The AHA guidelines include goals for the application of cardiac defibrillation to cardiac arrest victims. Cardiac arrest survival chances fall by 7 to 10% for every minute between collapse and defibrillation. Consequently, the AHA recommends cardiac defibrillation within five minutes of cardiac arrest.

As with fires, the sequence of events that lead to emergency cardiac care can be graphically illustrated, as in the following figure.

Figure 85: Cardiac Arrest Event Sequence
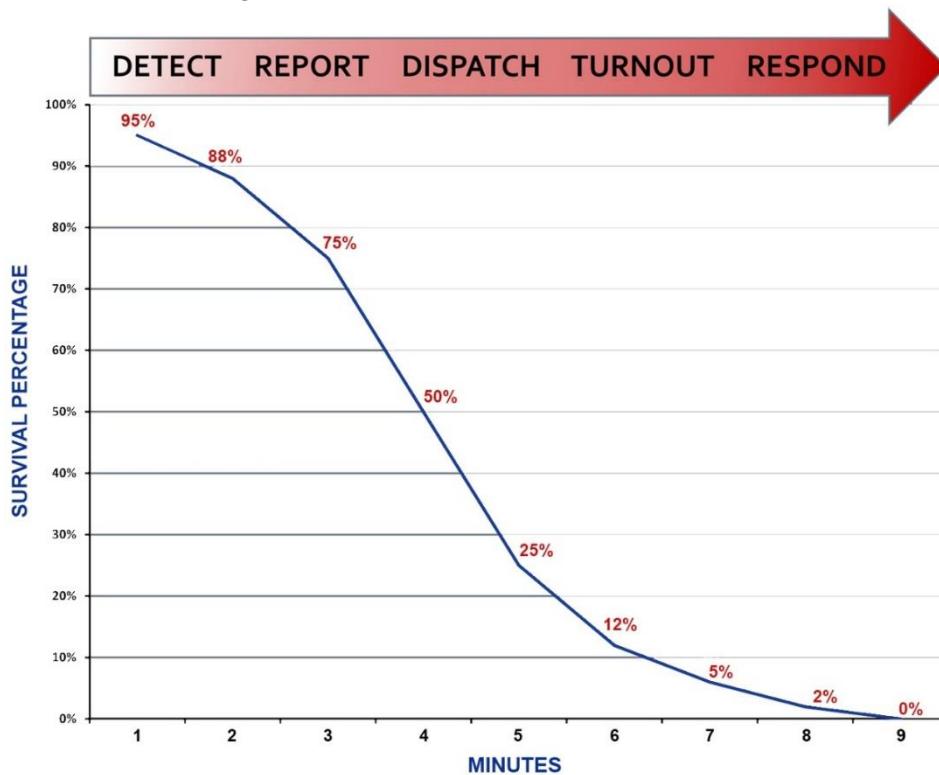
The percentage of opportunity for recovery from cardiac arrest drops quickly as time progresses. The stages of medical response are very similar to the components described for a fire response. Recent research stresses the importance of rapid cardiac defibrillation and administration of certain medications as a means of improving the opportunity for successful resuscitation and survival.

People, Tools, and Time

Time matters a great deal in the achievement of an effective outcome to an emergency event. Time, however, is not the only factor. Delivering sufficient numbers of properly trained, appropriately equipped personnel within the critical time period completes the equation.

For medical emergencies, this can vary based on the nature of the emergency. Many medical emergencies are not time-critical. However, for serious trauma, cardiac arrest, or conditions that may lead to cardiac arrest, a rapid response is essential.

Equally critical is delivering enough personnel to the scene to perform all of the concurrent tasks required to deliver quality emergency care. For a cardiac arrest, this can be up to six personnel; two to perform CPR, two to set up and operate advanced medical equipment, one to record the actions taken by emergency care workers, and one to direct patient care.

Thus, for a medical emergency, the real test of performance is the time it takes to provide the personnel and equipment needed to deal effectively with the patient's condition, not necessarily the time it takes for the first person to arrive.

Fire emergencies are even more resource critical. Again, the true test of performance is the time it takes to deliver sufficient personnel to initiate the application of water to a fire. This is the only practical method to reverse the continuing internal temperature increases and ultimately prevent flashover. The arrival of one person with a portable radio does not provide fire intervention capability and should not be counted as "arrival" by the fire department.

Performance Benchmarks

As noted previously, ESCI attempted to identify the historical response time performance in the PFRD service area. However, inconsistent and missing incident data hampered the ability to accurately quantify and assess the Department's performance in the various response time components of Call Processing Time, Turnout Time, Travel Time, Response Time, Total Response Time, and historical effective response force arrival times.

As a result, ESCI is unable to provide observations or example benchmarks on overall response times consistent with NFPA 1710.

Overview of Compliance Methodology

The preceding sections of this report attempted to provide a detailed analysis of the historical performance of the Provo Fire & Rescue. As noted, significant improvements in data collection and analysis is needed to accurately establish a baseline of response performance to identify and implement necessary improvements and modifications. Once done, a continued analysis should be performed on a routine basis.

PFRD should commit to a continual process of analyzing and evaluating actual performance against the adopted Standards of Cover and should improve the data collection procedures of field operations personnel. A periodic review of the Department's records management system reports will be necessary to ensure compliance and reliability of data.

Accountability & Responsibility

In accordance with the requirements set forth within the Center for Public Safety Excellence (CPSE) *Community Risk Assessment: Standards of Cover* (CRA-SOC), 6th Edition, PFRD is responsible for the creation of a compliance team to ensure that the CRA-SOC is maintained as a "living document" that is continually referenced, reviewed, and updated.

ESCI recommends that PFRD comprise a compliance team of the Fire Chief, Deputy Fire Chief, Emergency Manager, Fire Marshal, GIS Analyst, Administrative Assistant, and at least three members from the officer and firefighter ranks to represent each shift.

