CITY COUNCIL MEETING

Thursday, January 07, 2021 at 6:30 PM

Electronically through Zoom Meeting ID: 853 4028 0872 and Passcode: 615336

AGENDA

Public notice is hereby given of a Hyrum City Council Meeting to be held in the Electronically through Zoom Meeting ID: 853 4028 0872 and Passcode: 615336 at 6:30 PM, January 07, 2021. The proposed agenda is as follows:

1. ROLL CALL

2. CALL TO ORDER

3. WELCOME

4. PLEDGE OF ALLEGIANCE

5. INVOCATION

6. APPROVAL OF MINUTES

7. AGENDA ADOPTION

8. PUBLIC COMMENT

9. PUBLIC HEARING

A. To receive public comment to consider adopting, enacting, and/or modifying Written Impact Fee Facilities Plans, Impact Fee Analyses, and an Impact Fee Enactment by Ordinance for Hyrum City Power.

10. SCHEDULED DELEGATIONS

A. Josh Runhaar, Neighborhood Housing Solutions - To request approval of a revised Concept Plan for Mountain View Estates a subdivision located between 500 to 700 South and 1170 to 1600 East to subdivide 57 acres into 175 9,900 square foot single family lots.

B. Carl Lundahl, Lundahl Farms, LLC - To request approval of a three lot mini-subdivision located at approximately 365 West 300 North (Parcel 01-030-0004) with an exception to the minimum frontage requirements from 82.50 feet to 82.10 feet for lots one and two.

C. Jennie Pakalani - To request approval to sell snow cones and cotton candy over the spring, summer and fall of 2021 at Hyrum City's sports fields and the use of City power.

11. INTRODUCTION AND APPROVAL OF RESOLUTIONS AND ORDINANCES

A. Resolution 21-01 - A resolution authorizing a Councilmember to automatically succeed to the position of Mayor Pro Tempore.

B. Resolution 21-02 - A resolution amending the Personnel Policies and Procedures Manual. for Hyrum City Corporation to amend leave pay for part time employees with benefits and other miscellaneous items.

C. Resolution 21-03 - A resolution of Hyrum City adopting the 2020 Bear River Region, Utah Pre-Disaster Mitigation Plan.

12. OTHER BUSINESS

A. Consideration and approval of Electric Impact Fee Facility Plan.

B. Mayor and City Council Reports.

13. ADJOURNMENT

14. ELECTRONIC MEETING INFORMATION

Hyrum City will be holding this meeting electronically in compliance with Utah Governor Gary Herbert's Executive Order to suspend the enforcement of provisions of Utah Code 52-4-207, and related State Agency Orders, Rules and Regulations, Due to Infectious Disease COVID-19 Novel Coronavirus.

Any member of the public may remotely observe the meeting or comment during the public hearing electronically through ZOOM Video Communications with the following link:

https://us02web.zoom.us/j/85340280872?pwd=b1RSUVlteEc3UnpsRWxOTHEvd0JSdz09

The Meeting ID: 853 4028 0872 and Passcode: 615336 If you have any questions please contact the Hyrum City Recorder at 435-245-6033 before 5:00 p.m. on January 7, 2021.

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Stephanie Fricke
City Recorder

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify Hyrum City at 435-245-6033 at least three working days before the meeting.

CERTIFICATE OF POSTING - The undersigned, duly appointed and acting City Recorder of Hyrum City, Utah, does hereby certify that a copy of the foregoing Notice was emailed to The Herald Journal, Logan, Utah, posted on the Utah Public Notice Website and Hyrum City's Website, provided to each member of the governing body, and posted at the City Offices, 60 West Main, Hyrum, Utah, this 4th day of January, 2021. Stephanie Fricke, MMC, City Recorder.

HYRUM CITY
ESTABLISHED 1860

NOTICE OF PUBLIC HEARING

Notice is hereby given that the Hyrum City Council of Hyrum, City, Utah will hold a public hearing Thursday, January 7, 2021 at 6:30 p.m. electronically through Zoom Meeting ID: 853 4028 0872 and Passcode: 615336 to receive public comments to consider adopting, enacting, and/or modifying Written Impact Fee Facilities Plans, Impact Fee Analyses, and an Impact Fee Enactment by Ordinance for Hyrum City Power.

Copies of the Hyrum City Power Impact Fee analysis, including a summary of the impact fee analyses are available for public inspection at the Hyrum City Office, 60 West Main, Hyrum, weekdays between the hours of 8:00 a.m. and 4:30 p.m. it is also posted on Hyrum City's website at www.hyrumcity.org.

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Stephanie Fricke
City Recorder

Published in the Herald Journal on December 19, 2020.

HYRUM CITY
Power & Light
Impact Fee Analysis

November 2020

Prepared by: Active Power Engineering, LLC

Michael R. Anderson, P.E.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

General:

This report documents the study performed by Active Power Engineering, LLC, for Hyrum City Power & Light to update the Hyrum City Electric Power Impact Fee Analysis.

The Utah impact fee statute Title 11 Chapter 36a "Impact Fee Act" requires the city imposing impact fees to (1) prepare an Impact Fee Facilities Plan, (2) perform an Impact Fee Analysis, (3) calculate the Impact Fee(s), and (4) certify the Impact Fee Facilities Plan and Impact Fee Analysis.

This report includes an Impact Fee Facilities Plan, Impact Fee Analysis, calculated Impact Fees and certification of the Impact Fee Facilities Plan and Impact Fee Analysis.

This report provides the background, requirements, basis, projects and analysis for new customer impact fees that must be collected for new electric service to be connected. The impact fee applies to new services and upgraded services. The 10-year period 2021 to 2030 was used in this impact fee analysis.

Impact Fee Facilities Plan (IFFP):

According to the Statute, the "Impact Fee Facilities Plan ("IFFP") shall identify (a) demands placed upon existing public facilities by new development activity; and (b) the proposed means by which the political subdivision will meet those demands."

The projected demand placed upon the Hyrum City electric power system is directly tied to the forecasted population growth. Historic growth in population has averaged about 3.5%. Power demand growth rate has averaged about 5% and is projected continue to be between 3% to 4.6% per year going forward. Hyrum City power system load was 13.0 MVA in 2020 (21.6 MVA including JBS Meat Packing Plant). Hyrum City load is forecast to add 7.6 MVA of new development load between 2021 and 2030, totaling 20.6 MVA in 2030.

To serve the projected demand new power facilities are required. The IFFP includes a new substation (Dairy) with a 25 MVA transformer, an upgraded substation transformer adding 5 MVA capacity, an upgraded 46 kV transmission line to feed the new transformer capacity, and two new distribution feeders to utilize the new capacity. The total estimated cost of these projects is about $6,070,500. The projects add 30 MVA of system capacity.

Impact Fee Analysis (IFA):

The Impact Fee Analysis ("IFA") portion of the Statute states that (1) "each local political subdivision or private entity intending to impose an impact fee shall prepare a written analysis of each impact fee:" and (2) "shall also prepare a summary of the impact fee analysis designed to be understood by a lay person."

Electric impact fees in Hyrum City are calculated using incremental costs. This method determines what new developments pay for improvements or a portion of the improvements needed to serve them. This is a "capacity-based" fee structure. In this way existing customers are not burdened by the new growth.

The Impact Fee Analysis involves three basic steps or sub-analyses: (1) determining an Impact Fee rate that applies a cost per each kVA of new power demand from development ; (2) determining the kVA power demand for the typical customer types and service levels; and (3) calculating the proposed Impact Fee.

The Impact Fee rate was calculated by dividing the IFFP total project cost (adjusted for construction cost escalation, and interest earned on collected impact fees) by the added system capacity. The Impact Fee rate has been calculated to be $240.39/kVA.

The kVA power demand for residential customers was calculated from the typical kW demand experienced by Hyrum City on 200-amp and 400-amp services and the typical power factor. The kVA power demand for commercial customers was calculated using the service panel size, type (i.e., single phase or three phase), voltage, power factor and the panel utilization factor typical for commercial customers.

Several sample recommended Impact Fees calculated using the Impact Fee rate and power demand calculated above are shown below.

Residential Service Level	**Typical Power Demand (kW Impact)**	**Power Factor**	**Est. kVA Impact**	**Recommended Impact Fee**
200 Amp	5	95.0%	5.3	$1,265
400 Amp	10	95.0%	10.5	$2,530
Type of Commercial Service	**Typical Power Demand (kW Impact)**	**Power Factor**	**Est. kVA Impact**	**Recommended Impact Fee**
Single Phase 120/240 V 200 Amp Panel	17.3	90.0%	19.2	$4,615
Three Phase 120/208 V 200 Amp Panel	25.9	90.0%	28.8	$6,928
Three Phase 277/480 V 200 Amp Panel	59.9	90.0%	66.5	$15,989

Conclusions: The analysis documented in this report satisfies the Impact Fee Act requirements. The Electric Power Impact Fee can be implemented upon Hyrum city council approval and completion of the other appropriate steps outlined in the Impact Fee Act.

1 IMPACT FEE STUDY--GENERAL

1.1 INTRODUCTION

The purpose of this study is to update the Hyrum City Electric Power Impact Fee Analysis. This will help the city determine an impact fee for new electrical customers. This document provides the background, requirements, basis, projects and analysis for new customer impact fees that must be collected for new electric service to be connected. The impact fee applies to new services and upgraded services.

This analysis was performed using publicly available information, information supplied by Hyrum City, and spreadsheets developed for conducting this analysis. Certain assumptions about areas of development, growth rates, and needed projects were used in the analysis in arriving at the recommended impact fee. These assumptions are believed to be appropriate and reasonable for the impact fee analysis. The 10-year period 2021 to 2030 was considered in this impact fee analysis.

This analysis complies with all the requirements of the Utah "Impact Fees Act", Utah Statute U.C.A 11-36a.

The Electric Power Impact Fee can be implemented upon Hyrum city council approval and completing the other appropriate steps outlined in the Impact Fees Act .

1.2 IMPACT FEE STATUTE REQUIREMENTS

The Utah impact fee statute requires the city imposing impact fees to (1) prepare an Impact Fee Facilities Plan, (2) perform an Impact Fee Analysis, (3) calculate the Impact Fee(s), and (4) certify the Impact Fee Facilities Plan and Impact Fee Analysis. This report documents the completion of all four of these requirements.

According to the statute, the "Impact Fee Facilities Plan ("IFFP") shall identify (a) demands placed upon existing public facilities by new development activity; and (b) the proposed means by which the political subdivision will meet those demands."

The Impact Fee Analysis ("IFA") portion of the Statute states that (1) "each local political subdivision or private entity intending to impose an impact fee shall prepare a written analysis of each impact fee:" and (2) "shall also prepare a summary of the impact fee analysis designed to be understood by a lay person." The requirements of the IFA include identifying the estimated impacts on existing capacity and system improvements caused by the anticipated development activity. The political subdivision must also estimate the proportionate share of:

(i) the costs of existing capacity that will be recouped and (ii) the costs of the impacts on system improvements that are reasonably related to the new development activity.

The calculation of the Impact Fee may include the following:

(a) The construction contract price;

(b) The cost of acquiring land, improvements, materials, and fixtures;

(c) The cost for planning, surveying, and engineering fees for services provided for and directly related to the construction of the system improvements; and

(d) For a political subdivision, debt service charges, if the political subdivision might use impact fees as a revenue stream to pay the principal and interest on bonds, notes or other obligations issued to finance the costs of the system improvements.

Also, the calculation of the Impact Fee must be based on realistic estimates and the assumptions underlying such estimates must be disclosed in the impact fee analysis.

2 IMPACT FEE FACILITIES PLAN (IFFP) FOR HYRUM CITY POWER SYSTEM

2.1 GENERAL

Hyrum City Power & Light, is a municipal electric utility serving approximately 3,220 customers in Hyrum, Cache County, Utah. The system coincident peak demand including the demand of the JBS Meat Packing Plant was 21.6 megawatts (MW) in summer 2020. The utility's service area is about 6 square miles including all of Hyrum City limits and a small additional area of Cache County. Hyrum City owns and operates one hydroelectric generator that is rated 350 kilowatts (kW). The power system consists of one 46-kilovolt (kV) delivery substation and three 46/12.47 kV distribution substations: 800 East, Hammer, and Center Street substations. A map of the city and power system is shown in Figure 1.

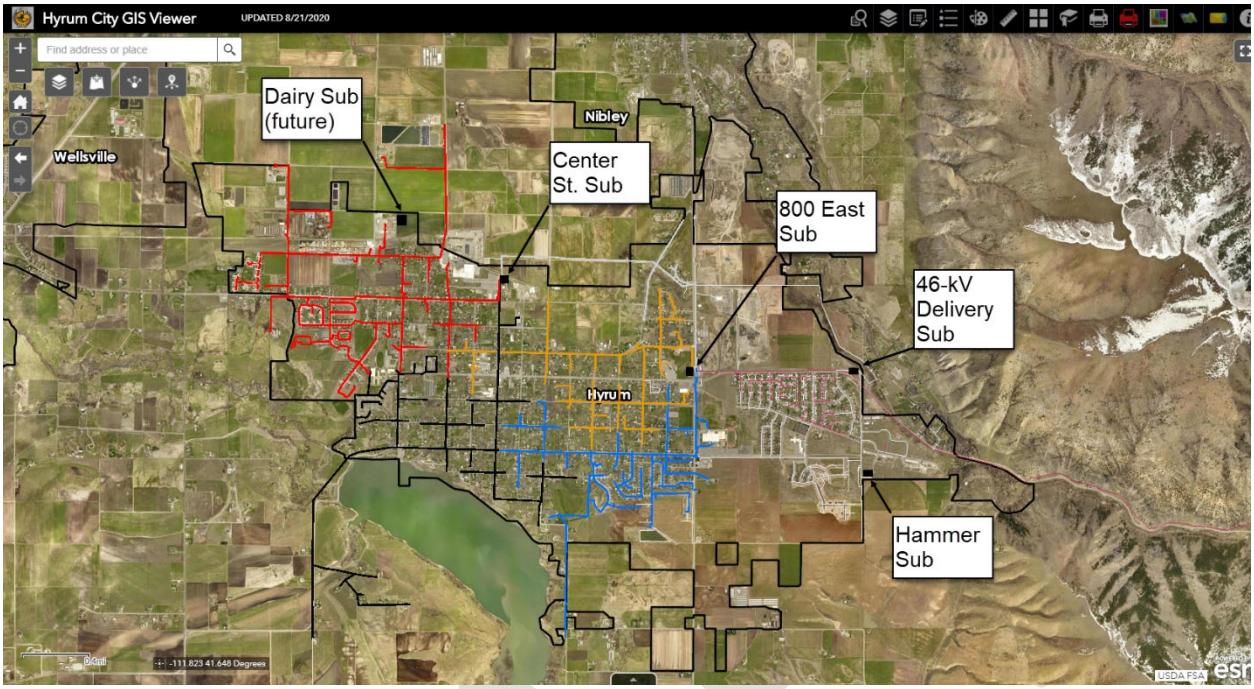


Figure 1-Hyrum City Power System Map

Hyrum City is a member of the Utah Associated Municipal Power Systems (UAMPS) organization. UAMPS is a member organization that provides wholesale electric-energy, transmission, and other energy services, on a nonprofit basis, to municipal-owned power systems. Hyrum City is able to participate along with other municipalities in projects including wind, natural gas, hydroelectric and coal-fired generation.

2.2 POPULATION AND GROWTH

The population of Hyrum City in 2019 was estimated by the Utah Governor's Office to be 8,619. The estimated population provided by Hyrum City for 2020 is 9,000. Population growth rate averaged over 2016-2020 is 2.5% to 3.5%, and the most recent year growth was about 4.5%.

2.2.1 POPULATION FORECAST

The population growth rate of 3.5% was applied over the 10-year period, 2021 to 2030, in this impact fee analysis. The estimated historic and projected future population of Hyrum City is shown in Figure 2.