Quality Assurance & Improvement Compliance Model

As is evidenced within this CRA-SOC report, a formal process was used to assess organizational capabilities and deployment as it pertains to risks within the Provo community. ESCI has referenced a six-step compliance model and included it within this report to assist PFRD in meeting current and future needs within the community. The following outlines the key tenets of an effective compliance model:

Figure 86: Compliance Model

Step 1: Establish/Review Performance Measures

Once the recording of PFRD incident data is accurately and completely implemented, the Department should conduct a full review of the performance measures every five years. At a minimum, this process should:

- Identify service levels provided
- Define levels of risk
- Categorize levels of risk
- Develop performance measures and objectives:
  - By incident type
  - By geographic demand zone
  - Distribution (first on scene)
  - Concentration (arrival of full first alarm)

Step 2: Evaluate Performance

Performance measures are applied to actual services provided:

- System level
- First due area level
- Unit level
- Full effective response force (ERF)

Step 3: Develop Compliance Strategies

Determine issues and opportunities:

- Determine what needs to be done to close identified gaps between goals and actual performance
- Seek alternative methods to provide service at desired levels
- Determine if resources can or should be reallocated
- Develop budget estimates as necessary
- Seek additional funding commitment as necessary

Step 4: Communicate Expectations to Organization and Stakeholders

Communicate expectations:

- Explain the method of measuring compliance to personnel who are expected to perform the services
- Provide feedback mechanisms
- Define the consequences of noncompliance

Train personnel:

- Provide appropriate levels of training/direction for all affected personnel
- Communicate consequences of noncompliance
- Modify (remediate) internal processes, application systems, and technical infrastructure as necessary to comply

Step 5: Validate Compliance

Develop and deploy verification tools and/or techniques that can be used by divisions of the organization on an ongoing basis to verify that they are meeting the requirements:

- Monthly evaluation:
  - Performance by unit
  - Overall performance
  - Review of performance by division
- Quarterly evaluation:
  - Performance by unit
  - Performance by first due
  - Overall performance
  - Review of performance by executive management

Step 6: Make Adjustments/Repeat Process

Review changes to ensure that service levels have been maintained or improved. Develop and implement a review program to ensure ongoing compliance:

- Annual review & evaluation
  - Performance by unit
  - Performance by first due
  - Overall performance
  - Review of performance by governing body
  - Adjustment of performance standards by governing body as necessary
- Five-year update of Standards of Cover
  - Performance by unit
  - Performance by first due
  - Full effective response force
  - Overall performance
  - Adoption of performance measures by the governing body
  - Establish management processes to deal with future changes in the PFRD's service area.

Future Fire Station Location Considerations

As noted previously in this report, significant growth and development are anticipated soon in the south and west areas of the City, along with continued infill and gentrification in the downtown core. As previously discussed, current station locations appear to be appropriate given the current population distribution and density, to provide timely first response and ERF coverage to the areas of the city with the most incidents east of the freeway. However, the periphery of the city is currently much less dense from a population and built environment perspective. The following figure illustrates the theoretical four-minute response time coverage to historical (2019) incidents from the current station locations.

Figure 87: Historical Response Time Analysis from Current Station Locations
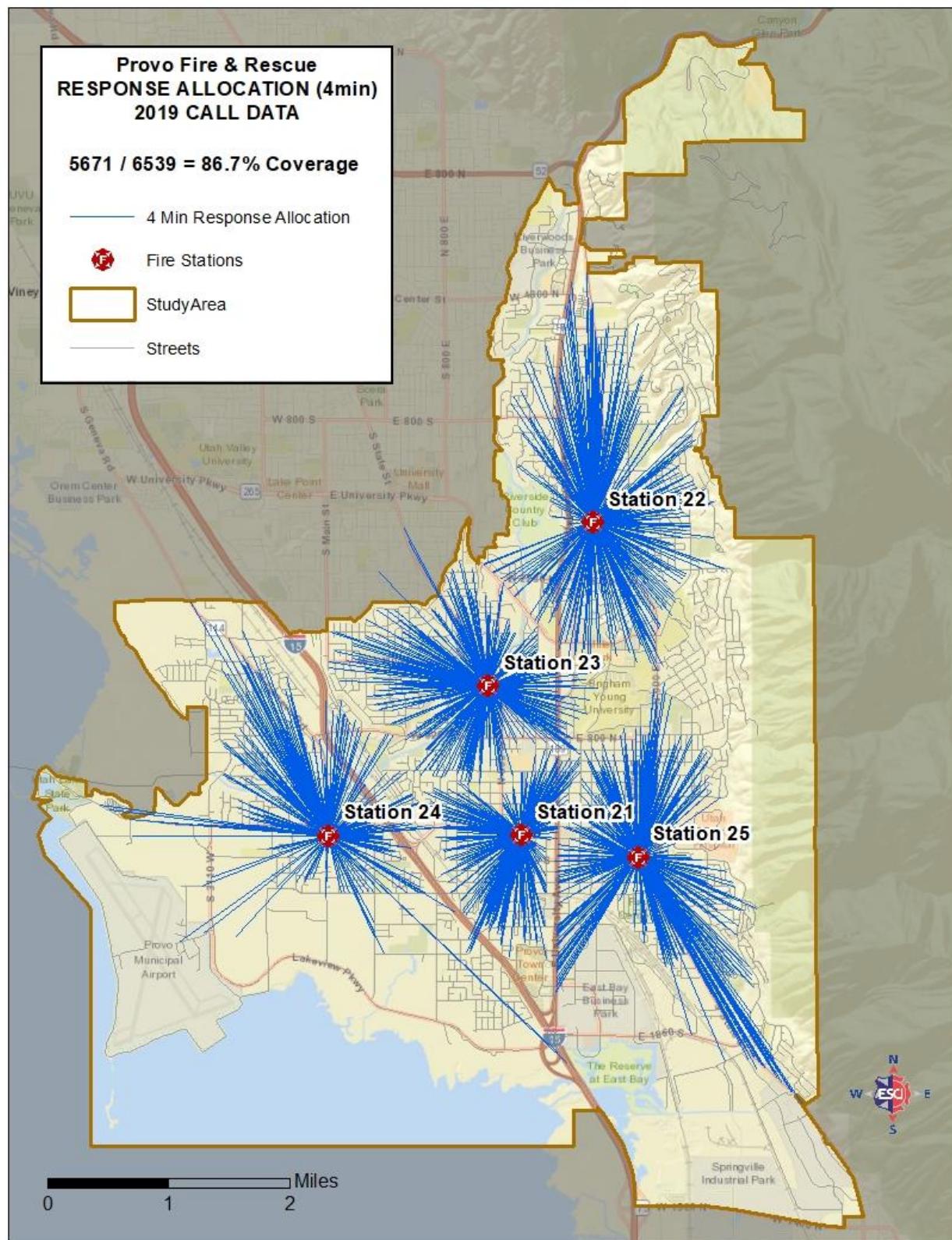
The map shows that the current station locations provided 4-minute response coverage to 86.7% of the 2019 incident locations.

ESCI anticipates that the terminal expansion at the Provo Municipal Airport will result in increased commercial and industrial development and related activity in the airport vicinity. This factor, along with planned residential growth in the far southwest and northwest areas of the City, will eventually result in increased service demand west of the freeway.

The airport expansion will likely result in the moving of airport operations equipment and apparatus out of the airport fire station facility, which would free up space for other fire department programmatic needs. According to the Airport's Master Plan Executive Summary, the current Airport Rescue Firefighting (ARFF) station "meets today's needs and is expected to meet future needs without major overhaul."

It is important to note that the current ARFF station is not currently configured or equipped with living quarters to house firefighters for extended periods. It is essentially an apparatus storage facility that is staffed only when commercial flights are landing or departing. In addition, while it is centrally located near active taxiways to provide timely emergency response on active taxiways and runways, it is relatively remote to areas outside of the airport. However, space for a relocated Station 24 may be available immediately adjacent to the airport perimeter. Also, ESCI understands that the Department has been contemplating moving Station 21 west of its current location by several blocks to better respond to the areas west of the freeway. Given these potential locations, ESCI modeled response time coverage to historical incident locations from these two hypothetical locations, as shown in the following figure.

Figure 88: Historical Response Time Analysis from Relocated Stations 21 and 24
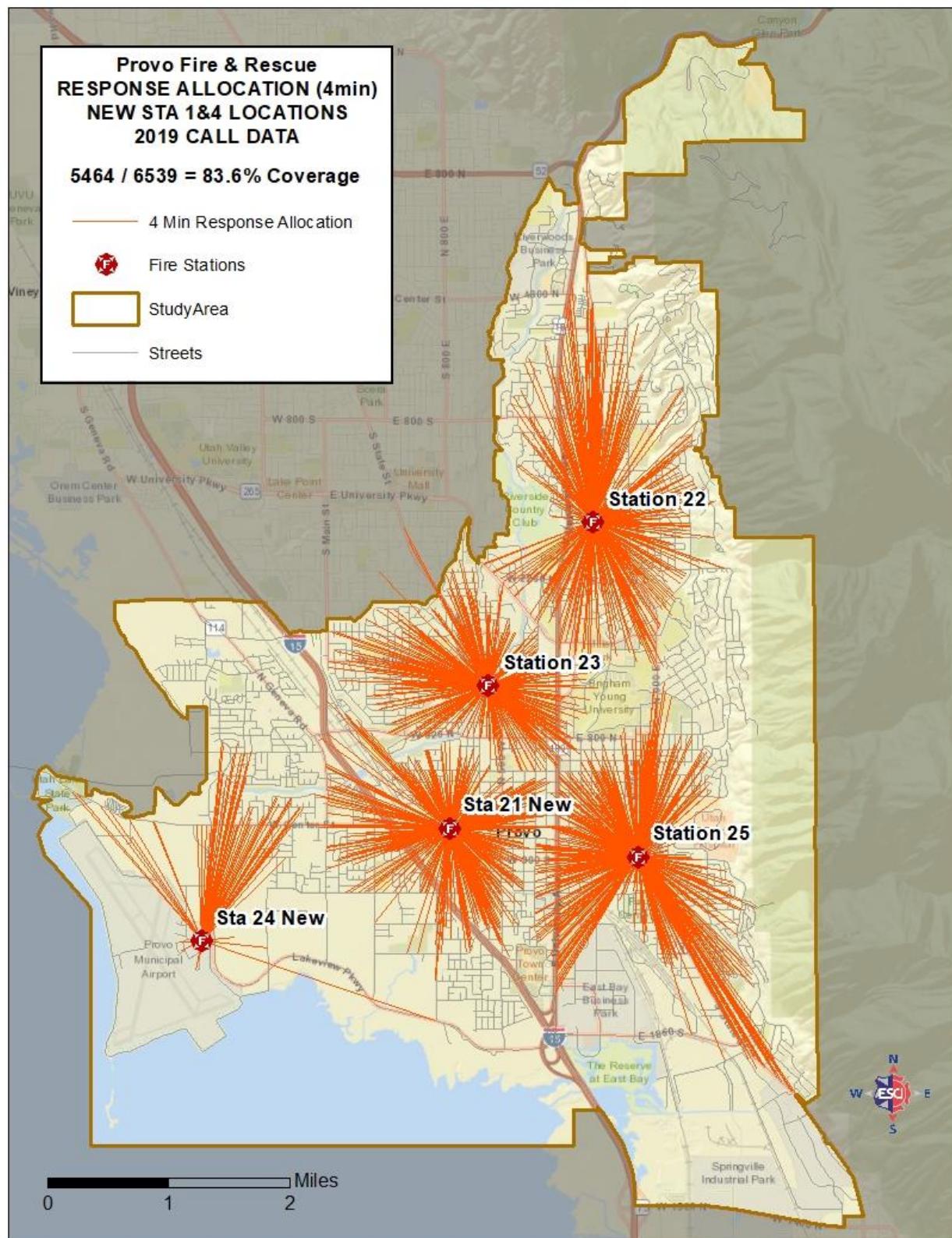
As can be seen in the preceding figure, 4-minute response time coverage decreases 3.1% overall, and response time coverage to the south does not appear to be substantially improved. However, it must be noted that the southern areas north of Lakeview Parkway slated for development are mostly undeveloped agricultural land without road networks. Once roads are built and development occurs in these areas, incidents will occur, and the relocated Station 24 would likely have fast response times into those areas.

Relocating Station 24 south would likely decrease response times into the northwest portion of the service area. Much of this area is developed, primarily as single-family and multi-family residential use, with some light commercial uses. ESCI understands there is pending significant residential development on available land in the far northwest corner of this area as well. Given this, ESCI modeled the placement of a new fire station in the proximity of Provo High School, along with the previously noted relocations of Stations 21 and 24. The following map shows the historical response coverage from these locations.