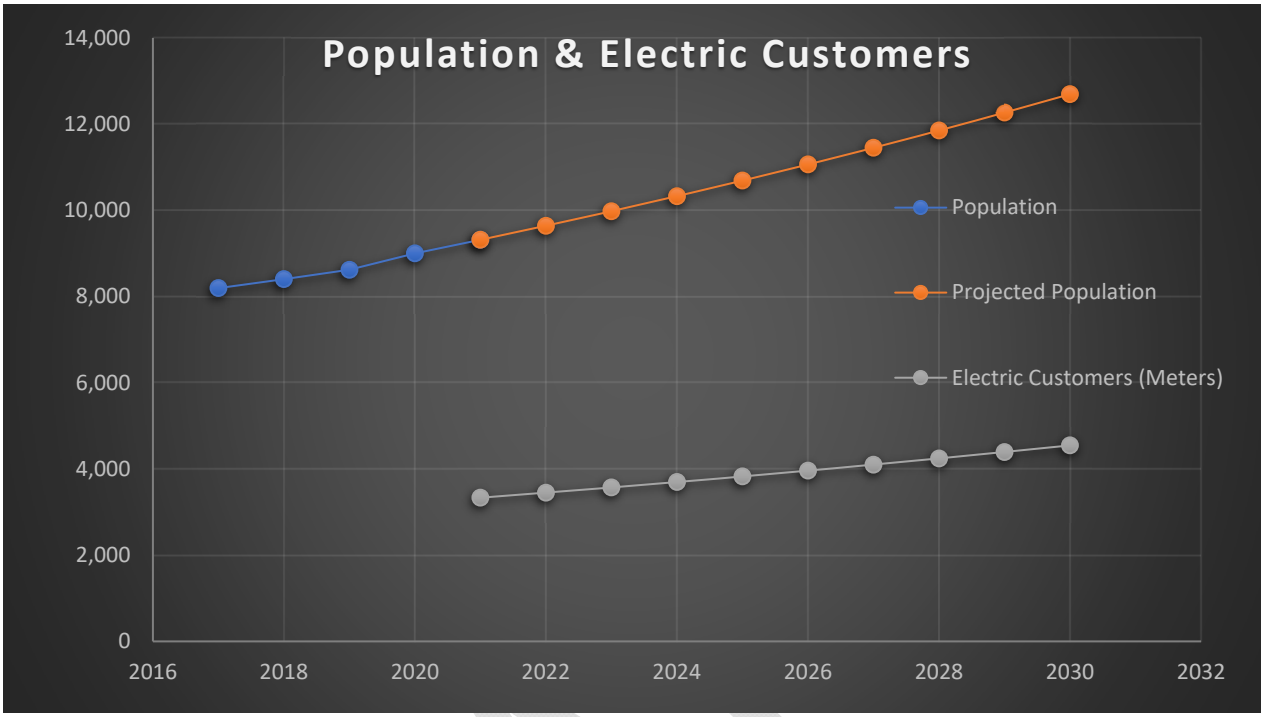


Figure 2 – Hyrum Population and Electric Customers

2.2.2 ELECTRIC CUSTOMERS

Hyrum City has about 3,220 electric meters installed as of 2020. Each meter is considered a customer, so the ratio of customers to population is 3,220:9,000 or 1 meter per 2.8 people. An estimated projection on the new of new meters or customers can be made from the population projection and the meters per population ratio. The projected number of total electric customers, or meters, is shown in Figure 2.

2.2.3 CUSTOMER FORECAST

The estimate for new meters is an average of 132 per year, some years might be less and some years might be more. Based on 2020 data, 94% of the meters are for residential customers, 4% of the meters are for commercial customers, and 2% of the meters are net meters or other type of meters. Going forward it is assumed that 94% of new meters will be for residential customers.

2.2.4 GROWTH AREAS

The areas of the city that are expected to see new growth are shown in Figure 3. The areas are identified as either residential or industrial based on the current zoning.

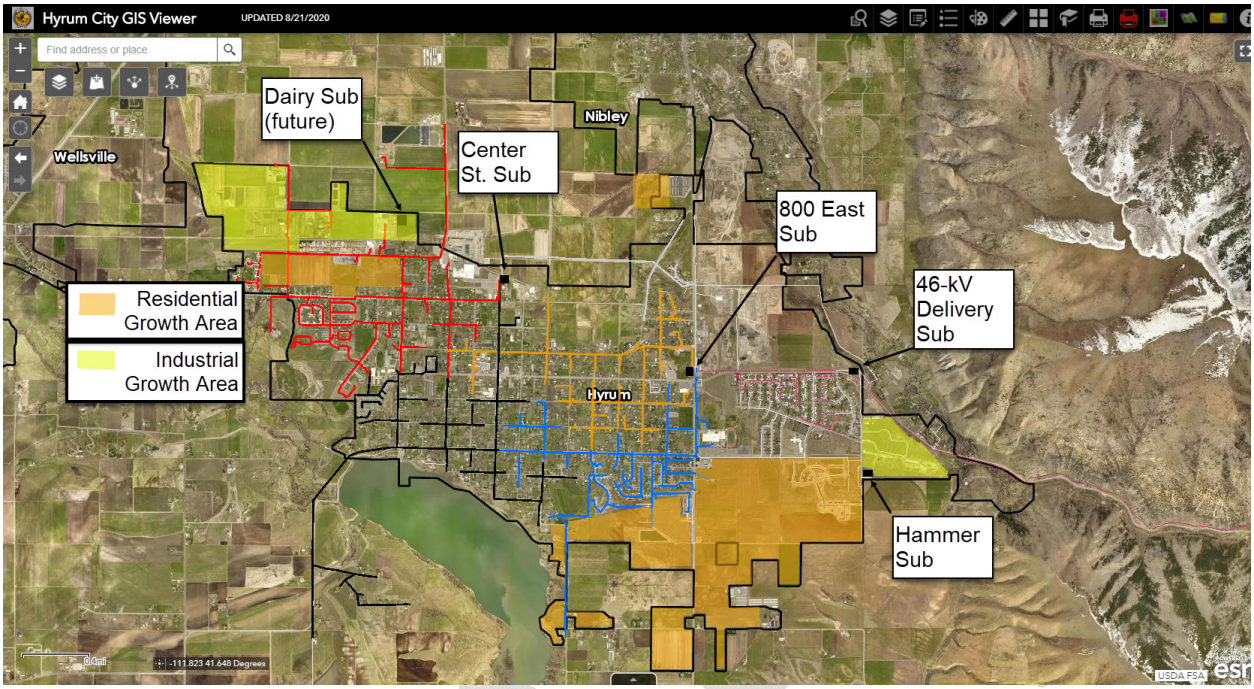


Figure 3-Growth Area Projection Map

2.3 EXISTING INFRASTRUCTURE CAPACITIES

2.3.1 TRANSMISSION SYSTEM AND SUBSTATIONS

Electric power is supplied to Hyrum City on a 46 kV transmission line owned and maintained by Rocky Mountain Power to one 46 kV breaker in the delivery substation. The city owns about 3.5 miles of 46 kV transmission line that feed four substations. An extension of the 46 kV transmission line will feed one future substation west of Center Street substation (the Dairy substation).

The 46 kV transmission system that is owned and operated by Hyrum City Power& Light has two branches. One branch goes to Hammer substation and another—the main branch—serves the substations at 800 East, Center Street, JBS[1] and will extend to feed the future Dairy substation. This main branch transmission line capacity is 23 MVA based on the 3/0 ACSR conductor rating (25 MVA short-term).

The substations and their associated transformers are listed in Table 1.

[1] JBS is a customer owned substation serving only the JBS plant. It is not counted as a Hyrum City Power distribution substation.

Table 1-Substation Transformers

Substation	Transformer Manufacturer	Transformer Rating (MVA)
800 East	Westinghouse	5
Center Street	Westinghouse	5
Hammer	ABB	10
Total Existing Transformer Rated Capacity		20
Dairy (Planned Future)	To be determined	10 (planned) 25 (ultimate)

2.3.2 DISTRIBUTION SYSTEM

From the three distribution substations there are nine 12.47/7.2 kV distribution feeders. These nine distribution feeders leaving the substations are generally constructed with 4/0 aluminum ACSR overhead conductor or 1100 MCM aluminum (Al) underground cable. The feeders built with 1100 MCM Al underground cable are classified as 600-amp circuits based on the limiting ratings of the other equipment in the system (e.g., reclosers, switchgear, elbows, bushings, connectors, etc.) The feeders built with 4/0 Al ACSR overhead conductor are rated at 340 amps and operated normally limited to 200 amps.

2.4 CURRENT LEVEL OF SERVICE

The current level of service is the system loading design criteria that Hyrum City Power & Light has historically used in designing, operating, and expanding the power system. The criteria followed is to limit loading to the base rating on substation transformers and to 80 percent of the rated capacity on main line feeder conductors. This ensures that there is sufficient reserve capacity built into the system to maintain service during the loss of a substation transformer or feeder while in the peak load season.

The system voltage design criteria of Hyrum City Power & Light are to maintain voltage within a range of +/- 5% nominal voltage in normal operation, and within a range of -10% to +5% during short-term emergency operation. Table 2 lists these loading and voltage design criteria.

Table 2-System Design Criteria

Element	Normal System	During Short-term Emergency ("N-1" Contingency)
Substation transformer loading	5 MVA on 800 East Sub 5 MVA on Center St. Sub 10 MVA on Hammer Sub	6.25 MVA on 800 East Sub 6.25 MVA on Center St. Sub 12.5 MVA on Hammer Sub (Transformer "Emergency" rating is 125% of its base rating)
Main line feeder loading	80% of conductor rating	100% of conductor rating
Main tie or main branch line loading	80% of conductor rating	100% of conductor rating
Voltage	+/- 5%	+ 5% to -10%

2.5 DEMANDS ON CURRENT SYSTEM

The peak load demand on the current system in 2020 was 21.66 MVA. This includes the load of the JBS plant. The Hyrum City distribution load not including the JBS plant was 12.34 MVA. See Table 3 for the details on the 2020 power demand.

Table 3 - Hyrum 2020 Peak Power Demand

July 2020 Peak Demand	MW	Power Factor	MVA	% of Total
Hyrum UAMPS Meter Total	19.912	0.9199	21.646	100%
JBS Meat Packing Plant UAMPS Meter	7.575	0.8778	8.630	39.9%
Hyrum City (without JBS)	12.337	0.9478	13.016	60.1%

Load on the main branch of the Hyrum owned and operated 46 kV transmission line in 2020 is estimated to have been 17.6 MVA (includes JBS load).

2.6 DEMANDS WITH GROWTH (LOAD GROWTH FORECAST)

Historic power demand growth rate has averaged about 5% from 2016 to 2020. Power demand growth correlates with and is tied to the population growth rate. The forecast peak load demand on the system from 2021-2030 is shown in Figure 4. The orange line Includes Hyrum City distribution load with the JBS plant load with a 3% growth rate per year applied. The blue line shows the Hyrum City distribution load only, with a 4.6% growth rate per year applied to it. The Hyrum City distribution peak load demand in 2030 is projected to be 20.6 MVA.

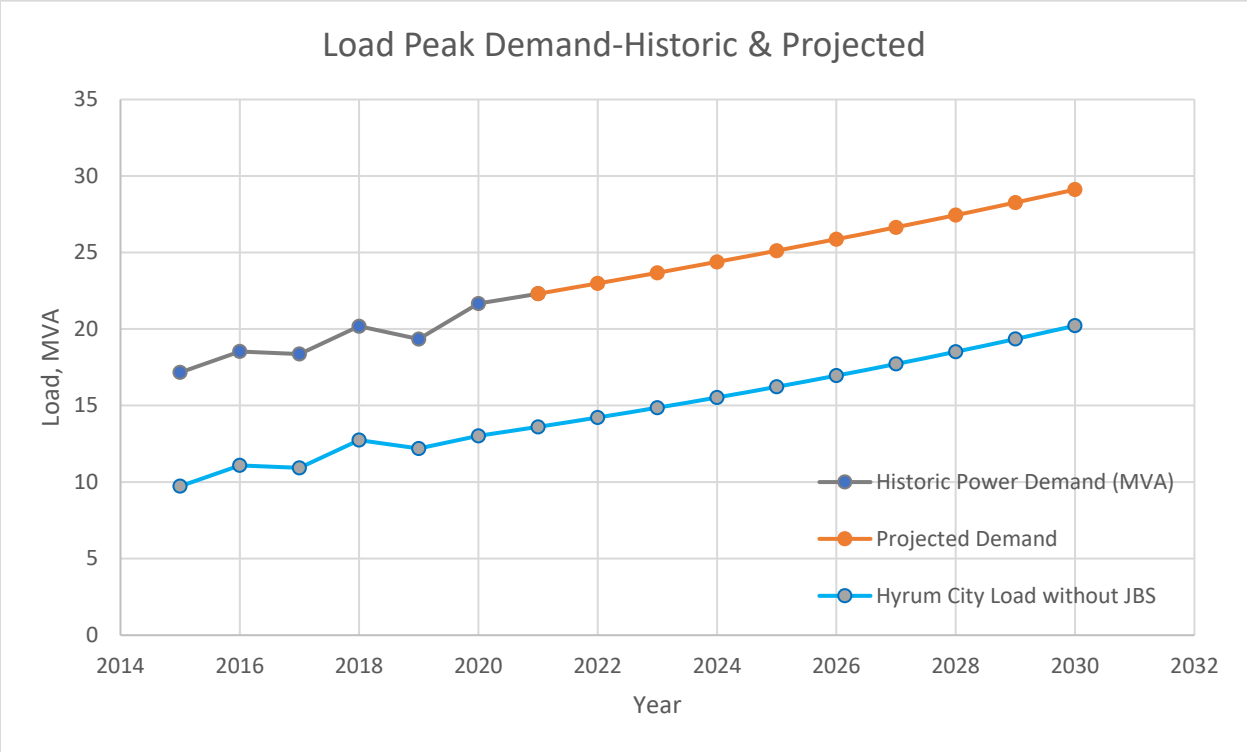


Figure 4- Power Demand

2.7 SPATIAL LOAD FORECAST

In order to plan the capital expansion of the Hyrum City power system, a spatial load forecast was performed. Spatial load forecast was performed using the growth areas provided in Figure 3 to obtain a prediction of future electric demand in those specific areas. The Figure 3 map of Hyrum City shows where and what types of future development is anticipated. From this information the 2021-2030 spatial load forecast was developed showing the projected power demand at build-out of these areas. The total Hyrum City power demand projected at build-out is approximately 20.6 MVA[2] as shown in Table 4.

[2] Does not include JBS substation/plant load

Table 4-Spatial Load Forecast

Hyrum City Zoning Category	Approx. Total Acres	Factor of Usable Acreage (Accounts for roads, parks, open space, etc.)	Number of Units per Acre	Demand per Customer (kW)	Spatial Forecast Demand (kW)
R-2 (Residential Multi Family)	725	0.4	4	5	5,800
M-2 (Manufacturing-Med. To Heavy)	250	0.625	0.36 (2.75 acres per unit)	25	1,400
Totals	975				7,200

Future Load (kW) (kVA @ 0.95 P.F.)	7,200 kW 7,579 kVA	From above Spatial Forecast
Hyrum City 2020 Peak Load (kVA)	13,016 kVA	(Without JBS)
Total (kVA)	20,595 kVA	Projected for 2030

2.8 PROJECTS FOR IFFP—REQUIRED CAPACITY ADDITIONS

The projects below are included in the IFFP to meet the demand of future growth. They are also listed with the project's probable costs in Table 5.

2.8.1 46 kV TRANSMISSION PROJECT

When the Dairy substation is built (10 MVA capacity initially) it will have about 5 MVA of new load on it. The Dairy substation and its load will be served by the main transmission branch. The year that the Dairy substation load is added the main branch transmission line is projected to be loaded over its normal rating.

Even if the Dairy substation load is not added, in the "N-1" contingency loss of Hammer substation the entire Hyrum load is on the transmission line. The projected load in 2022 that the main branch transmission line would carry in this "N-1" is 23.1 MVA which exceeds the 23 MVA normal rating.