Figure 89: Historical Response Time Coverage from Relocated Stations 21 & 24, and new Station 25
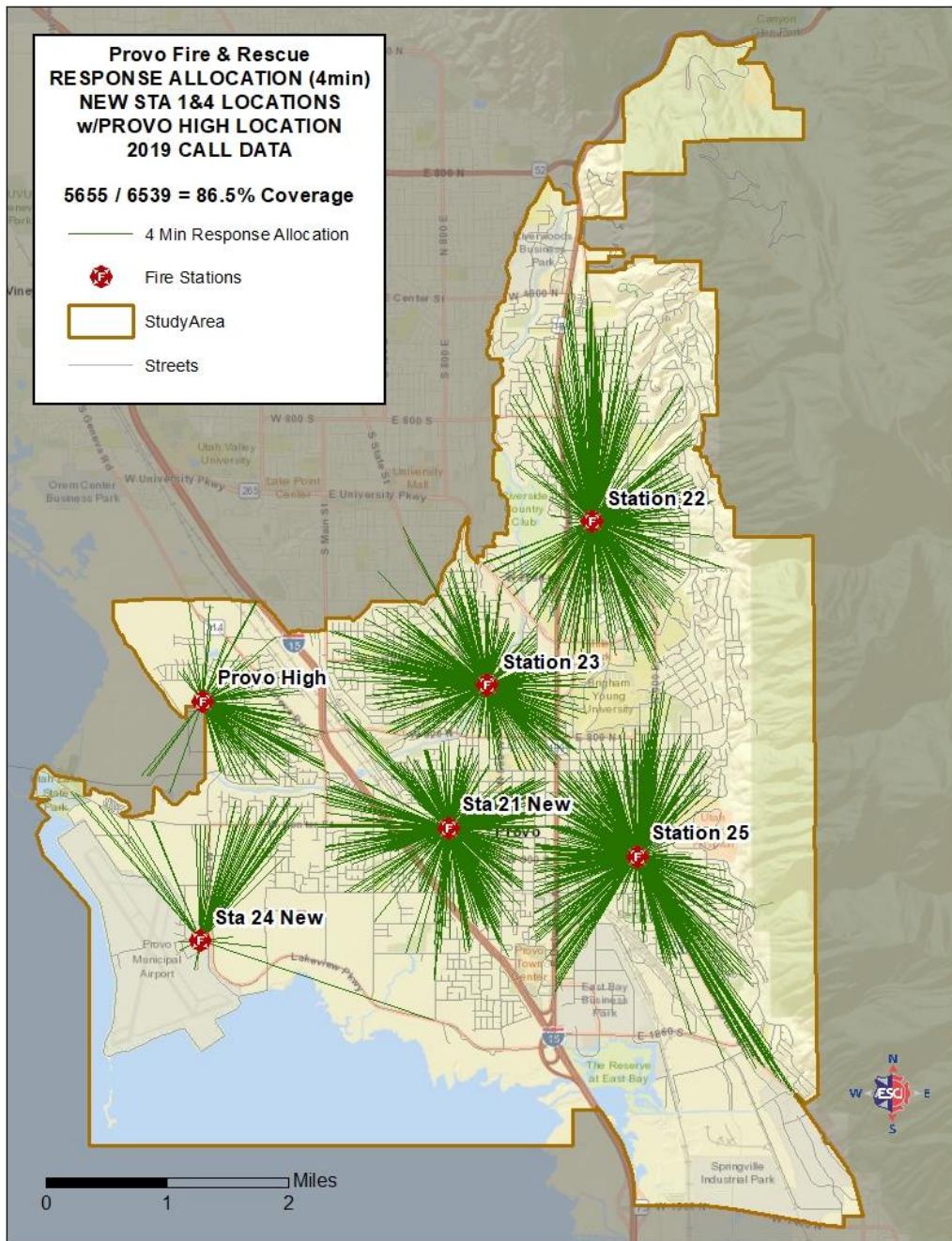
Adding a new station in the northwest service area improves the overall 4-minute first arrival unit coverage by only 2.9%, and brings the overall coverage percentage up to the coverage provided by the current station locations. *However, it must be noted that this coverage is based on the current population and built environment. It is anticipated that incident demand will eventually increase in the City's northwest and southwest periphery as development occurs, and the Department needs to plan accordingly.*

Section III:

Recommendations

Overall Evaluation, Conclusions, & Recommendations

This *Community Risk Assessment: Standards of Cover* study culminates in a series of recommendations based on the observations and analysis previously discussed. Addressing these recommendations should be approached pragmatically. As such, ESCI grouped them into recommended time frames to address.

Facilitating the adoption and implementation of many of these recommendations will take significant commitment, time, and resources (including finances). The suggested timeframes are intended to introduce a realistic "blueprint" for implementation. However, environmental conditions and circumstances may provide challenges or opportunities to address a recommendation(s) outside of the timeframes identified here.

ESCI has grouped the recommendations into three implementation timeline categories: Short-Term (6 months–2 year), Mid-Term (2–4 years), and Long-Term (4–6 years).

Lastly, these recommendations are just that—recommendations. They are ESCI's best effort in providing guidance to issues and deficiencies identified during the study period. City leaders and citizens hold the ultimate authority in embracing, revising, or discounting the following guidance.

Short-Term Recommendations

Recommendation 1-A: Reconfigure the incident records management system, establish emergency response time goals, and routinely analyze response time performance against the goals.

As noted in the Historical System Performance overview, there are significant gaps in the recording of key response benchmark timestamps and response mode information. The Department should establish a consistent data link from the Provo Police Department CAD to ImageTrend®, which automatically enters and archives the following data points into each report.

- Incident latitude/longitude.
- 911 call time.
- Dispatched time for each responding unit.
- Enroute time for each responding unit.
- Arrival time for each responding unit.
- Complete/In-service time for each responding unit.
- Unit number for each responding unit.

Incident numbers from CAD should populate the same into both the fire and EMS RMS. Until such time that automated timestamping can be achieved, the Department should regularly review incident reports for completeness and accuracy, including reviewing the recorded response times.

Once this information is reliably and consistently entered into the RMS, the Department should review this information and use it to adopt response time goals (call processing, turnout, and 4 and 8-minute travel response time goals), and regularly measure the Department's performance against the adopted goals.

Recommendation 1-B: Work with the NREMT to configure the training database to allow access and analysis of completed EMS training.

The Department's ability to monitor and confirm that personnel have completed required continuing education medical training is critical to ensuring compliance with State EMS regulations. Coordination and reconfiguration of the database to allow for timely monitoring and reporting of each employee's training status should be undertaken as soon as possible.

Recommendation 1-C: Reduce the allowed consecutive hours worked to 72 hours.

The Department should be concerned about potential significant negative impacts resulting from fatigue related to employees working up to 96 hours straight. The Department should consider requiring at least a 12-hour rest break after 72 consecutive hours worked.

Recommendation 1-D: Relocate Station 21 slightly west of the current location, and increase staffing for an engine company.