When the new Dairy substation is built and loaded, but no later than 2022, the 46 kV transmission line to the substations at 800 East, Center Street, and JBS substations and the new Dairy substation needs to be rebuilt with conductor that adds at least 9 MVA additional capacity--such as 397.5 ACSR conductor (rated 44 MVA) or greater.

2.8.2 SUBSTATION TRANSFORMERS

Hyrum City substation transformer total existing base capacity is 20 MVA which is sufficient for 2021 projected load of about 13.6 MVA. However, the 2020 load on Center Street substation appears to be about 5.7 MVA which is over its base rating capacity of 5 MVA. Load transfer could be used to address this existing loading issue. This is an existing system issue the resolution of which is not included as an IFFP project.

Prior to building Dairy Sub the worst-case emergency ("N-1") contingency is the loss of the Hammer sub transformer (10 MVA capacity). In this "N-1" contingency there is emergency capacity of 12.5 MVA on the two remaining subs which is not enough capacity for the 13.6 MVA projected load in 2021. As development driven load continues to increase beyond this, another substation transformer or upgraded substation transformer is needed to serve the load. Either adding the Dairy substation or upgrading the Center St. substation transformer could fix this deficiency. The resolution of this issue is included in IFFP projects.

When the Dairy substation is built (10 MVA capacity initially) then the worst case emergency ("N-1") contingency would be the loss of the Dairy substation transformer (10 or 25 MVA)—there is emergency capacity of 25 MVA on the three remaining substations, which is enough capacity for the projected load until 2029. Another substation transformer or upgraded substation transformer is needed in 2029 to meet and serve the projected 2029 load under the worst-case emergency ("N-1") contingency. The resolution of this issue is included as an IFFP project.

2.8.3 DISTRIBUTION SYSTEM

In order to serve the projected new load one feeder with at least 360 amp capacity (477 ACSR overhead or 1100 MCM aluminum (Al) underground needs to be built, and another feeder of the same size is needed to back it up in the "N-1" contingency situation. Since the forecasted load is projected to be connected in two separate geographical areas, the southeast and northwest areas of the city, new feeders will be need in each area.

A total of two new feeders are considered necessary to maintain the level of service to Hyrum City Power & Light customers. One new feeder would be built into the northwest area and one new feeder would be built into the southeast area. This would likely satisfy the capacity requirements of new load in these areas. The new feeder built in the southeast area would likely be built from the Hammer substation into the areas that are being developed. The new Dairy substation or existing Center Street substation would be the source for the new feeder that would be built into the northwest area where it would be developed.

2.9 COST OF IFFP PROJECTS REQUIRED

The opinion of the probable costs of the capacity additions required and discussed in Section 2.8 are show in Table 5 and discussed in this section. Costs shown are 2020-dollar probable costs.

Table 5-IFFP Projects

Project	Added Capacity	Year	Opinion of Probable Cost
Build Dairy Substation	25 MVA (10 MVA initially, 25 MVA ultimate)	2021	$3,000,000
Center St. Substation Transformer Upgrade	5 MVA (10 MVA transformer replaces 5 MVA)	2021-2029	$800,000
Two New Feeders	15 MVA	2021-2026 (dependent on growth)	$575,000
46 kV Transmission Upgrade	21 MVA (44 MVA line replaces 23 MVA line)	2022 (or earlier when Dairy Sub is added)	$1,695,500
Capacity Added[3] (MVA)	**30 MVA**	**TOTAL Cost**	**$6,070,500**

2.9.1 SUBSTATION TRANSFORMER COST

The probable cost of the Dairy substation with a 25 MVA transformer is likely about $3,000.000. A transformer upgrade at Center St. substation to a 10 MVA transformer is an option in 2021, or required in 2029, and is likely about $800,000. These substation transformers are what are counted in the "Capacity Added" total in Table 5 since they represent the increase of the capacity of the system. The transmission upgrade and two new feeders are means to feed and utilize, respectively, the new transformer capacity.

2.9.2 FEEDER COST

Standard feeders are underground 1100 MCM aluminum (Al) feeders with a feeder breaker at the substation. The opinion of cost of a feeder is approximately $50,000 for the feeder breaker and $287,500 for an underground feeder that extends approximately one mile from the

[3] The 46 kV transmission upgrade is required for the capacity of the Dairy substation so it is not included in the total of the capacity added. Also, the two new feeders do not increase the system capacity but are needed to utilize it, so they are not included in the total of the capacity added.

substation. One feeder from Hammer substation and one feeder from the Dairy substation are included in Table 5.

2.9.3 46 KV TRANSMISSION COST

The cost of the 46 kV transmission upgrade is based on 46 kV transmission line costing about $500,000 per mile. The length of the 46 kV transmission line to be built--upgraded to higher capacity--is 3.39 miles. The opinion of probable cost on this project is $1,695,500.

2.10 CERTIFICATION OF THE IFFP

I certify that the attached Impact Fee Facilities Plan:

1. includes only the costs of public facilities that are:
    a. allowed under the Impact Fees Act; and
    b. actually incurred; or
    c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
    a. costs of operation and maintenance of public facilities;
    b. costs for qualifying public facilities that will raise the level of service for facilities, through impact fees, above the level of service that is supported by existing residents;
    c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement;
3. complies in each and every relevant respect with the Impact Fees Act.

CERTIFIED BY:

Signature: _____

Name: _____

Title: _____

Date: _____

3 IMPACT FEE ANALYSIS (IFA)

3.1 GENERAL

Impact fees are one-time charges imposed on new development activity as a condition of development approval to mitigate the costs associated with necessary capital improvements to the public infrastructure, in this case the electric system. Utah has put in place Title 11, Chapter 36a (the "Impact Fee Act"). The "Impact Fee Act" imposes requirements regulating impact fees which apply to municipally owned electric utilities.

To implement impact fees as defined by the Impact Fee Act, "local political subdivisions" must conduct an analysis with the following elements:

Identification of the impact on or consumption of any existing capacity of a public facility by the anticipated development activity;

Identification of the anticipated impact on system improvements required by the anticipated development activity to maintain the established level of service;

Demonstration of how those impacts on system improvements are reasonably related to the development activity;

Estimation of the proportionate share of the costs for existing capacity that will be recouped and the costs of impacts on system improvements; and

Explanation of how the impact fee was calculated.

Electric impact fees in Hyrum City are calculated using incremental costs, which is one of several methods for calculating impact fees. This method determines what new developments pay for improvements or a portion of the improvements needed to serve them. This is a "capacity-based" fee structure. In this way existing customers are not burdened by the new growth.

This Impact Fee Analysis involves three basic steps or sub-analyses: (1) determining an Impact Fee rate that applies a cost per each kVA of new power demand from development; (2) determining the kVA power demand for the typical customer types and service levels; and (3) calculating the proposed Impact Fee

3.1.1 IMPACT FEE RATE CALCULATION

As in shown Table 5 the total cost of new development-related projects in the IFFP is $6,070,500. The Impact Fee rate analysis is shown in Table 6.

As shown in Table 6 the estimated cost/kVA of new system capacity, including transmission and substation capacity, and distribution feeders, is $202.35/kVA at present day pricing and

$252.71/ kVA for projected 2029 pricing[4], assuming no interest is earned on the collected fees. However, if the current rate of 0.5% interest earnings[5] on invested funds can be maintained, the impact fee rate can be reduced to $240.39/kVA.

Table 6-Impact Fee Rate Calculation

Row Item	Value	Notes
(1) Total Cost of IFFP Projects	$6,070,500	2020-dollar costs of new development-related projects shown in Table 5
(2) Added kVA	30,000 kVA	25,000 kVA New Dairy Sub + 5,000 kVA transformer upgrade at Center St. Sub
(3) Cost per kVA	$202.35 per kVA	$(Row\ 1) \div (Row\ 2) = \frac{\$}{kVA}$
(4) 2029 Escalated Total Cost of Projects	$7,581,223	Assumed construction cost escalation rate of 2.5% per year. $(Row\ 1)x(1.025)^9$
(5) 2029 Escalated Cost per kVA	$252.71 per kVA	$(Row\ 4) \div (Row\ 2) = \frac{\$}{kVA}$
(6) Present Value of 2029 Escalated Total Cost of Projects	$7,211,707	Assumed interest earnings rate of 0.5% per year compounded quarterly, Impact fees collected evenly over 10 years
(7) Cost per kVA considering earned interest	$240.39	$(Row\ 6) \div (Row\ 2) = \frac{\$}{kVA}$
Impact Fee Rate	**$240.39**	

Hyrum City states that there is no cost of debt service since there are no bonds for electrical capital projects, and there are no offsets to project costs with grants or other alternate sources of payment. Therefore, the impact fees recommended for Hyrum City will be based on the rate of $240.39 per kVA of power demand added to the system.

[4] Calculated based on assumed construction cost escalation rate of 2.5%

[5] The 0.5% rate of return is the present rate of return available to the City for these funds.

3.1.2 POWER DEMAND AND IMPACT FEE CALCULATION

The methods used to determine the estimated power demand--kW impact--on the power system of residential customers and commercial customers are different as shown in the following sections. The power demand calculations shown in sections 3.1.2.1 and 3.1.2.3 are used in calculating the Impact Fee in sections 3.1.2.2 and 3.1.2.4. A summary of recommended Impact Fee charges for the Residential and Commercial customer classes is provided in Table 7 and in Table 8.

3.1.2.1 RESIDENTIAL POWER DEMAND

The estimated power demand--kW impact--of residential customers is based on typical usage rather than on electric panel size. There are two residential service levels recognized by Hyrum City Power & Light—200-amp service and 400-amp service. Typical historic power demand seen in the experience of Hyrum City Power & Light has been about 5 kW on average for a 200-amp residential service and about 10 kW on average on a 400-amp residential service. Power factor on residential services is typically about 95%.

3.1.2.2 RESIDENTIAL IMPACT FEE CALCULATION

Recommended residential Impact Fee is calculated based on Equation 1:

Equation 1

Single Phase Residential Calculation

$$\frac{Typical\ Residential\ Demand\ (kW)}{Power\ Factor} \times Impact\ Fee\ Rate(\$/kVA) = Incurred\ Fee$$

Example 200A 120/240V Single Phase Residential Service

$$For\ 200A\ Residential\ Service\text{:}\ \frac{5kW}{0.95} \times \$240.39/kVA = \$1{,}265$$

Table 7 shows the recommended Impact Fee charge for the two residential service levels.

Table 7. RESIDENTIAL IMPACT FEES

Residential Service Level	Typical Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
200 Amp	5	95.0%	5.3	$1,265
400 Amp	10	95.0%	10.5	$2,530

3.1.2.3 COMMERCIAL POWER DEMAND

Commercial customers should be assessed an impact fee amount that is based on their estimated load placing power demand on the system. The estimated power demand for commercial customer classes have been calculated using the service panel size, voltage, and panel utilization. Typical panel utilization seen in the experience of Hyrum City Power & Light has been about 40% on average. Table A in the Appendix shows the estimated power demand (column 2) for commercial customers with various typical service panel sizes (column 1).

3.1.2.4 COMMERCIAL IMPACT FEE CALCULATIONS

The calculation of the Impact Fee charges for commercial customer classes are based on the following Equation 2 and Equation 3:

Equation 2

Single Phase Calculation

$$\frac{Main\ Panel\ Size\ \times Line\ to\ Line\ Voltage\ \times\ Panel\ Utilization}{1000} \times Impact\ Fee\ Rate = Incurred\ Fee$$

Example 200A 120/240V Single Phase Service

$$For\ 200A\ Single\ Phase\ Service\text{:}\ \frac{200A\ \times 240V\times\ 0.4}{1000} \times \$240.39/kVA = \$4{,}615$$

Equation 3

3 Phase Calculation

$$\sqrt{3} \times \frac{Main\ Panel\ Size \times Line\ to\ Line\ Voltage \times Panel\ Utilization}{1000} \times Impact\ Fee\ Rate = Incurred\ Fee$$

Example 600A 120/208V Three Phase Service

$$600A\ Three\ Phase\ Service\text{:}\ \sqrt{3} \times \frac{600A\ \times 208V\ \times 0.4}{1000} \times \$240.39/kVA = \$20{,}785$$

A selected sample of recommended Impact Fee charges for commercial class customers is shown in Table 8. A complete table of recommended Impact Fee charges for commercial class customers is included in Table A in the Appendix.

Table 8. SELECTED COMMERCIAL IMPACT FEES

Type of Commercial Service	Typical Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
Single Phase 120/240 V 200 Amp Panel	17.3	90.0%	19.2	$4,615
Three Phase 120/208 V 200 Amp Panel	25.9	90.0%	28.8	$6,928
Three Phase 277/480 V 200 Amp Panel	59.9	90.0%	66.5	$15,989

3.2 CERTIFICATION OF THE IFA

I certify that the attached Impact Fee Analysis:

1. includes only the costs of public facilities that are:
    a. allowed under the Impact Fees Act; and
    b. actually incurred; or
    c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
    a. costs of operation and maintenance of public facilities;
    b. costs for qualifying public facilities that will raise the level of service for facilities, through impact fees, above the level of service that is supported by existing residents;
    c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
3. offsets costs with grants or other alternate sources of payment; and
4. complies in each and every relevant respect with the Impact Fees Act.

CERTIFIED BY:

CERTIFIED BY:

Signature: _____

Name: _____

Title: _____

Date: _____

HYRUM CITY
Power Department

APPENDIX

IMPACT FEE ANALYSIS
SUPPORTING DOCUMENTATION

Table A--Commercial Customer Power Demand and Recommended Impact Fee

COMMERCIAL IMPACT FEES -- Panel Utilization assumed 40%				
	Est. Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
Single Phase 120/240 V 200 Amp Panel	17.3	0.90	19.2	$4,615
Single Phase 120/240 V 400 Amp Panel	34.6	0.90	38.4	$9,231
Three Phase 120/208 V 200 Amp Panel	25.9	0.90	28.8	$6,928
Three Phase 120/208 V 400 Amp Panel	51.9	0.90	57.6	$13,857
Three Phase 120/208 V 600 Amp Panel	77.8	0.90	86.5	$20,785
Three Phase 120/208 V 800 Amp Panel	103.8	0.90	115.3	$27,713
Three Phase 120/208 V 1200 Amp Panel	155.6	0.90	172.9	$41,570
Three Phase 120/208 V 1600 Amp Panel	207.5	0.90	230.6	$55,427
Three Phase 277/480 V 200 Amp Panel	59.9	0.90	66.5	$15,989
Three Phase 277/480 V 400 Amp Panel	119.7	0.90	133.0	$31,977
Three Phase 277/480 V 600 Amp Panel	179.6	0.90	199.5	$47,966
Three Phase 277/480 V 800 Amp Panel	239.4	0.90	266.0	$63,954
Three Phase 277/480 V 1200 Amp Panel	359.2	0.90	399.1	$95,931
Three Phase 277/480 V 1600 Amp Service	478.9	0.90	532.1	$127,908
Three Phase 277/480 V 2000 Amp Service	598.6	0.90	665.1	$159,885
Three Phase 277/480 V 2500 Amp Service	748.2	0.90	831.4	$199,857
Three Phase 277/480 V 3000 Amp Service	897.9	0.90	997.7	$239,828

CONCEPT PLAN

MOUNTAIN VIEW ESTATES SOUTH

CITY COUNCIL MEETING

JANUARY 7, 2021

Summary: Concept Plan

Neighborhood Housing Solutions is seeking to revise the Concept Plan for the remainder portion of the previously approved Mountain View Estates. NHS proposes to subdivide 57 acres to provide 175 single family lots.

ZONING: R-2 Residential

UTILITIES:

Power:	By Developer
Culinary:	By Developer
Sewer:	By Developer
Irrigation:	By Developer

PARKING & ROADS: By Developer

NOTES: All proposed lots meet the minimum lot size and frontage requirements for the R-2 zone.

Planning Commission was pleased to see that the two parks are still being incorporated into the plan with an east-west footpath.

Planning Commission Recommendation:

Lots will have no access to 700 South (shown as 660 South) west of 1490 East, and no access to 1600 East (Hammer Road). This will need to be noted on the plat.

PARCEL TABLE					
	PARCEL OWNER	PARCEL OWNER ADDRESS		PARCEL OWNER	PARCEL OWNER ADDRESS
P1	NEIGHBORHOOD NONPROFIT HOUSING CORP	195 GOLF COURSE RD STE 1 LOGAN, UT 84321	P12	DUSTIN & ABIGAIL AUMAN	522 S 1380 E HYRUM, UT 84319
P2	NEIGHBORHOOD NONPROFIT HOUSING CORP	195 GOLF COURSE RD STE 1 LOGAN, UT 84321	P13	JESSICA LEE HANSEN	525 S 1380 E HYRUM, UT 84319
P3	SCOTT JOSEPH & CATHERINE HAWKES SUMMIT	267 W 1100 N APT 1 LOGAN, UT 84321	P14	AMANDA RASMUSSEN	526 S 1430 E HYRUM, UT 84319
P4	NEIGHBORHOOD NONPROFIT HOUSING CORP	195 GOLF COURSE RD STE 1 LOGAN, UT 84321	P15	HOLLY M & STUART M SOGLA	538 S 1430 E HYRUM, UT 84319
P5	MARIA FELICITAS MEZ	491 N 100 W LOGAN, UT 84321	P16	DANIEL & CARLIE MILLER	522 S 1430 E HYRUM, UT 84319
P6	ASHLEY CHRISTINE & BYRON JAKOB HARRIS	21 S 350 E APT 3 LOGAN, UT 84321	P17	MATTHEW DELBERT & KELSEY ANN WILLIAMS	1520 E 540 S HYRUM, UT 84319
P7	NEIGHBORHOOD NONPROFIT HOUSING CORP	195 GOLF COURSE RD STE 1 LOGAN, UT 84321	P18	KYLE BENJAMIN KIRKHAM	657 N 800 E WELLSVILLE, UT 84339
P8	JESSIE LUNDQUIST	PO BOX 395 HYRUM, UT 84319	P19	ISAAC & BRITAIN GALICIA	410 S 700 E HYRUM, UT 84319
P9	KELLIE CROWLEY	508 S 1330 E HYRUM, UT 84319	P20	MARTIN MITCHELL & MEGAN YATES TURPIN	84 S 300 E LOGAN, UT 84321
P10	REESE & SHEENA WIRICK	524 S 1330 E HYRUM, UT 84319	P21	LAYNE VERNON & KIRA DAWN ROBINSON	1588 E 540 S HYRUM, UT 84319
P11	JACOB PITCHER	350 ROSEWOOD DR BSMT HYRUM, UT 84319			

GENERAL NOTES:

- TOTAL ACREAGE: 57.19 ACRES
- TOTAL LOTS: 175 LOTS
- WATER: THE SUBDIVISION SHALL INSTALL CULINARY WATER SYSTEM AND CONNECT TO HYRUM CITY SYSTEM.
- SEWER: THE SUBDIVISION SHALL INSTALL SANITARY SEWER SYSTEM AND CONNECT TO EXISTING LIFT STATION IN MOUNTAIN VIEW ESTATES PHASE 3.
- OWNER: NEIGHBORHOOD HOUSING SOLUTIONS
  195 W GOLF COURSE RD STE. 1
  LOGAN, UT 84321

////// INDICATES RESTRICTED ACCESS. LOT HAS NO RIGHTS OF VEHICULAR ACCESS ALONG MARKED AREA.

N

0 100' 200'

civilsolutionsgroup inc.
CACHE VALLEY | P: 435.213.3762
SALT LAKE | P: 801.216.3192
UTAH VALLEY | P: 801.874.1432
info@civilsolutionsgroup.net
www.civilsolutionsgroup.net

MOUNTAIN VIEW ESTATES SOUTH
500 SOUTH 1330 EAST
HYRUM, UT

MARK: DATE: DESCRIPTION:

PROJECT #: 20-209
DRAWN BY: L. CHUGG
PROJECT MANAGER: M. TAYLOR
ISSUED: 11/5/2020

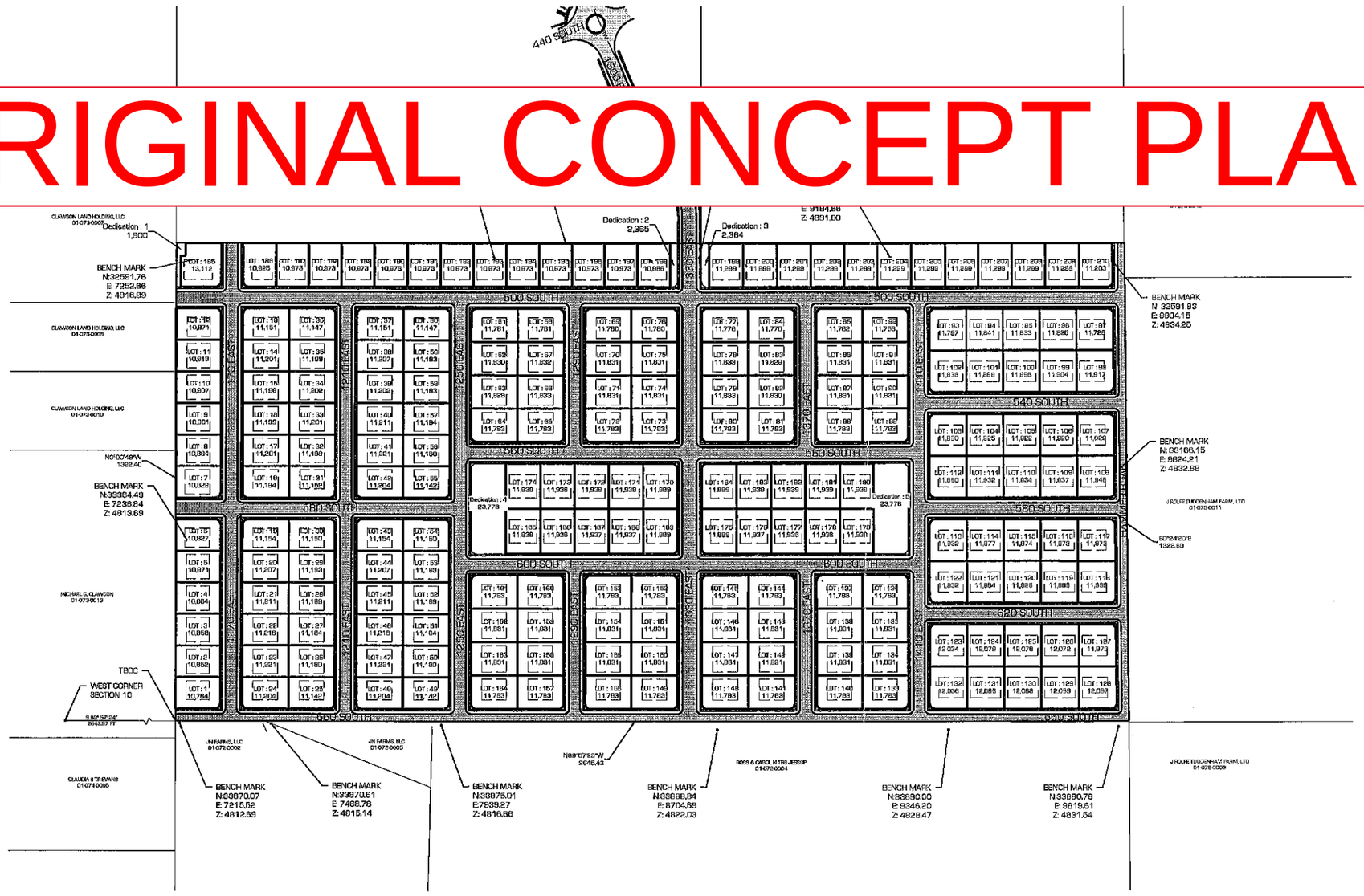
CONCEPT PLAN

SHEET 1 OF 1

DESIGNING OUR FUTURE

P:\2020\20-209 MVE Phase 4\AutoCAD\Civil\Concept\Mountain View Estates Concept 10-28-20

MOUNTAIN VIEW ESTATES
PRELIMINARY PLAT (VICINITY LAYOUT)
SCALE: 1"=150'



SHEET GENERAL NOTES:

1. SEE SHEET C105 & C108 FOR LOT DIMENSIONS.
2. ALL OPEN SPACE & SANITARY SEWER LIFT STATION AREA ARE TO BE DEDICATED TO HYRUM CITY.
3. ACCORDING TO THE UTAH DIVISION OF WATER RIGHTS, THERE IS A WELL LOCATED ON THE PROPERTY ASSOCIATED WITH RIGHT #25-423, AND A SPRING ASSOCIATED WITH WATER RIGHT #25-422; HOWEVER, NO EVIDENCE OF EITHER FEATURE HAS BEEN IDENTIFIED ON SITE. NO OTHER WELLS OR SPRINGS HAVE BEEN IDENTIFIED WITHIN THE PERIMETER OF 1000 FEET BEYOND THE TRACT BOUNDARY.
4. THERE ARE NO NATURAL FEATURES OR SENSITIVE AREAS WITHIN THE PROJECT AREA.
5. ALL LOCAL SITE BENCH MARKS ARE TIED HORIZONTALLY AND VERTICALLY TO USGS MONUMENT #MR0450 LOCATED NEAR THE RAY B. WEST BUILDING ON THE USU CAMPUS.
6. SETBACKS:
   FRONT YARD: 30'
   BACK YARD: 30'
   SIDE YARD (WITH NO ADJACENT ROAD): 10'
   SIDE YARD (WITH ADJACENT ROAD): 25'
   REQUIRED FOR LOTS 185 THROUGH 210.
   E A REAR SET BACK OF 45' AND A FRONT
   ACK OF 20' TO ENSURE SUFFICIENT
   O THE EXISTING IRRIGATION PIPE.

LEGEND EXISTING

- EXISTING FIRE HYDRANT
- EXISTING SEWER MANHOLE
- EXISTING SEWER LINE
- EXISTING AERIAL POWER LINE
- EXISTING CONTOUR
- EXISTING ASPHALT
- EXISTING CONCRETE
- EXISTING WATER LINE
- EXISTING IRRIGATION LINE

LEGEND PROPOSED

- PROPERTY BOUNDARY
- PROPOSED WATER LINE
- PROPOSED GAS LINE
- PROPOSED SEWER LINE
- PROPOSED BURIED POWER LINE
- PROPOSED COMMUNICATION LINE
- PROPOSED CONTOUR
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- PROPOSED BUILDING
- BUILDING SETBACK
- PROPOSED IRRIGATION LINE

N

0 150' 300'

civilsolutionsgroup inc.
540 W GOLF COURSE RD SUITE B1
PROVIDENCE, UT 84332
P: 435.213.3762
F: 435.213.3762
www.civilsolutionsgroup.net

MOUNTAIN VIEW ESTATES
PRELIMINARY PLAT
6200 SOUTH 800 EAST
HYRUM, UT 84319

MARK	DATE	DESCRIPTION

PROJECT #: 706-1501
DESIGN: C.BOWN
REVIEW: M. TAYLOR
ISSUED: 06.26.15

DRAFT

VICINITY LAYOUT

C-101

ZX MINI-SUBDIVISION

383 WEST 300 NORTH

CITY COUNCIL MEETING

DECEMBER 10, 2020

Summary: 3 Lot Mini-Subdivision

Lundahl Farms, LLC is seeking to subdivide Parcel 01-030-0004 into three lots following a boundary line adjustment. Each lot is intended to be a residential building lot. Approval of the lots as drafted will provide an exception to the minimum frontage requirements for Lots 1 & 2.

ZONING: R-2 Residential

UTILITIES:

Power:	Available for Lot 3, Lots 1 & 2 to extend service
Culinary:	Available
Sewer:	Available
Irrigation:	Available

PARKING & ROADS: Paved roads, no curb

NOTES: Lots 1 and 2 are 82.10 feet along the frontage. Recent survey shows that block was laid out smaller than the nominal size. Lot frontage follows the character of current zoning. Staff recommends this be considered as meeting the requirement for minimum frontage.

Planning Commission Recommendation:

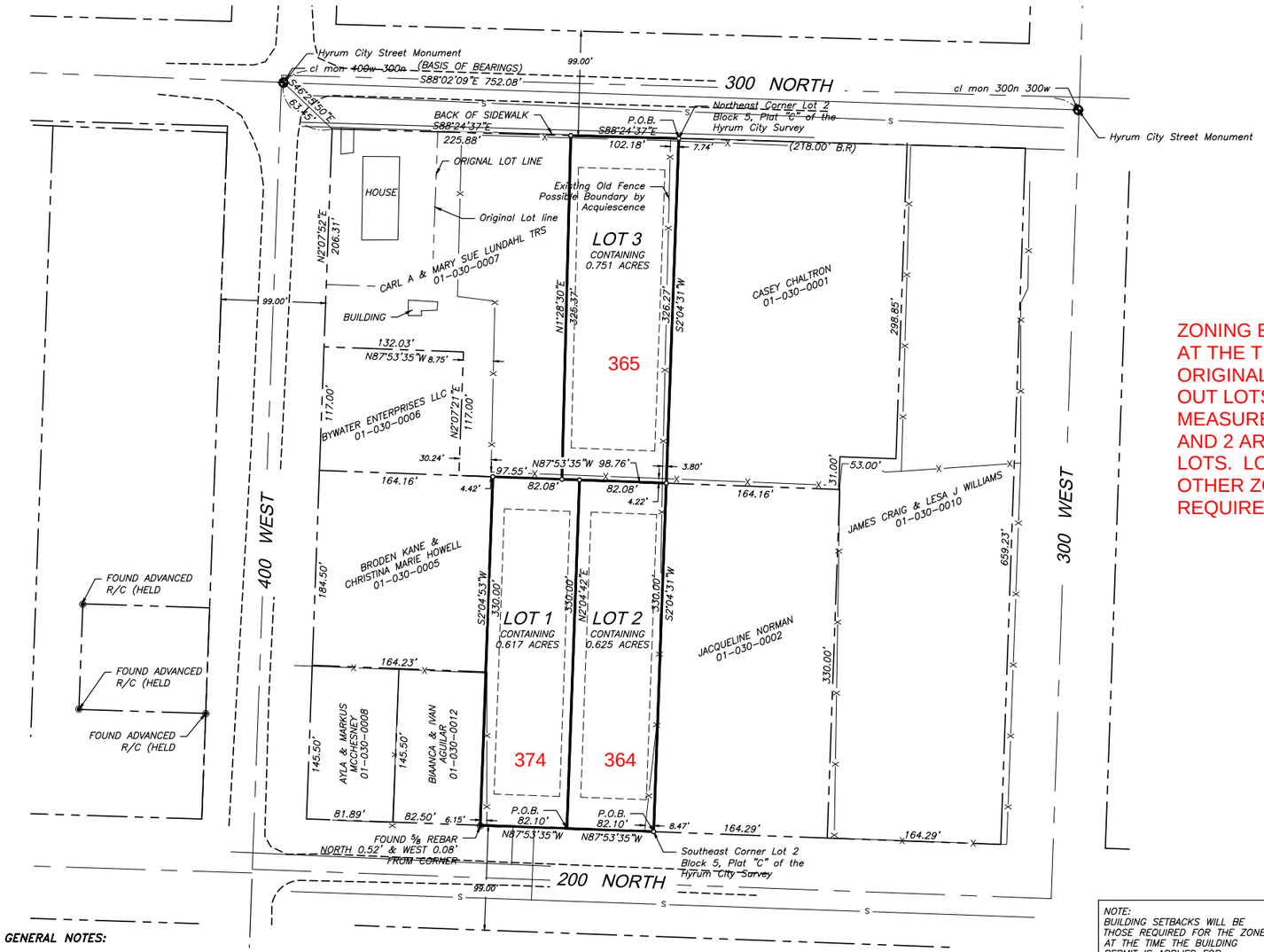
A note be added to the plat stating that the Lots 1 & 2 be considered building lots at 82.10 feet instead of 82.50 feet along the frontage. All other zoning requirements shall be per City Code.