The City and Fire Department should survey and purchase available and suitable land and relocate Station 21. Relocating the station west by several blocks (in the proximity of the 900 block of West Center Street, for example) should improve response coverage on the west side of Interstate 15, yet still be close enough to provide timely first-in response coverage to the areas with the highest incident density in the downtown core. This recommendation was deemed to have a short implementation timeframe due to the ongoing construction of a new Public Safety/City Hall complex immediately adjacent to the current Station 21 site, which can be repurposed during construction and remodeling.

Given the shift of the station location further west, which reduces the overlapping coverage provided by Stations 3 and 5, an additional engine should be purchased, and staffing should be increased by two personnel per shift to cross-staff an engine company and medic unit in the same deployment configuration as the other stations.

Cost Estimate Projection

ESCI used PFRD's current onboarding, equipping, construction, and salary/benefits information to estimate the costs of relocating Station 21 and increasing staffing. The following table summarizes the first year one-time construction cost projections, and estimated future years' operating costs through 2032. ESCI used the following parameters in developing these projections:

- 8,000 square foot station, constructed in 2022.
    - Construction costs: $400 per square foot, based on the $365 per square foot cost for constructing the new Station 2, plus a 9.5% inflationary factor.
- Salary costs were based on 2021average salary/benefits costs, with the salary escalated at 2% per year, and benefits escalated at 7% annually.

- Station annual operating costs $85,000, increased by 4% annually for inflation.

- Staffing Relief Factor per 24/7 position: 3.69 theoretical employees = 7.38 theoretical employees needed for two positions 24/7. This was rounded down to 7 positions.

Figure 90: Station 21 Construction and Staffing Cost Estimates

One Time Cost Center	2022	2026	2028	2032
Station Construction Cost	$3,200,000			
Engine	$750,000			
Engine Equipment	$150,000			
Personnel Equipment Outfitting	$45,500			
Total	**$4,145,500**			
Recurring Cost Center				
Station Annual Operating Cost	N/A	$103,415	$111,854	$130,853
Captain Salary/Benefits	$361,094	$421,375	$456,702	$517,511
Engineer Salary/Benefits	$335,713	$391,757	$424,601	$481,135
FF/Paramedic Salary/Benefits[1]	$104,113	$121,785	$132,157	$150,032
Total Estimated Cost of Additional Personnel	**$800,920**	**$934,917**	**$1,013,461**	**$1,148,679**
Total Recurring Costs	**N/A**	**$920,684**	**$997,631**	**$1,284,766**

[1] One position added for overall staff relief purposes

In the preceding figure, one Firefighter/Paramedic position was added to provide overall relief coverage that would be required to meet scheduled and unscheduled leaves created by the increase in the additional on duty personnel. If the position is not filled, the increased relief coverage needs would likely result in increased overtime expense, depending on overall staffing levels at the time the leave coverage is required.

Given the significant initial cost of adding these positions, the City may be able to secure funding to initially pay for them through the Federal Emergency Management Agency (FEMA) Staffing for Adequate Fire and Emergency Response (SAFER) grant program.

This program provides funding to increase firefighter staffing. If awarded a SAFER grant, the City must recruit and hire the grant-funded firefighters within 180 days. The grant performance period is 36 months, with the grant paying 75% of the new employees' salary and benefits for the first 24 months, and 35% of their salary and benefits during the final 12 months of the grant performance period.

Recommendation 1-E: Fully deploy Priority Dispatch® ProQA™ protocols and revise response modes, and implement a Quality Assurance process for reviewing dispatcher protocol use compliance.

The Department should purchase and install the ProQA Emergency Medical Dispatch protocol system, which links to the Dispatch Center's CAD system. ProQA will allow the Department to better define the number and type of resources to send to specific EMS incident types, and also designate the initial response mode (emergency or non-emergency). Setting the appropriate response levels and modes should be reviewed and approved by the Department's EMS Medical Director. Dispatched units should respond in a manner consistent with these protocols.

Once implemented, the Department should establish a formal quality assurance program that routinely reviews dispatcher use of the ProQA system and compliance with the protocols. This includes listening to interrogations, determining if the appropriate protocol and determinate code was selected, and the quality of any relayed pre-arrival instructions. Consideration should also be given to installing the Priority Dispatch® Aqua™ Quality Improvement software, which integrates with ProQA™ to automate part of the quality review process.

Mid-Term Recommendations

Recommendation 2-A: Establish and maintain a comprehensive commercial occupancy inventory.

The Department does not have a comprehensive list of commercial, institutional, or educational buildings in the City, and the features and specific hazards in these buildings. As a result, the Department cannot quantify the risk, hazards, and mitigation steps necessary to keep businesses, employees, and citizens safe in the City's built environment.

The Department should initiate an aggressive and comprehensive commercial building inventory project to establish and maintain an accurate inventory of all commercial occupancies in the city. The inventory should include important pre-fire plan information, including building size, type of construction, occupancy use, building access locations, special hazards, fire protection features/systems, etc. Ideally, this information would be entered into the Department's RMS system that would be readily retrievable in an easy-to-read format by field personnel during an incident.

Recommendation 2-B: Relocate Station 24 in proximity to the Provo Airport.

Station 24 Relocation

The City and Fire Department should survey and purchase available and suitable land and relocate Station 24 in close proximity to the Provo Airport. Relocating this station southwest of its current location will improve response coverage into the soon-to-be-developed single-family, multi-family, and commercial areas adjacent to the airport and immediately east and north of Lakeview Parkway.

Cost Projection

The cost projections for this station would likely be one-time costs related to the procurement of land and construction of the station as noted in Recommendation 1-D, as Station 4's existing personnel, apparatus, and equipment would be relocated to the new station. There may be additional one-time or ongoing special costs related to FAA ARFF capability requirements or Department of Homeland Security requirements. The Department and City should also consider that Increased use of the airport by larger aircraft in the future may result in elevating the airport to the Index C category, which may require additional and larger ARFF equipment and personnel.

Additionally, the Department should consider building the station immediately adjacent to the Airport perimeter where it could deploy ARFF apparatus "inside the fence" that meets FAA response time requirements, and also provide structural fire and EMS response "outside the fence" in the City.

Recommendation 2-C: Establish automatic aid agreements with Orem Fire Department and Springville Fire & Rescue.