ZX Investments "MINI" Subdivision 1

A PART OF THE NORTHWEST QUARTER OF SECTION 5, T10N, R1E, S.L.B.&M.
HYRUM, CACHE COUNTY, UTAH

November 6, 2020

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.



ZONING EXCEPTION: MINIMUM FRONTAGE AT THE TIME OF RECORDING IS 82.5 FEET. ORIGINAL SURVEY INTENT WAS TO LAY OUT LOTS AT 165 FEET. DUE TO ERRORS IN MEASUREMENT DURING LAYOUT, LOTS 1 AND 2 ARE CONSIDERED DEVELOPABLE LOTS. LOTS ARE STILL SUBJECT TO ALL OTHER ZONING AND BUILDING REQUIREMENTS.

LEGEND:

- SUBDIVISION BOUNDARY
- ADJACENT PROPERTY LINE
- CENTERLINE
- SETBACK LINE
- EASEMENT LINE
- FENCE LINE
- SEWER LINE
- WATERLINE
- FOUND REBAR/CAP
- SECTION CORNER
- HYRUM CITY MONUMENT
- SET 5/8" REBAR W/CAP (FORESIGHT SURVEY)

NOTE:
BUILDING SETBACKS WILL BE THOSE REQUIRED FOR THE ZONE AT THE TIME THE BUILDING PERMIT IS APPLIED FOR.

Record Owners: Lundahl Farms LLC
P.O. Box 42
Hyrum, Utah 84319

GENERAL NOTES:

1. Dominion Energy approves this plat solely for the purpose of confirming that the plat contains public utility easements. Dominion Energy may require other easements in order to serve this development. This approval does not constitute abrogation or waiver of any other existing rights, obligations or liabilities provided by law or equity. This approval does not constitute acceptance, approval or acknowledgment of any terms contained in the plat, including those set in the owner's dedication and the notes and does not constitute a guarantee of particular terms of natural gas service. For further information please contact Dominion Energy's right-of-way department at 1-800-366-8532.

2. Setback lines are for primary buildings only.

Front:	30.00'	25.00
Rear:	30.00'	
Side:	12.00' & 8.00'	
Side along Roadway:	30.00'	25.00

SURVEYOR'S CERTIFICATE

I, JEFF C. NIELSEN, DO HEREBY CERTIFY THAT I AM A REGISTERED LAND SURVEYOR, AND THAT I HOLD CERTIFICATE NO. 5152661 AS PRESCRIBED UNDER THE LAWS OF THE STATE OF UTAH, I FURTHER CERTIFY THAT BY AUTHORITY OF THE OWNERS I HAVE MADE A SURVEY OF THE TRACT OF LAND SHOWN ON THIS PLAT AND DESCRIBED BELOW, AND HAVE SUBDIVIDED SAID TRACT OF LAND INTO LOTS AND STREETS HEREAFTER TO BE KNOWN AS: ZX "MINI" SUBDIVISION 1 AND THE SAME HAS BEEN CORRECTLY SURVEYED AND ALL STREETS ARE THE DIMENSIONS SHOWN.

Boundary Descriptions

LOT 1
PART OF LOTS 2 AND 3, BLOCK 5, PLAT "C" OF THE HYRUM CITY SURVEY ALSO BEING A PART OF THE NORTHWEST QUARTER OF SECTION 5, TOWNSHIP 10 NORTH, RANGE 1 EAST, SALT LAKE BASE AND MERIDIAN.

BEGINNING AT A POINT ON THE NORTH RIGHT OF WAY LINE OF 200 NORTH STREET LOCATED NORTH 87°53'35" WEST, A DISTANCE OF 82.10 FEET FROM THE SOUTHEAST CORNER OF SAID LOT 2 AND RUNNING THENCE NORTH 87°53'35" WEST A DISTANCE OF 82.10 FEET ALONG THE SAID NORTH RIGHT OF WAY LINE; THENCE NORTH 02°04'53" EAST, A DISTANCE OF 330.00 FEET TO THE NORTH LINE OF SAID LOT 3; THENCE SOUTH 87°53'35" EAST, A DISTANCE OF 82.08 FEET ALONG THE SAID NORTH LINE; THENCE SOUTH 02°04'42" WEST, A DISTANCE OF 330.00 FEET TO THE POINT OF BEGINNING.
CONTAINING 0.622 ACRES.

LOT 2
PART OF LOTS 2 AND 3, BLOCK 5 PLAT "C" OF THE HYRUM CITY SURVEY ALSO A PART OF THE NORTHWEST QUARTER OF SECTION 5, TOWNSHIP 10 NORTH, RANGE 1 EAST, SALT LAKE BASE AND MERIDIAN.

BEGINNING AT A POINT ON THE NORTH RIGHT OF WAY LINE OF 200 NORTH STREET SAID POINT BEING THE SOUTHEAST CORNER OF SAID LOT 2 AND RUNNING THENCE NORTH 87°53'35" WEST, A DISTANCE OF 82.10 FEET ALONG SAID NORTH RIGHT OF WAY LINE; THENCE NORTH 02°04'42" EAST, A DISTANCE OF 330.00 FEET TO THE NORTH LINE OF SAID LOT 3; THENCE SOUTH 87°53'35" EAST, A DISTANCE OF 82.08 FEET ALONG THE SAID NORTH LINE TO THE NORTHWEST CORNER OF SAID LOT 3; THENCE SOUTH 02°04'31" WEST, A DISTANCE OF 330.00 FEET ALONG THE EAST LINE OF SAID LOTS 2 AND 3 TO THE POINT OF BEGINNING.
CONTAINING 0.622 ACRES.

LOT 3
PART OF LOTS 4 AND 5, BLOCK 5 PLAT "C" OF THE HYRUM CITY SURVEY ALSO A PART OF THE NORTHWEST QUARTER OF SECTION 5, TOWNSHIP 10 NORTH, RANGE 1 EAST, SALT LAKE BASE AND MERIDIAN.

BEGINNING AT A POINT ON THE SOUTH RIGHT OF WAY LINE OF 300 NORTH STREET AND AT THE NORTHEAST CORNER OF SAID LOT 5 AND RUNNING THENCE SOUTH 02°04'31" WEST, A DISTANCE OF 326.27 FEET ALONG THE EAST LINE OF LOTS 4 AND 5 TO THE SOUTHEAST CORNER OF SAID LOT 4; THENCE NORTH 87°53'35" WEST, A DISTANCE OF 98.76 FEET ALONG THE SOUTH LINE OF SAID LOT 4; THENCE NORTH 01°28'30" EAST, A DISTANCE OF 325.37 FEET TO THE SAID SOUTH RIGHT OF WAY LINE; THENCE SOUTH 88°24'37" EAST, A DISTANCE OF 102.18 FEET ALONG SAID SOUTH RIGHT OF WAY LINE TO THE POINT OF BEGINNING.
CONTAINING 0.752 ACRES.

SIGNATURE DATE

RENEW
LICENSED LAND SURVEYOR 5152661
JEFF C. NIELSEN
STATE OF UTAH

FORESIGHT
LAND SURVEYING
2005 North 600 West, Logan, Utah
435-753-1910

Project No. 20-128
Prepared by JH, 11/6/20

20-128.dwg November 6, 2020

ACKNOWLEDGMENT

STATE OF UTAH)
) SS.
COUNTY OF CACHE)

THE FOREGOING INSTRUMENT WAS PERSONALLY ACKNOWLEDGED BEFORE ME, THE UNDERSIGNED NOTARY PUBLIC THIS_____DAY OF_____, 20___, BY_____, WHO PROVED ON BASIS OF SATISFACTORY EVIDENCE TO BE _____, OF _____ AND IS SAID PERSON WHOSE NAME IS SUBSCRIBED TO THIS INSTRUMENT AND THAT SAID DOCUMENT WAS SIGNED BY HIM/HER IN BEHALF OF SAID _____ BY AUTHORITY OF ITS BYLAWS.
WITNESS MY HAND AND OFFICIAL SEAL.

_____
NOTARY PUBLIC

CITY ENGINEER'S CERTIFICATE

I CERTIFY THAT I HAVE HAD THIS PLAT EXAMINED AND THAT IT IS CORRECT AND IN ACCORDANCE WITH THE INFORMATION ON FILE IN THIS OFFICE.

DATE CITY ENGINEER

UTILITY COMPANY APPROVALS

THE UTILITY EASEMENTS SHOWN ON THIS PLAT ARE APPROVED

HYRUM CITY CULINARY WATER AUTHORITY	DATE
HYRUM CITY SANITARY SEWER AUTHORITY	DATE
HYRUM CITY POWER	DATE
COMCAST	DATE
QUESTAR GAS	DATE
QWEST	DATE

OWNERS DEDICATION

THE UNDERSIGNED, BEING ALL OWNERS OF RECORD OF THE ABOVE-DESCRIBED PARCEL OF LAND TO BE SUBDIVIDED AND KNOWN AS: ZX INVESTMENTS "MINI" SUBDIVISION 1 AND DO HEREBY DEDICATE THE STREETS AND PUBLIC AREAS SHOWN ON THIS PLAT FOR THE PERPETUAL USE OF THE PUBLIC AND DO HEREBY VEST THE FEE TITLE OF SUCH DEDICATED PARCELS IN AND TO HYRUM CITY, CACHE COUNTY, UTAH.

_____, HAVE EXECUTED THIS PLAT AND DEDICATION THE_____DAY OF_____, 2020.

COUNTY RECORDER'S NO.

STATE OF UTAH, COUNTY OF _____, RECORDED AND FILED AT THE REQUEST OF: _____

DATE: _____ TIME:_____ FEE:_____

ABSTRACTED_____

INDEX_____ _____
FILED IN: FILE OF PLATS COUNTY RECORDER

CITY COUNCIL APPROVAL AND ACCEPTANCE

PRESENTED TO THE HYRUM CITY COUNCIL THIS_____ DAY OF _____A.D. 20___, AT WHICH TIME THIS SUBDIVISION WAS APPROVED AND ACCEPTED.

MAYOR ATTEST

PLANNING COMMISSION APPROVAL

APPROVED THIS_____DAY OF_____A.D. 20___, BY THE HYRUM CITY PLANNING AND ZONING COMMISSION.

BY:_____
CHAIRPERSON

CITY ATTORNEY APPROVAL

I CERTIFY THAT I HAVE EXAMINED THIS PLAT AND APPROVE THE PLAT AS TO FORM AS REQUIRED BY STATE LAW AND CITY ORDINANCE THIS _____ DAY OF _____, 2020.

DATE HYRUM CITY ATTORNEY

Jennie Pakalani
380 S 1580 E
Hyrum, UT 84319
(435) 469-0416

Sawyer's Snow Cone & Cotton Candy Stand

2nd December 2020

OVERVIEW

We want to sell snow cones and cotton candy over the spring, summer and fall of 2021 at the many Hyrum City sports fields.

GOALS

1. To sell snow cones and cotton candy bags at the different sporting events held within Hyrum City.
2. To help my son, Sawyer (age 6) learn to work, learn responsibility and manage money.
3. Create a fun environment where Sawyer can learn how to interact with many different people, at a safe distance, and learn time management skills.

SPECIFICATIONS

Sawyer and I will acquire a safe snow cone machine and a cotton candy machine that we can both run to provide snacks to our customers. I will receive a food handlers permit and we will both wear gloves and masks, if necessary, to distribute all snacks. Snow cones will be made on site and will need the use of a power source. If possible we would like to use an outlet at the sports fields. The Cotton candy will be made at our home which is pet and smoke free and will be placed in individual bags to sell. We will wear gloves and masks, if necessary, during the cotton candy making process. We would like to be able to sell these products in the evening during the school years for about 2 hours each time and whenever there may be games throughout the summer for 2-3 hours at a time. Since we do not have the schedule yet, it is hard to determine extract times. If we receive approval from the counsel then a business license application would be submitted before we would proceed.

MILESTONES

Learning to Work

My son, Sawyer, needs to start learning responsibility. He does chores at home but living in a townhouse community limits the things that he can do. This will be a great way for him to learn about time management, money and work.

RESOLUTION 21-01

A RESOLUTION AUTHORIZING COUNCILMEMBER _____ TO AUTOMATICALLY SUCCEED TO THE POSITION OF MAYOR PRO TEMPORE.

WHEREAS, the City Council desires to appoint one member of the governing body to automatically succeed to the position of mayor pro tempore whenever the mayor is absent; and

WHEREAS, the City Council passed and posted Ordinance 84-10, an ordinance authorizing a designated member of the City Council to automatically succeed to the position of mayor pro tempore whenever the mayor is absent; and

WHEREAS, Ordinance 84-10 provides that the appointment of the councilmember to serve a one-year term as mayor pro tempore shall be by resolution;

NOW, THEREFORE, BE IT RESOLVED by the City Council of Hyrum City, Cache County, State of Utah, that Councilmember _____ shall automatically succeed to the position of mayor pro tempore in the absence of the mayor during the calendar year 2021.

This resolution shall be effective upon adoption.

ADOPTED AND PASSED by the Hyrum City Council this 7th day of January, 2021.

HYRUM CITY

BY:_____
Stephanie Miller
Mayor

ATTEST:

_____
Stephanie Fricke
City Recorder

RESOLUTION 21-02

A RESOLUTION AMENDING THE PERSONNEL POLICIES AND PROCEDURE MANUAL FOR HYRUM CITY CORPORATION TO AMEND LEAVE PAY FOR PART TIME EMPLOYEES WITH BENEFITS AND OTHER MISCELLANEOUS ITEMS.

WHEREAS, on March 19, 1998, the Hyrum City Council adopted a personnel policy manual known as "Personnel Policies and Procedures Manual for Hyrum City Corporation" and on December 5, 2013 readopted the Personnel Policy Manual after major revisions were made; and

WHEREAS, said manual sets forth those policies pertaining to personnel conduct, conditions of employment, employment classification, work week, benefits, payroll, and related matters; and

WHEREAS, Section XII of the manual establishes employment classifications and Section XVIII defines Leaves of Absences; and

WHEREAS, Hyrum City's Personnel Policy defines Part-Time with Benefits as employees who work more than 20 hours a week but less than 40 hours a week, and Part-Time Non-Benefited as employees who work less than 30 hours per week; and

WHEREAS, Hyrum City's current employment practice is to classify employees as Part-Time with Benefits that work between 30 to 39 hours a week, and employees as Part-Time Non-Benefited employees that work less than 29.75 hour a week; and

WHEREAS, Hyrum City's Part-Time with Benefits employees work more than six hours a day, but only receive and/or accrue leave pay at one-half the amount that full time employees receive; and

WHEREAS, upon further review and recommendation by Mayor Miller it has been determined that it is both necessary and fair to amend the employee classification of Part-Time with Benefits and Part-Time Non-Benefited to reflect Hyrum City's current hiring classification process, and to amend the leave pay (Holiday, Vacation, and Sick) for Part-Time with Benefits to reflect 75% of the leave offered to full time employees.

NOW, THEREFORE, BE IT RESOLVED by the City Council of Hyrum, Cache County, Utah, that Section XVII. 2. of the "Personnel Policies and Procedures Manual for Hyrum City Corporation" is hereby amended to read as follows:

1. Section VI. Employee Code of Conduct 7. Smoking of the Hyrum City Personnel Policies and Procedures Manual is hereby amended as follows:

7. SMOKING. In compliance with the Utah Indoor Clean Air Act smoking is not permitted in City facilities. Hyrum City also prohibits smoking in City owned vehicles.

2. Section XII. Employment Classifications/Compensation 2. Employment Classifications of the Hyrum City Personnel Policies and Procedures Manual is hereby amended as follows:

2. EMPLOYMENT CLASSIFICATIONS. There are six classifications of employees within Hyrum City:

A. Elected Official. Mayor, City Council, and Judge are elected officials and serve in a position where there is not a normal work week and/or works less than twenty (20) hours per week do not qualify for any Hyrum City benefits including retirement with the Utah State Retirement System. Elected Officials who are considered Tier 1 employees by the Utah Retirement System may be eligible for retirement benefits with the Utah Retirement Systems if wage meets Utah Retirement System requirement. Elected Officials are considered Part-Time Non Benefited employees for all intent and purposes.