The Department should coordinate with the Orem Fire Department in establishing an automatic aid agreement that results in dispatching each agency's respective response units into each jurisdiction. At a minimum, the agreement should include the following emergency response considerations:

- Automatic dispatching of one or more of the respective fire or EMS response units on a 24/7 basis, as part of an initial alarm assignment or a unit's proximity to an ongoing incident.
- Identifying the incident types and alarm assignments in which units would be automatically dispatched, including, at a minimum, response to a structure fire.
- Identifying an initial response territory, where applicable, for automatic aid response.
- Defining a common communications protocol, including tactical frequencies.
- Establishing common emergency operations policies and procedures for on-scene operations.

Recommendation 2-D: Implement an Engine Company Pre-Fire Plan/ Inspection Program.

As previously noted, the Department only inspects a limited number of occupancy use types annually (Institutional facilities, Hazardous Materials Tier II sites, Public Assembly buildings, etc.).

Once a commercial occupancy inventory has been completed, as noted in Recommendation 2-A, an inspection schedule should be established consistent with the risks identified and the frequency recommended in NFPA 1731. The amount of commercial and institutional occupancies identified in the inventory will most certainly require additional resources to ensure the occupancies are inspected per the identified inspection schedule. As noted previously, gaining knowledge of the inherent and special hazards and construction features in a building is extremely important. Training and assigning operations personnel to conduct a pre-fire plan "walk-through," along with a cursory inspection to identify basic fire code issues can be a "force multiplier" for the Fire Prevention Division, and help ensure that the pre-fire plan information gathered is germane to the Operations Division.

Recommendation 2-E: Create a formal Public Education/Information Officer Position with a job description.

Timely dissemination of public information and community engagement is critical to maintaining public confidence in the Department and its personnel. The Department's current approach in splitting public education and information tasks should be revisited. Ideally, a single position, either a standalone position or additional duties assigned to a current employee, should be considered. A formal job description should be created that includes desired qualifications and skills necessary to effectively communicate, motivate, and teach, and include the ability to create, manage, and communicate through various social media channels.

Recommendation 2-F: Create and implement a holistic all-hazards life safety education program.

The Department's current fire prevention/life safety education efforts (exclusive of Emergency Management education efforts) are narrowly focused, limited, and do not appear to be programmatically oriented. The Department should evaluate the types of incidents, mechanisms of injury/illness, and community risks identified in this study, and dedicate resources and time to establishing a holistic life safety education program that addresses the wide variety of risks found in the community. Examples of these programs include, but are not limited to; Elder safety/Fall prevention, bicycle safety, Smoke and carbon monoxide detector donations/installations, car seat inspections, home safety program, water safety, bike helmet donations/fittings, and Learn Not To Burn® injury prevention program.

Long-Term Recommendations

Recommendation 3-D: Build a new fire station in the northwest area of the City in proximity to Provo High School.

Significant single and multi-family development is slated to begin within the next five years in the far northwest corner of the city, north of Provo High School. Several building and development permits have been on hold until upgrades to the wastewater treatment system were completed, which has been accomplished. This, coupled with relocating Station 24 southwest to the airport, will leave a response coverage gap in the area north and west of Interstate 15. The City and Fire Department should survey and purchase available and suitable land and build a new station north and west of Interstate 15 in the general area of Provo High School.

Cost Estimate Projection

ESCI used PFRD's current onboarding, equipping, construction, and salary/benefits information to estimate the costs of building Station 26. The following figure summarizes the first year one-time construction cost projections, and estimated future years' operating costs through 2032. ESCI used the following parameters in developing these projections:

- 8,000 square foot station, constructed in 2026.
    - Construction costs: $400 per square foot, based on the $365 per square foot cost for constructing the new Station 2, plus a 9.5% inflationary factor.
- Salary costs were based on 2021average salary/benefits costs, with the salary escalated at 2% per year, and benefits escalated at 7% annually.
- Station annual operating costs $85,000, increased by 4% annually for inflation.
- Staffing Relief Factor per 24/7 position: 3.69 theoretical employees = 14.76 theoretical employees needed for four positions 24/7. This was rounded up to 15, which divides equally across the three shifts.

The following figure summarizes the cost estimates and projects future costs for building and operating an additional Provo fire station.

Figure 91: Station 26 Construction and Staffing Cost Estimates

One Time Cost Center	2026	2028	2032
Station Construction Cost	$3,898,289	$4,210,982	$4,926,253
Engine	$912,489	$986,948	$1,155,591
Engine Equipment	$182,497	$197,389	$230,918
Personnel Equipment Outfitting	$118,623	$128,303	$150,096
Total	**$5,111,898**	**$5,523,622**	**$6,462,858**
Recurring Cost Center			
Station Annual Operating Cost	$103,415	$111,854	$130,853
Captain Salary/Benefits	$421,375	$456,702	$517,511
Engineer Salary/Benefits	$391,757	$424,601	$481,135
FF/Paramedic Salary/Benefits[1]	$852,492	$925,098	$1,050,227
Total Estimated Cost of Additional Personnel	**$1,665,625**	**$1,806,402**	**$2,048,874**
Total Recurring Costs	**$1,773,177**	**$1,922,730**	**$2,184,961**

[1] One position added on each shift for overall staff relief purposes

In the preceding figure, three Firefighter/Paramedic positions (one on each shift) would theoretically be required to provide increased overall relief coverage that would be required to meet scheduled and unscheduled leaves created by the increase in the additional on duty personnel. If these positions are not filled, the increased relief coverage needs would likely result in increased overtime expense, depending on overall staffing levels at the time the leave coverage is required.

Section IV:

Appendices

Table of Figures

ABOUT THE DEPARTMENT

Response Districts

85 FTE's

- 81 Safety
- 4 Support
- 5 Fire Stations
- 19 minimum daily staffing
- 2021- 11,763 calls for service
- Training, events, public education programs, special projects

Fire Department Functions

- Fire Administration
  - Policies, budget, purchasing, personnel, support.
  - Training
- Fire Prevention
  - Community Development
  - Life Safety (Infrastructure)
  - Fire Investigation
  - Public Education, PIO
  - Community Risk Reduction

Emergency Operations

- Fire Suppression
- Hazardous Materials
- Rescue
  - Auto
  - Water
  - Mountain
  - Other
- Service

Emergency Medical Services

- ▶ Advanced Life Support
- ▶ Transport Services
- ▶ Training/ Certifications
- ▶ State Regulations

Revenue: $2 Million Annually

Emergency Preparedness

- Community Education
- CERT
- Mass Notification
- City-wide Training
- Emergency Operations Center
- Covid 19

Provo Emergency Communications (911)

- New Communications Manager
- 26 Full Time Positions – All Positions Full
- 1 Part time employee
- Stand Alone Budget
- Right size support budget, overtime