B. Appointed Official. City Recorder and City Treasurer are appointed officials and serve for an indefinite period in a position for which the normal work schedule is forty (40) hours per week may qualify for specific Hyrum City Benefits (such as health, dental, life, and disability insurances; retirement with the Utah Retirement System; vacation and sick leave; etc.). Full time Appointed Officials are considered Full-Time employees for all intent and purposes.

C. Full-time. An employee hired for an indefinite period in a position for which the normal work schedule is forty (40) hours per week. Full-time employees may or may not qualify for specific Hyrum City benefits.

D. Part-time with Benefits. An employee hired for an indefinite period in a position for which the normal work schedule is more than thirty (~~20~~ 30) hours but less than thirty nine (~~40~~ 39) hours per week. Part-time employees with benefits qualify

for Utah State Retirement System coverage, annual leave, sick leave, and holiday leave.

E. Part-time Non Benefited. An employee hired for an indefinite period in a position for which the normal work schedule is less than twenty nine and seventy-five hundredths ~~thirty~~ (~~30~~ 29.75) hours per week. Part-time Non Benefited employees do not qualify for Hyrum City benefits.

F. Temporary. An employee hired for a position which is required for only a specific, known duration, usually less than six (6) months. Temporary employees do not qualify for Hyrum City benefits.

G. Seasonal. An employee hired for a position which is required less than five months, typically April through September. Seasonal employees do not qualify for Hyrum City benefits.

H. Volunteers. Those serving on various boards and committees in an unpaid capacity.

3. Section XVI. Benefits 5. Retirement System of the Hyrum City Personnel Policies and Procedures Manual is hereby amended as follows:

5. RETIREMENT SYSTEM. Additional details are available from the Mayor, or his/her designee.

A. All full time Hyrum City employees are covered by the Utah State Retirement Systems, unless otherwise authorized by the City Council according to State Law. A permanent part time with benefits employee employed in a position requiring at least ~~twenty (20)~~ thirty (30) hours of service per week is also covered.

B. The cost of this program is paid for by Hyrum City and the employee in the percentages set by action of the City Council.

C. Employees in the following positions are eligible to request exemption from the Utah State Retirement System under Utah State Law 49-13-203(4). Employee must file an Exemption Form with the Personnel Director within the first 60 days of employment.

(1) Mayor - Elected
(2) City Council Member - Elected
(3) Judge - Elected

Exemption from Utah State Retirement System can only be made by the above employees if position

meets the qualification for eligibility to participate in the URS.

4. Section XVIII. Leaves of Absences 2. Annual Leave, 3. Holiday Leave, and 4. Sick Leave A. B. and C. of the Hyrum City Personnel Policies and Procedures Manual is hereby amended as follows:

2. ANNUAL LEAVE.

A. Each permanent full-time employee shall receive annual leave at the following rate:

Service	Accrual
1 yr.	~~6~~10 days/yr or ~~4 hrs~~ 6 2/3 hrs/month
2 yrs.	10 days/yr. or 6 2/3 hrs./month
3 yrs.	11 days/yr. or 7 1/3 hrs./month
4 yrs.	12 days/yr. or 8 hrs./month
5 yrs.	13 days/yr. or 8 2/3 hrs./month
6 yrs.	14 days/yr. or 9 1/3 hrs./month
7 yrs.	15 days/yr. or 10 hrs./month
8 yrs.	16 days/yr. or 10 2/3 hrs./month
9 yrs.	17 days/yr. or 11 1/3 hrs./month
10 yrs.	18 days/yr. or 12 hrs./month
11 yrs.	19 days/yr. or 12 2/3 hrs./mont
12 yrs.	20 days/yr. or 13 1/3 hrs./month
13 yrs.	21 days/yr. or 14 hrs./month
14 yrs.	22 days/yr. or 14 2/3 hrs./month

B. New employees shall accrue annual leave from the date of hire. ~~, but they shall not be eligible to use accrued leave until satisfactorily completing the probationary period and have been promoted to permanent status, unless otherwise specified.~~

C. Each permanent part-time with benefits employee who works less than ~~40~~ 39 hours but more than ~~20~~ 30 hours will be entitled to ~~one-half~~ three-fourths of full-time employee annual leave listed above.

D. Persons hired on an emergency, part-time non-benefited, seasonal, temporary or contract basis shall not accrue annual leave.

E. Individual department heads will issue approval or disapproval on all annual leave requests. All annual leave requests should be submitted in a reasonable time in advance of the desired time off. If an excessive (being the number of requests if granted that would render the department or organization ineffective) amount of employees request leave for the same time period it shall be granted in order of application (first-come-first-

served) at the discretion of the City Administrator, Personnel Director, or Mayor.

F. The maximum annual leave which can be accrued and carried forward from calendar year to calendar year is two hundred and forty (240) hours for a full time employee; and one hundred and eighty (180) hours for a part-time with benefits employee. Any accrued annual leave in excess of two hundred and forty (240) hours for a full time employee; or one hundred and eighty (180) hours for a part time with benefits employee shall be forfeited on December 31 in which the leave was accrued. A full time employee may turn in up to fifty six (56) hours ~~seven (7) days~~ of vacation per year for pay; and a part time with benefits employee may turn in up to forty two (42) hours of vacation per year for pay.

G. A holiday which falls during an employee's annual leave shall be counted as a paid holiday and not as annual leave.

H. An employee who is separated from employment shall be compensated for all accrued annual leave.

I. Official vacation records will be maintained and kept current by the Personnel Director.

3. HOLIDAY LEAVE.

A. Holidays which apply to permanent full time and part time with benefits employees are:

(1)	New Year's Day	January 1st
(2)	Human Rights Day	3rd Monday in January
(3)	President's Birthday	3rd Monday in February
(4)	Memorial Day	Last Monday in May
(5)	Independence Day	July 4th
(6)	Pioneer Day	July 24th
(7)	Labor Day	1st Monday in September
(8)	Columbus Day	2nd Monday in October
(9)	Veteran's Day	November 11th
(10)	Thanksgiving	4th Thursday in November
(11)	Day After Thanksgiving	4th Friday in November
(12)	Christmas Eve	*Half Day December 24th
(13)	Christmas	December 25th

B. If any of the above holidays fall on Saturday, then the preceding Friday shall be the holiday. If any of the above holidays fall on Sunday, then the following Monday is the holiday.

C. Each full time employee will receive eight (8) hours of pay on each holiday listed above except Christmas Eve which is four (4) hours of pay; and

permanent part-time with benefits employee who work less than ~~40~~ 39 hours but more than ~~20~~ 30 hours will be entitled to ~~one-half~~ 6 hours of pay on each holiday listed above ~~of full-time employee holidays listed above~~ except Christmas Eve which is 3 hours of pay.

4. SICK LEAVE.

A. Purpose. Short-term sick leave accruals may be used to cover the employee on days when he/she must be absent from work due to short-term illness or when the employee is absent from work for personal business. Long-term sick leave accruals are to be used to cover the employee for illness in excess of four days, or to supplement disability or Workers' Compensation payments to make up the employees average weekly earnings.

B. Eligibility. Sick leave shall be available to all permanent employees, including part time with benefits employees working ~~20~~ ~~30~~ hours or more per week, and probationary employees. Part-time Non-Benefited, seasonal, temporary, provisional, and emergency employees are not eligible for sick leave. Sick leave will not be granted to employees during their first ninety (90) calendar days of employment, except for emergency circumstances.

C. Accrual. The employee will begin to accrue sick leave immediately upon being hired by Hyrum City. Sick leave shall not accrue if an employee is in a leave-without-pay status. The two categories of sick leave are short-term sick leave and long-term sick leave.

(1) Short-term sick leave accrues at the rate of 5 days per year, or 1.67 hours per pay period, to a maximum accumulation of 300 hours for full-time employees; and ~~2 ½ days~~ 30 hours per year, or ~~.83~~ 1.25 hours per pay period to a maximum accumulation of ~~150~~ 225 hours for part-time with benefits employees (those working at least ~~20~~ 30 hours, but fewer than ~~40~~ 39 hours per week).

(2) Long-term sick leave accrues at the rate of 7 days per year, or 2.33 hours per pay period, to a maximum accumulation of 1,040 hours for full-time employees; and ~~3 1/2 days 30~~ 42 hours per year, or ~~1.17~~ 1.75 hours per pay period, to a maximum accumulation of ~~520~~ 780

hours for part-time with benefits employees (those working at least ~~20~~ 30 hours, but fewer than ~~40~~ 39 hours per week).

THIS RESOLUTION shall become effective upon adoption.

ADOPTED this 7th day of January, 2021.

HYRUM CITY CORP.

BY:_____
Stephanie Miller
Mayor

ATTEST:

_____
Stephanie Fricke
City Recorder

RESOLUTION 21-03

A RESOLUTION OF HYRUM CITY ADOPTING THE 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN

WHEREAS, the Hyrum City Council recognizes the threat that natural hazards pose to people and property within Hyrum City; and

WHEREAS, Hyrum City has participated in the creation of a multi-hazard mitigation plan, hereby known as the 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, the 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Hyrum City from the impacts of future hazards and disasters; and

WHEREAS, adoption by the Hyrum City Council demonstrates their commitment to hazard mitigation and achieving the goals outlined in the 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN.

NOW, THEREFORE, BE IT RESOLVED by the City Council of Hyrum City, Cache County, State of Utah, hereby approves the following 2020 Bear River Region, Utah Pre-Disaster Mitigation Plan attached hereto as "Exhibit A".

This resolution shall become effective upon adoption.

ADOPTED AND PASSED by the City Council this 7th day of January, 2021.

HYRUM CITY

BY:_____
Stephanie Miller
Mayor

ATTEST:

_____
Stephanie Fricke
City Recorder

BRAG
Bear River Association of Governments

Box Elder
Cache
Rich

December 2020

PRE-DISASTER MITIGATION PLAN

Bear River Region, Utah

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Photo courtesy of the USFS Logan Ranger District

Executive Summary

Welcome to the 2020 Bear River Region Pre-Disaster Mitigation Plan!

This plan serves as the FEMA-approved natural hazard mitigation plan for Box Elder, Cache, and Rich counties, and the 39 incorporated municipalities in extreme northern Utah. The site provides information on local and regional natural hazards, risk assessments for each community, community mitigation strategies, historical hazards information, and other natural hazards planning and mitigation resources.

It is hoped that through learning more about natural hazards and implementing the strategies included in this plan, potential losses to life, property, infrastructure, and other critical resources can be greatly reduced.

How to use this plan

The sections in this plan include information on local community risks, natural hazards data and information, resources for adopting the plan, implementing mitigation strategies, and many other resources.

Visit brag.utah.gov for a link to the online version of this plan.

What is hazard mitigation?

According to the Federal Emergency Management Agency (FEMA), hazard mitigation is defined as, "...any sustainable action that reduces or eliminates long-term risk to people and property from future disasters. Mitigation planning breaks the cycle of disaster damage, reconstruction, and repeated damage."

In addition to reducing potential losses, hazard mitigation measures also:

- Reduce vulnerability of communities to disasters.
- Promote individual and community safety and their ability to adapt to changing conditions and recover.
- Promote community vitality after a disaster.
- Lessen response and recovery resource requirements.
- Result in safer communities that are more self-reliant.

Does hazard mitigation work?

Yes, hazard mitigation works! By making smart investments now in implementing hazard mitigation strategies, local governments can help save lives, reduce losses to property and infrastructure, and preserve community assets that, otherwise, could be lost. According to FEMA, for every $1 spent on hazard mitigation projects funded by FEMA, local governments can save $6 by implementing mitigation strategies in their communities. Additionally, if communities adopt ordinances that help guide smart development in natural hazard areas, they can save around $11 for every $1 spent

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Canal Breach repairs in Box Elder County in 2020 (Photo courtesy of Box Elder County Emergency Management)

Plan Purpose and Use

Project scope

This plan identifies the region's natural hazards, helps communities understand their vulnerabilities to those hazards, and documents potential solutions that can significantly reduce threats to life, property, infrastructure, natural systems, and other community assets.

This is not an emergency response or management plan. Certainly, the plan can be used to identify weaknesses and refocus emergency response planning, which is an important mitigation strategy. However, the focus of this plan is to support better decision making directed toward minimizing impacts from natural hazard events.

Participating jurisdictions in the Bear River Region

RICH COUNTY	CACHE COUNTY
Garden City	Amalga
Laketown	Clarkston
Randolph	Cornish Town
Woodruff*	Hyde Park City
BOX ELDER COUNTY	Hyrum City
Bear River City	Lewiston City
Brigham City	Logan City
Corinne City	Mendon City
Deweyville	Millville City
Elwood	Newton
Fielding*	Nibley
Garland City	North Logan City
Honeyville City	Paradise
Howell	Providence City
Mantua	Richmond City
Perry City	River Heights City
Plymouth	Smithfield City
Portage	Trenton
Snowville	Wellsville City
Tremonton City	
Willard City	

If jurisdictions did not participate in the planning process, including all types of communication or meeting attendance, they are not currently considered a participating jurisdiction.

Planning Objectives

- Protection of life before, during, and after the occurrence of a natural hazard event
- Protection of emergency response facilities and capabilities
- Improved communications and warning systems
- Protection of homes, businesses, educational facilities, cultural-historical amenities, natural systems, and other community assets
- Identification and mapping of critical facilities, homes, businesses, educational facilities, cultural-historical amenities, natural systems, and other community assets
- Government collaboration across jurisdictional boundaries before, during, and after natural hazard events

How the plan can be used

Help local and appointed officials plan, design, and implement programs and projects that help reduce community vulnerability to, and potential losses from, natural hazards.
Help facilitate inter-jurisdictional coordination and collaboration related to hazard mitigation planning and implementation.
Provide guidance for local emergency management and planning offices and staff.
Help local jurisdictions comply with the Disaster Mitigation Act of 2000, through adoption of this plan. This helps communities qualify and apply for certain federal pre- and post-disaster funds.

Increasing local capacity

One of the many benefits of having this regional natural hazard mitigation plan is the potential it creates for local governments and other entities to expand their local planning and implementation capacity. Communities can reference this plan in their local land use zoning and ordinances, and can show developers, builders, lenders, elected officials, and members of the general public where hazards exist and what is at stake if hazard events occur. Likewise, council members, planning and zoning commissions, and others can strategize on how they can plan better for hazards in their city, town, or county to mitigate potential impacts.

Additionally, most communities in the Bear River Region are experiencing fairly steady population growth - some are growing quite rapidly. As these communities grow, their ability to increase their local capacity for improved land use and natural hazards planning and implementation will also likely occur as function of that growth.

Likewise, as a local Association of Governments, BRAG provides general planning technical assistance to cities, towns, and counties in the Bear River Region, helping them increase their capacity to plan for and mitigate hazard risks in their respective communities.