5.4.4.2 – Staffing Ratios, National Standards system approach

- 15 firefighters
- 1 command officer
- 1st unit in 5 minutes or less
- All units in 9 minutes
- Station location and calls for service = System Reliability
- EMS
- Mutual, Automatic Aid

provo
FIRE&RESCUE

5.4.4.1 – Emergency Management (EOC)

- Activations – Protests, Earthquake, Pandemic
- Public Information Coordination
- Pandemic PPE, Testing and Vaccinations
- Emergency Management Performance Grant $25,000
- Continuity of Operations (COOP)
- City-wide EOC training

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FIRE&RESCUE
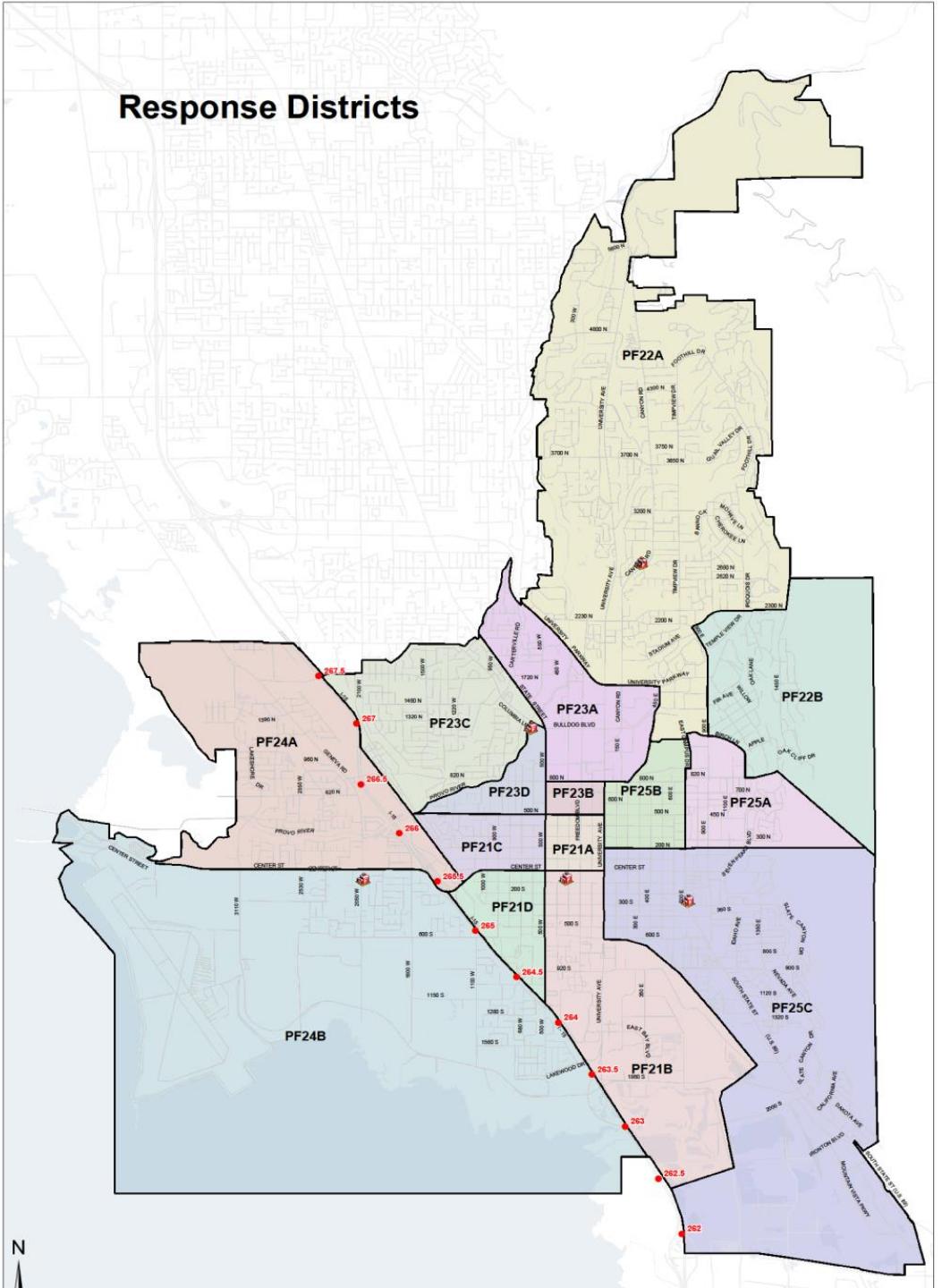
FIRE DEPARTMENT MASTER PLAN

- Adopted by City Council 2021

    Staffing levels

    Station additions and locations

    Airport operations

2021 Fire Department Master Plan

5.4.4.5 – Facility Replacement

5.4.4.4 Fire Station Locations

2021 Fire Department Master Plan

- ► Location, staffing of Station 1.
- ► Need for, location and Staffing of Station 6.
- ► Location of Station 4 at build out.
- ► Airport Fire Protection recommendations.

FY 2022 Successes

▸ Contiued Pandemic Response

    ▸ Healthy Workforce

    ▸ City-wide Testing

▸ Wildland Unban Interface Program

▸ Mental Wellness Initiative

Fire Department Supplemental Budget Requests

- Capital Equipment Replacement Fund   ($62,000 ongoing)

- 911 Center budget adjustment   ($93,000 ongoing)

- Paramedic School Tuition   4 Students   ($32,000)

- Airport Staffing/Training to meet new demand   (TBD)

PROVO MUNICIPAL COUNCIL
STAFF REPORT

Submitter: JMCKNIGHT
Department: Public Works
Requested Meeting Date: 03-01-2022

SUBJECT: A presentation regarding the Water Utility Update. (22-026)

RECOMMENDATION: Presentation and discussion.

BACKGROUND: Public Works will be sharing information relative to the water utility system including an update on plans to construct a culinary water treatment plant and aquifer storage and recovery efforts.

FISCAL IMPACT: Discussion will include capital budget plans which have a fiscal impact.

PRESENTER'S NAME: Dave Decker- Director of Public Works

REQUESTED DURATION OF PRESENTATION: 45 minutes

COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:

CITYVIEW OR ISSUE FILE NUMBER: 22-026

PROVO MUNICIPAL COUNCIL
STAFF REPORT

Submitter: MDAYLEY
Department: Council
Requested Meeting Date: 03-01-2022

SUBJECT: A presentation from the Foothills Protection Committee regarding the Provo Foothills Trail Plan. (22-024)

RECOMMENDATION: Presentation and consideration for possible adoption at the March 15, 2022, Council Meeting.

BACKGROUND: In early 2020, the Utah Valley Trails Alliance (UVTA) was asked by Uinta-Wasatch-Cache National Forest to assist in developing a long-range trails plan for the mountains adjacent to the City of Provo.Provo City was also pursuing several activities relating to foothills land within city limits, and it was decided that an integrated City-National Forest plan was needed. This plan is intended to provide a framework for that effort,including immediate improvements and long-term visions.

FISCAL IMPACT: None currently, cost will be incurred when trails are built.

PRESENTER'S NAME: Doug Robins, Assistant Director of Parks and Recreation

REQUESTED DURATION OF PRESENTATION: 20 minutes

COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:

CITYVIEW OR ISSUE FILE NUMBER: 22-024

PROVO MUNICIPAL COUNCIL
STAFF REPORT

Submitter: MDAYLEY
Department: Council
Requested Meeting Date: 01-18-2022

SUBJECT: A discussion regarding redistricting adjustments to City Council District maps. (22-003)

RECOMMENDATION: Presentation and discussion

BACKGROUND: Counties and some cities are also required to re-divide legislative areas based on the 2020 census data. Cities must complete any redistricting of municipal legislative areas within six months of the state's adoption of new maps; that deadline is in May 2022. Provo's new Municipal Council District map will be created using the 59 precincts outlined by Utah County with the new 2020 census data.

In meetings earlier this year, the Provo Municipal Council voted to maintain the current Council makeup of 5 district elected seats and 2 at-large elected seats; however, new district boundaries will need to be drawn to accomodate population growths and shifts accounted for in the 2020 census data.

For these Council areas, any redistricting will affect any election or mid-term vacancies after the ordinance is adopted.

The public has now submitted ~120 potential new Council District maps.Staff has provided information on each of the maps the Council will select which maps will be placed on Open City Hall for public input. The selection of the final map is anticipated at the March 15 Council meeting.

FISCAL IMPACT:

PRESENTER'S NAME: Melia Dayley- Policy Analyst & John Magness- Interim Council Executive Director

REQUESTED DURATION OF PRESENTATION: 30 minutes

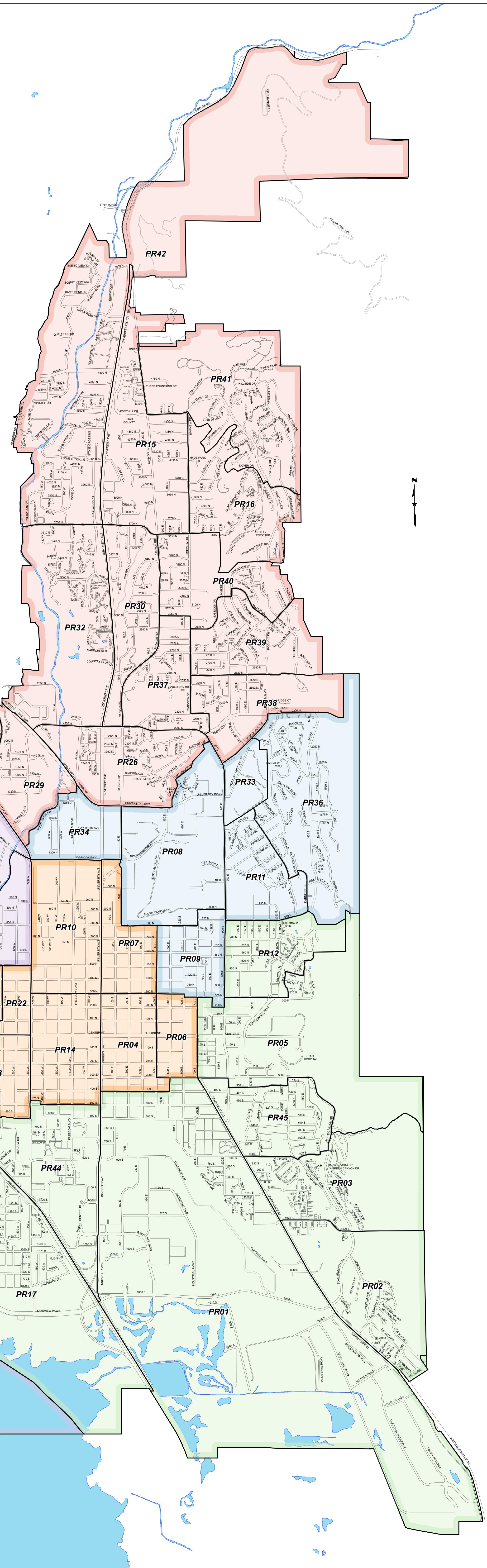**COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:**

CITYVIEW OR ISSUE FILE NUMBER: 22-003

Provo City
Municipal Council Districts
with Precinct Boundaries

pr**o**vo
WELCOME HOME

District 1 - Bill Fillmore

District 2 - George Handley

District 3 - Shannon Ellsworth

District 4 - Travis Hoban

District 5 - David Harding

City-wide District I - Dave Sewell
City-wide District II - David Shipley

PR42

PR41

PR15

PR16

PR40

PR30

PR32

PR39

PR37

PR38

PR28

PR26

PR29

PR33

PR25

PR13

PR36

PR31

PR19

PR34

PR08

PR11

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PR07

PR27

PR09

PR12

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PR21

PR22

PR24

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PR06

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PR35

PR43

PR45

PR44

PR03

PR18

PR17

PR02

PR01

PROVO MUNICIPAL COUNCIL
STAFF REPORT

Submitter: MDAYLEY
Department: Council
Requested Meeting Date: 03-01-2022

SUBJECT: A discussion regarding the hiring process and committee for selecting a Municipal Council Executive Director. (22-027)

RECOMMENDATION: Presentation and discussion

BACKGROUND: With the departure of Cliff Strachan as Executive Director of Council a new Executive Director will need to be hired. The committee that was created to start the search for the new director is proposing a process to achieve this goal. The committee is seeking input from the Council regarding the proposed process.

FISCAL IMPACT: none

PRESENTER'S NAME: John Magness- Interim Council Executive Director

REQUESTED DURATION OF PRESENTATION: 15 minutes

COMPATIBILITY WITH GENERAL PLAN POLICIES, GOALS, AND OBJECTIVES:

CITYVIEW OR ISSUE FILE NUMBER: 22-027