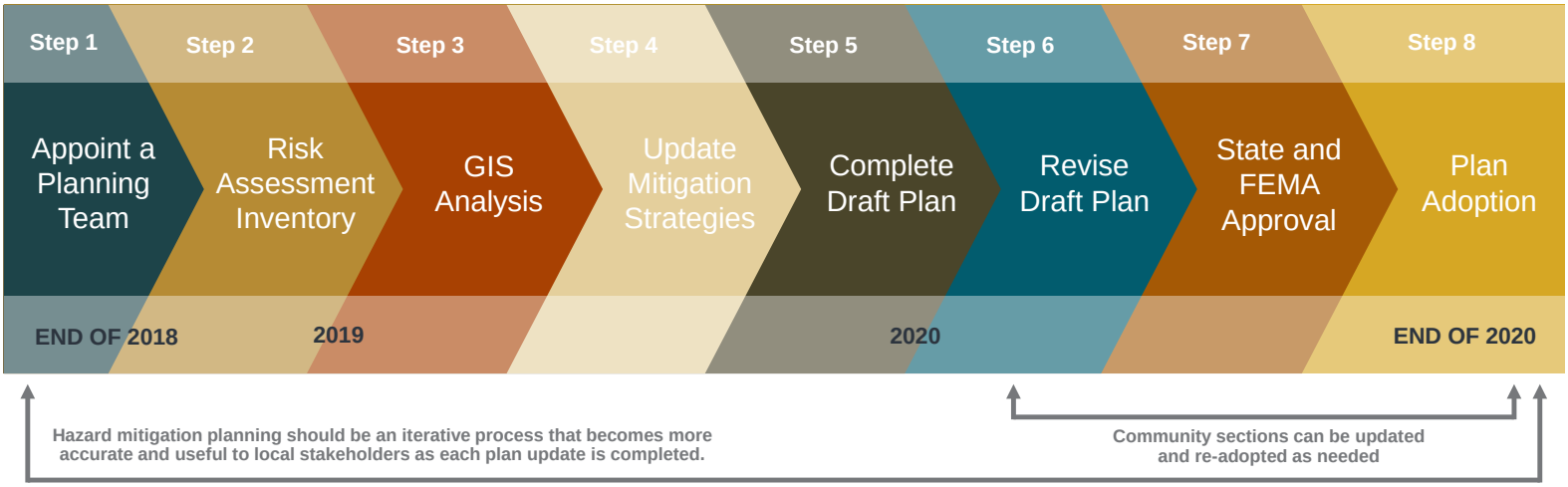
Photo: Historic Willard landslide and flooding event in 1923 courtesy of Utah State University Special Collections.

Kick-off Meeting
A regional kick-off meeting was held on December 4, 2018 with county emergency managers and others.

Risk Assessment Meeting
County-level working group meetings were held in March and April of 2019.

Mitigation Strategies Meeting
County-level working group meetings were held in January and February of 2020.

Pre-Adoption Meeting
A regional pre-ad held on October 1 the draft plan and provide training.



Project timeline and various steps in the planning process for the 2020 Bear River Region Pre-Disaster Mitigation Plan.

The Planning Process

County Working Group Meetings:

RISK ASSESSMENT:

Review of mapped critical facilities and infrastructure; Wildfire hazards presentation (Utah FFSL); Geologic hazards presentation (Utah Geological Survey); and review of online hazards map.

MITIGATION STRATEGIES:

FEMA-approved mitigation strategies and floodplain model ordinances (FEMA); Geologic hazards model ordinance (Utah Geological Survey); Community potential loss analyses; and a mitigation strategies exercise.

PRE-ADOPTION:

Presentation of the draft PDM Plan and findings; Plan adoption and implications for local governments;

Overview and project timeline

While the pre-disaster mitigation plan update process has been standardized to a certain degree by FEMA, through working with local stakeholders included in county working groups, BRAG has adjusted the process to fit the needs of Bear River Region communities.

The sections below provide more information on critical components of the planning process.

Forming county working groups and meetings

Early on in the planning process, BRAG staff consulted with county emergency managers in Box Elder, Cache, and Rich Counties to help determine project details, and come up with a list of initial agencies, organizations, and other groups to include in county-wide working groups. These organizations were invited to attend the first regional kick-off meeting in 2018. During this meeting, BRAG staff, county emergency managers, Utah Division of Emergency Management staff, and others created a list of additional stakeholders that needed to be brought to the table to participate in the planning process.

County working groups were then formed, and three meetings were held for each respective county to discuss natural hazards and community risk assessments, create local mitigation strategies, and to present the draft plan and discuss plan promulgation (See **APPENDIX B** for meeting agendas and attendance lists).

In addition to the county working group meetings, many other meetings were held with state staff and local communities. Mayors, council members, city/town staff, and others were very generous with their time, especially as they worked with BRAG to create realistic mitigation strategies that fit their needs. Below is a list of other organizations BRAG staff met with as part of this plan update, whether in person, e-mail, or over phone or video calls:

- Utah Division of Emergency Management
- BRAG Governing Board (x2)
- Local GIS Analysis Professionals
- Utah Geological Survey
- Utah Forestry, Fire, and State Lands
- ESRI Denver Office
- Northwest Band of Shoshone Native American Tribe
- Box Elder Mayor's Association Meeting (Mayors in attendance representing: Willard, Brigham City, Mantua, Snowville, Perry, Honeyville, Deweyville, Tremonton, Portage; and Box Elder County representatives)

Local city, town, and county meetings:

Amalga
Bear River City
Brigham City
Box Elder County
Cache County
Clarkston
Corinne
Cornish
Deweyville
Elwood
Garden City
Garland
Honeyville
Howell
Hyde Park
Hyrum
Laketown
Lewiston
Logan
Mantua
Mendon
Millville
Newton
Nibley
North Logan
Paradise
Perry
Plymouth
Portage
Providence
Randolph
Rich County
Richmond
River Heights
Smithfield
Snowville
Tremonton
Trenton
Wellsville
Willard

Photo (right): Rich County Risk Assessment Meeting held on April 10, 2019 in Garden City, Utah (BRAG).

Public outreach

Public outreach for the plan update was achieved via letters, e-mails, the presence of a hazard mitigation page on the BRAG website at brag.utah.gov, and public service announcements in local newspapers (See **APPENDIX B** for detailed agendas and lists of attendees for each meeting, and APPENDIX C for all other public outreach documentation). Through the use of all of these approaches, the following stakeholders were invited to participate in the planning process:

- All cities, towns, and counties in the Bear River Region including: Elected and appointed officials, emergency managers, city managers, clerks, public works staff, civil engineers, planners, and other related staff
- Local citizens
- Surrounding states, regions, and counties
- Federal and state agencies, including land management agencies and emergency management staff
- School districts and local universities/colleges MPO, UDOT, and other transportation planners
- Northwest Band of Shoshone Nation

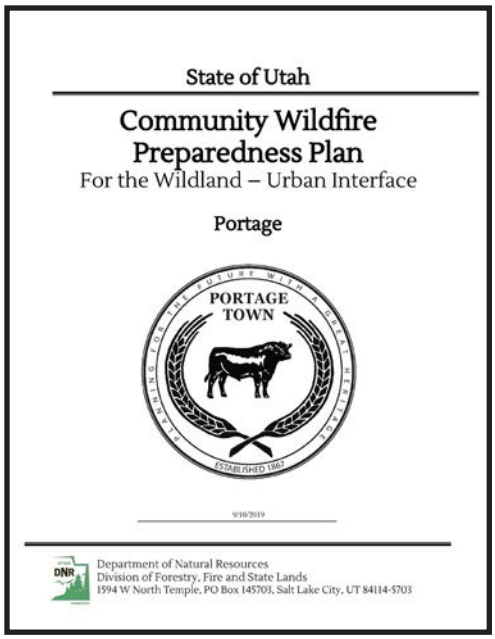
On April 15, 2019, BRAG staff met with members of the Northwest Band of Shoshone Nation at the tribal office in Brigham City. Though there is no reservation land in the region, the tribe is an integral part of the community. As such, the tribe as a sovereign nation is included in this plan, though no technical analysis was provided. The tribe was included in written correspondence and made aware of the planning process so they could provide input if desired.

Incorporating other plans and studies

Other plans and studies referenced and incorporated into this plan update process include a variety of federal, state, regional, and local plans. Some plans were from other regions in the U.S. and Canada, while others were from

more local communities in Utah. FEMA provides a variety of useful hazard mitigation planning resources available at fema.gov, and the State of Utah's Hazard Mitigation Plan, available at hazards.utah.gov, has been an extremely valuable resource during the creation of this plan. Plans and studies incorporated into this plan update process include the following:

- Utah Public Health Joint Risk Assessment, 2014 Recently completed
- Community Wildfire Protection Plans (CWPP) for Box Elder County, Deweyville, Honeyville, Plymouth, Portage, and Willard (2019)
- Garden City Community Wildfire Protection Plan
- Utah Geological Survey, Guidelines for Evaluating Surface-Fault Rupture Hazards in Utah, 2003


State of Utah

Community Wildfire Preparedness Plan

For the Wildland – Urban Interface

Portage

PORTAGE TOWN

ESTABLISHED 1867

9/10/2019

Department of Natural Resources
Division of Forestry, Fire and State Lands
1594 W North Temple, PO Box 145703, Salt Lake City, UT 84114-5703

The Community Wildfire Preparedness plan for Portage Town, completed in 2019, is a great document to reference in this pre-disaster mitigation plan. In some areas, these types of plans are being merged in order to better coordinate mitigation efforts across multiple agencies and jurisdictions.

- Other Utah Geological Survey guides and booklets
- Utah Natural Hazards Handbook, 2008
- UGS Geologic Hazard Model Ordinance, 2020
- Utah DEM Flood Damage Prevention Ordinances
- Floodplain Management in Utah; Quick Guide, 2003
- Box Elder County. Hansel Valley floodplain resident letters, maps, and photos, 2014
- Local Community Risk Assessment Surveys, 2018

Other plans and websites referenced for the design of this plan:

- Six-County Regional Pre-Disaster Mitigation Plan (Utah), 2020
- New River Valley Hazard Mitigation Plan (Virginia), 2017
- City of Los Angeles 2018 Local Hazard Mitigation Plan
- City of Boulder Multi-Hazard Mitigation Plan, 2018
- South Central Region Multi-Jurisdiction Hazard Mitigation Plan, 2018
- San Diego County Multi-Jurisdiction Hazard Mitigation Plan, 2017
- Utah CDO Online Tools and Resources - ESRI StoryMaps Montana Forest Action Plan (Online)
- Seattle Hazard Explorer (Online)
- Are You Ready Tampa Bay? (Online)
- Denver ESRI Office and ESRI Denver ArcGIS HUB Site*

*Thanks to the ESRI Denver Regional Office staff who provided valuable input on potential ESRI tools and apps for use in creating this plan. A big thanks also to the Utah Community Development Office (CDO) staff for sharing examples of excellent plans and guides they have created recently by utilizing similar ESRI products.

Incorporating this plan into other community plans and studies

There are several ways that communities can incorporate this plan into their own local plans and studies. Some communities in the past have adopted this plan as an appendix or reference to their General Plan. Others have used the maps and hazards data in particular as a means of disclosing potential risks for future development, allowing developers and builders to do additional site assessments or studies before building. Ideally, the data layers in this plan could be used as a supplement for sensitive lands planning and to justify additional ordinances for future development which can reduce potential losses and liability for local governments. See the Implementation Resources tab at the top of this website for links to model geologic and floodplain ordinances.

Other plans, studies, and projects that can incorporate the information from this plan include:

- Capitol improvements list and plans
- Future infrastructure studies and projects
- Regional and community level sensitive lands studies and plans
- General plan updates
- Community Wildfire Preparedness Plans

- Community Emergency Response Plans
- County Resource Management Plans
- Hazard mitigation related grant applications
- Many others...

Flooding in Box Elder County in 2017. Frozen conditions and heavy rainfall contributed to many homes and properties being flooded in the eastern part of the county.

Identifying natural hazards

Hazards were identified and evaluated for inclusion in this plan based on historical review of past events, synthesis of existing reports and data, hazard mapping analysis, and input from local stakeholders (see graphic to the right). Consideration for inclusion was based on the likelihood of a hazard's occurrence, location of potential hazard risk areas, and the potential impact of the event in terms of its effect on human life, property, infrastructure, and other assets/amenities. It should be noted that not all hazards were analyzed with GIS software, due to the fact that GIS data does not exist for all hazards. However, all hazards on this list were discussed and qualitative analysis was performed on a certain level for each hazard based on the best available data.

For information on hazard locations and extents, click on the "Hazard Maps and Risks" tab at the top to view an interactive map of natural hazards in the Bear River Region (includes only data from the left column).

Also, for more information on natural hazards, including specific hazard definitions, click HERE to visit the 2019 Utah Hazard Mitigation Plan website. Scroll down until you see photos of various hazards and click on each one to learn more.

*Note: Due to the outbreak of COVID-19 in 2020, pandemics are listed as a natural hazard in the Bear River Region. However, due to the fact that the COVID-19 outbreak occurred late in the planning process, no analysis was included and no mitigation strategies were created. Local emergency managers anticipate the need for mitigation strategies for pandemics in the future. If local governments would like to include strategies for pandemics in this plan updated, the plan can be amended at a later date and re-adopted by the affected jurisdiction.

HAZARDS - GIS DATA	HAZARDS - NO GIS DATA
Avalanche Terrain	Air Quality
Dam Failure	Alluvial Fans
Flood (FEMA 100-Year)	Climate Change
Flood (Soils/Purdue)	Drought
Flood (Valley Bottom)	Insect Infestation/Plant Disease
Geologic Faults (Quaternary)	Radon
Landslide	Severe Weather
Liquefaction	Tornado
Steep Slopes	Seiche
Problem Soils (Struct. w/ Basements)	Volcanic
Problem Soils (Struct. w/o Basements)	Seasonal Population Growth
Wildfire (Utah FFSL)	*Pandemics
Wildfire (US Forest Service)	

Natural hazards identified in the Bear River Region. Though some natural hazards data exists in GIS format, and were utilized for analysis in community risk assessments, risks were also identified and strategies created for other hazards based on local conditions and needs.

Identifying structures, critical facilities, infrastructure, and other assets

The table to the right shows the types of structures (ex: homes, businesses), critical facilities (ex: fire station, town hall, post office),

STRUCTURES, CRITICAL FACILITIES, INFRASTRUCTURE, AND OTHER ASSETS			
HOMES	Home	NATURAL INFRASTRUCTURE	Lake/Pond
COMMUNITY RESOURCES	Cemetery		Reservoir
	Commercial Business		Playa
	Library		Riparian Area
	Place of Worship		Spring/Seep
	University/College		Stream/River
	School		Wetland
GOVERNMENT FACILITIES	Correctional Facility	OTHER INFRASTRUCTURE	Communication Towers
	Military Facility		Microwave Service Towers
	Post Office		Gas Station
	Town Hall		Sewer Pipeline
RECREATION AMENITIES	Campground/Recreation Facility		Wastewater Facility
	Golf Course		Contaminated Land
	Public Areas		Hazmat Material Storage
	Historic Site		Mines
	Museum		Broadband Anchors
	State Park		Solid Waste Facility
	Park	TRANSPORTATION INFRASTRUCTURE	Airport/Heliport
	Trail		Bridge/Culvert/Underpass
EMERGENCY SERVICES	Emergency Medical Service		Railroad
	Emergency Operations Center/PSAP		Emergency Outlet Roads
	Fire Station		Road
	Hospital/Health Care Facility	WATER INFRASTRUCTURE	Canal
	National System Shelter Facility		Culinary Water Pipeline
	Law Enforcement Station		Culinary Water Source
ENERGY INFRASTRUCTURE	Substation/Regulator		Water Tank
	Natural Gas Pipeline		Dam
	Crude Oil Pipeline		Groundwater Recharge
	Oil and Gas Well		Groundwater Protection and Transient NC Zones
	Petroleum Pipeline		Well
	Hydrogen Sulfide Pipeline	AGRICULTURAL RESOURCES	Farmland
	Power Generation Facility		Grazing Allotments
	Transmission Line		

A comprehensive list of structures, critical facilities, infrastructure, and other assets analyzed in the 2020 Bear River Region Pre-Disaster Mitigation Plan.

infrastructure (ex: roads, water lines, wells), and other assets/ amenities (ex: natural areas, groundwater protection zones, agricultural lands) included in local community risk assessments.

To identify the types and locations of these datasets, BRAG staff relied heavily on county working group members to define what types of data were needed, and to verify the location of the most critical facilities and community assets. BRAG staff also collected large quantities of GIS data from local, state and federal agencies, data clearinghouses (Including Utah AGRC), and many other sources. Other datasets were digitized as needed if not available.

Community Asset Data:

- **Point data** (64,061 residential/ commercial & 9,078 critical facility points - 73,139 total)
- **Line data** (19,207 miles)
- **Polygon data** (4,804,951 acres)

Note: Not all assets were located in all jurisdictions. For example, some communities wanted water and sewer main lines included in their analysis, while others did not. All datasets were not available for all jurisdictions. As such, potential losses, in many cases, could be higher for certain hazards in certain communities, than are documented in this plan.

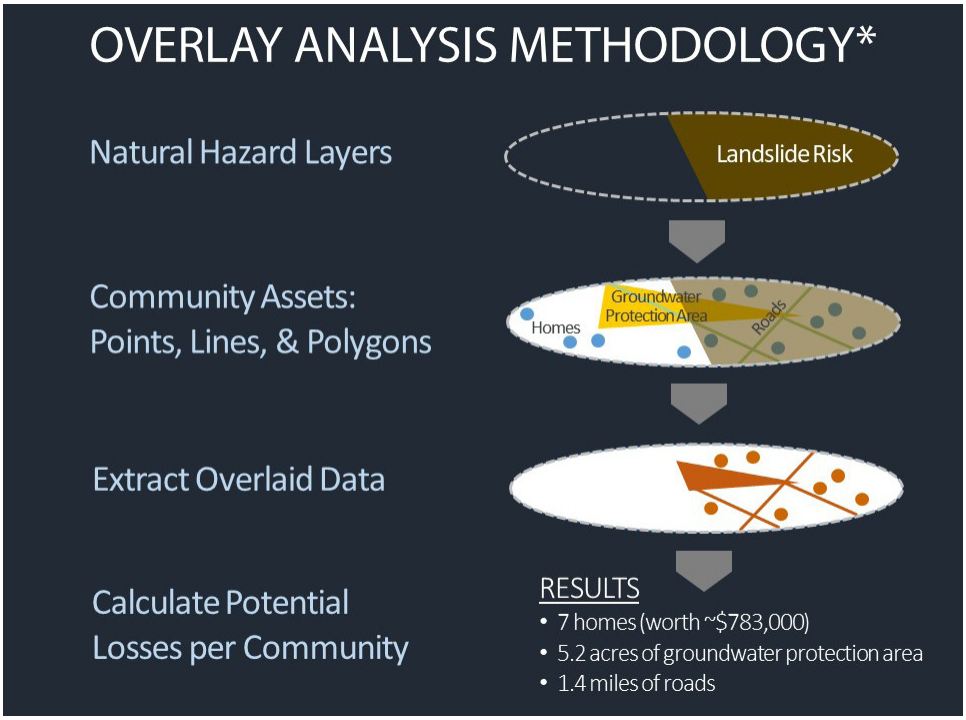
Risk assessment methodology

BRAG staff utilized Geographic Information Systems (GIS) software for analyzing potential losses to local communities from various natural hazards in the Bear River Region. This was only done for those hazards that had available GIS data. A relatively simple and time-tested methodology of overlay analysis was utilized for these community assessments (see graphic below for a simplified version). In an overlay analysis, various datasets are overlaid on one another, and data is extracted from where those datasets share a common geographic location. Data can be extracted by these locations and quantified or categorized, resulting in a better understanding of that geographic area based on those particular datasets.
See APPENDIX D for a more detailed description of the GIS-based risk assessment methodology for this plan update.

Other hazards without available GIS data were also analyzed to determine risk. This analysis was much more qualitative in nature, and considered overall exposure, probability, and severity for each hazard and for each county, respectively. For information on how non-GIS hazard risks were determined, see county risk matrices and summaries in the Hazard Risks and Profiles section.

The basic steps involved in the GIS-based risk assessment analyses for this plan update:

1. **Data preparation (existing and/or created)**
2. **Consolidate data by type and re-format (to create uniformity across multiple datasets and types)**
3. **Extract community point, line, and polygon asset data by natural hazard layer per each municipality or county**
4. **Calculate potential loss values by asset type for each community**



Basic risk assessment overlay analysis methodology for the 2020 Bear River Region Pre-Disaster Mitigation Plan. For a more detailed methodology and details on GIS datasets utilized for this plan, see Appendix D and Appendix E, respectively.

Note: Local county working group members felt that sensitive critical facility, infrastructure, and other related data should not be shared with the public for safety and security reasons. To address their concerns, all analysis was performed in-house by BRAG GIS and vetted during county working group meetings. If interested in viewing or obtaining GIS data from this plan update, contact each respective emergency manager for Box Elder, Cache, or Rich Counties.

Creating and prioritizing mitigation strategies

After completing community-level risk assessments for all 42 jurisdictions in the Bear River Region, potential losses were then calculated by asset type. Mitigation strategies meetings were held with county working groups, where presentations were given on how to create effective mitigation strategies for various hazards. BRAG staff then created individual mitigation strategies packets for each jurisdiction and e-mailed a fillable digital file to community leaders and staff to fill out. Each packet had mitigation strategies sections to address each hazard in their respective community.

BRAG staff provided assistance to officials and staff as needed in person, by e-mail, and over the phone or video calls. When completed, packets were then sent back to BRAG and integrated into this plan.

After reviewing a list of mitigation strategies from 2015, some communities decided to keep the same strategies from that plan, since local conditions have not changed substantially since that time, and/or strategies were not yet implemented for various reasons.

Click on the "Community Sections" tab at the top to see mitigation strategies for each community.

A guiding factor in prioritizing mitigation strategies was the principle that mitigation should provide the greatest amount of good to the greatest number of people, after considering resources, staffing, and other constraints. Recurrence intervals, past events, and damage estimates compiled during the risk assessment in this plan were also considered. Overall, each community individually considered their own capabilities and resources as they prioritized each strategy.

As part of the process for creating implementation strategies for this plan update, each community also reviewed their strategies list from the 2016 plan, and recorded which strategies were implemented over the past 5 years, if any. After reviewing their strategies from 2016, some communities determined to keep and/or modify those strategies in an effort to try to implement those in the upcoming 5 years. However, some communities have taken great strides in reducing losses through strategy implementation. Some examples of these implemented strategies include:

Creation of Community Wildfire Protection Plans (CWPP)
Improved fire regulations
Purchase of back-up generators
Flood reduction measures such as culverts and retention basins
Improved floodplain and other hazards GIS data
Improved training for local emergency response and fire crews and better equipment
Updates of local ordinances to help reduce risks to future development
Click HERE to see a community-specific, regional list of all mitigation strategies implemented from the 2016 plan.

NFIP participation and compliance

COMMUNITIES PARTICIPATING IN NFIP - 2020

Jurisdiction	County
BEAR RIVER, CITY OF	BOX ELDER COUNTY
BOX ELDER COUNTY	BOX ELDER COUNTY
BRIGHAM CITY, CITY OF	BOX ELDER COUNTY
CORINNE, CITY OF	BOX ELDER COUNTY
GARLAND, CITY OF	BOX ELDER COUNTY
HONEYVILLE, CITY OF	BOX ELDER COUNTY
MANTUA, TOWN OF	BOX ELDER COUNTY
PERRY CITY, CITY OF	BOX ELDER COUNTY
TREMONTON, CITY OF	BOX ELDER COUNTY
WILLARD,CITY OF	BOX ELDER COUNTY
CACHE COUNTY	CACHE COUNTY
CLARKSTON, TOWN OF	CACHE COUNTY
HYDE PARK, TOWN OF	CACHE COUNTY
HYRUM, CITY OF	CACHE COUNTY
LEWISTON, CITY OF	CACHE COUNTY
LOGAN, CITY OF	CACHE COUNTY
MENDON, CITY OF	CACHE COUNTY
MILLVILLE, TOWN OF	CACHE COUNTY
NEWTON, TOWN OF	CACHE COUNTY
NIBLEY, TOWN OF	CACHE COUNTY
NORTH LOGAN, CITY OF	CACHE COUNTY
PARADISE, TOWN OF	CACHE COUNTY
PROVIDENCE, CITY OF	CACHE COUNTY
RICHMOND, CITY OF	CACHE COUNTY
RIVER HEIGHTS, CITY OF	CACHE COUNTY
SMITHFIELD, CITY OF	CACHE COUNTY
WELLSVILLE, CITY OF	CACHE COUNTY
LAKETOWN, TOWN OF	RICH COUNTY
RICH COUNTY	RICH COUNTY
WOODRUFF, TOWN OF	RICH COUNTY

The National Flood Insurance Program (NFIP) was created to reduce losses from flood events and to provide more affordable flood insurance options. Local governments can join NFIP for free, even if they do not have FEMA 100-year floodplain mapping. This allows local residents to purchase flood insurance if they are concerned about flood risks for their home.

During the planning process, Floodplain Administrators (FPA's) were invited to local working group meetings via local elected and appointed officials and community staff, many of which are currently serving in that capacity in addition to other duties. Communities in the Bear River Region participating in the NFIP are consistently working towards NFIP compliance, and education and training is ongoing as coordinated and provided by the State Floodplain Manager. Additionally, BRAG staff will continue to work with local governments to provide additional training and resources, to help them reduce losses and comply with NFIP.

NFIP repetitive loss structures

Occasionally, the same home or business suffers damages from a flood year after year. Structures that are located in the FEMA 100-year floodplain, have insurance under NFIP, and suffer damages from flooding year after year, are considered, "repetitive loss" properties.

As of September 14, 2020, Box Elder County has zero repetitive loss properties; Cache County has 10; and Rich County has zero.

COMMUNITIES NOT PARTICIPATING IN NFIP - 2020

Jurisdiction	County
AMALGA, TOWN OF	CACHE COUNTY
CORNISH, TOWN OF	CACHE COUNTY
DEWEYVILLE, CITY OF	BOX ELDER COUNTY
ELWOOD, CITY OF	BOX ELDER COUNTY
FIELDING, TOWN OF	BOX ELDER COUNTY
HOWELL, CITY OF	BOX ELDER COUNTY
PLYMOUTH, TOWN OF	BOX ELDER COUNTY
PORTAGE, CITY OF	BOX ELDER COUNTY
SNOWVILLE, TOWN OF	BOX ELDER COUNTY
TRENTON, TOWN OF	CACHE COUNTY

Landslide in Millville Canyon (Photo courtesy of the Logan Ranger District, U.S. Forest Service)

Writing the Plan and Plan Adoption

Though professional planning staff at Bear River Association of Governments (BRAG) oversaw this plan update process and created the online plan and plan document, they did so with extensive input from:

- **County emergency managers**
- **City and town emergency managers**
- **Elected and appointed officials**
- **Local planners**
- **City managers/administrators**
- **Public works**
- **Local engineers**
- **Town and city clerks**
- **State and federal agencies and land management representatives**
- **Natural hazards experts**
- **The general public**

...and many others

Throughout the entire planning process, BRAG staff worked to incorporate new ideas, values, and priorities into the plan. Input from local working group members, the public, elected officials, and others were highly valued, and greatly informed the planning process. This includes comments from stakeholders on working group make-up and membership, risk assessment data and methodologies, mitigation strategy ideas and training, and even the final format of this plan.

This plan was also created on the coat tails of past BRAG planners and planning interns who, over the years, have helped to improve the plan, including updated layout and design, GIS analysis methodologies, and community outreach tools and techniques. BRAG's fifteen-member Governing Board also provided oversight and support throughout the entire planning process.

BRAG staff who have worked on various elements of this plan include:

- Zac Covington, *Sr. Regional Planner and Project Manager*
- Scott McComb, *Regional Planner*
- Lara Gale, *Regional Planning Intern*

Plan adoption and FEMA approval

Following the completion of this online plan and FEMA approval, a hard copy was available at the BRAG office for those interested in looking at the plan in that format.

After a 30-day public comment period on the online plan, comments from local communities, the public, county working group members, as well as the Utah Division of Emergency Services were integrated into the draft. The plan was then sent to FEMA Region VIII for review.

After revisions to the draft plan were completed, letters were sent to each local jurisdiction in the Bear River Region explaining the benefits of adopting a FEMA-approved plan. Blank promulgation forms were then sent to the

chief elected official for each jurisdiction, and communities were encouraged to adopt the plan and send the completed promulgation forms to BRAG for inclusion in the plan. Hard copies of the plan were also made available to all participating jurisdictions by request.

Updating the plan

The plan will be monitored, evaluated, and updated by BRAG staff annually, or on an as-needed basis, depending on the current need. These updates could include adding new or revising current mitigation strategies, integrating more recent plans and/or studies, utilizing better GIS data, or other necessary updates. As need dictates, local jurisdictions, the BRAG Governing Board, or other participating organizations can request updates to the plan as necessary.

Likewise, local communities are encouraged to have ongoing and regular discussions with the public regarding local hazards and potential mitigation strategies to reduce losses in their county, city, or town. This input can be integrated into the plan directly through plan amendments and adoption of the updated plan as needs dictate.

If the plan is amended, each affected participating jurisdiction will be required to hold a public meeting to re-adopt the amended plan by resolution.

Contingent on funding, this plan will also be updated on a regular basis every 5 years according to FEMA requirements for approved plans.

(LOCAL COMMUNITY)
Utah

RESOLUTION NO. _____

A RESOLUTION OF *(LOCAL COMMUNITY)* ADOPTING THE 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN

WHEREAS *(local governing body)* recognizes the threat that natural hazards pose to people and property within *(local community)*; and

WHEREAS *(local community)* has participated in the creation of a multi-hazard mitigation plan, hereby known as the 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in *(local community)* from the impacts of future hazards and disasters; and

WHEREAS adoption by *(local governing body)* demonstrates their commitment to hazard mitigation and achieving the goals outlined in the 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN.

NOW THEREFORE, BE IT RESOLVED BY *(LOCAL COMMUNITY)*, *Utah*, THAT:

In accordance with *(local rule for adopting resolutions)*, *(local governing body)* adopts the 2020 BEAR RIVER REGION, UTAH PRE-DISASTER MITIGATION PLAN.

This resolution shall be effective on the date it is adopted.

DATED this _____ day of _____, 2020/2021.

_____
Signed

_____
Printed Name and Title

_____
Jurisdiction Name

ATTEST

_____

_____
Name/Title

Basic resolution template for adopting the 2020 Bear River Region Pre-Disaster Mitigation Plan, adapted from a basic FEMA template.

Photo of the 2016 Peterson Hollow fire courtesy of the USFS Logan Ranger District

Hazard Risks and Profiles

HAZARDS - GIS DATA	HAZARDS - NO GIS DATA
Avalanche Terrain	Air Quality
Dam Failure	Alluvial Fans
Flood (FEMA 100-Year)	Climate Change
Flood (Soils/Purdue)	Drought
Flood (Valley Bottom)	Insect Infestation/Plant Disease
Geologic Faults (Quaternary)	Radon
Landslide	Severe Weather
Liquefaction	Tornado
Steep Slopes	Seiche
Problem Soils (Struct. w/ Basements)	Volcanic
Problem Soils (Struct. w/o Basements)	Seasonal Population Growth
Wildfire (Utah FFSL)	*Pandemics
Wildfire (US Forest Service)	

Natural hazards in the Bear River Region

The table above shows natural hazards identified in the Bear River Region. Some of these hazards were mapped using currently available GIS data (left column), while others did not have GIS data (right column). For more information on potential risks from hazards without GIS data, read the county hazard risk profiles later in this section.

Natural hazards and historical hazard events and maps

To access interactive webmaps showing natural hazards in the Bear River Region, as well as historical hazard events, visit the web-version of this plan at: **https://brag.maps.arcgis.com/apps/MapSeries/index.html?appid=fc507e02862e42cbbf627437c1658549**.

Likewise, an extensive database of historical hazard events was compiled as part of this planning process. This database includes information on:

- Avalanches from 2010 to 2020
- Hail storms from 1955 to 2018
- High wind paths from 1950 to 2018
- Tornado paths from 1950 to 2018
- Earthquake epicenters from 1850 to 2016
- Wildfires from 1992 to 2015 (two datasets)
- Long-term drought averaged from 1895 to 2012
- Ag. production
- Drought
- Population growth
- Grasshoppers/crickets
- Tornados
- Air Quality
- Floods
- Landslides
- Radon

See **Appendix F** for more details.

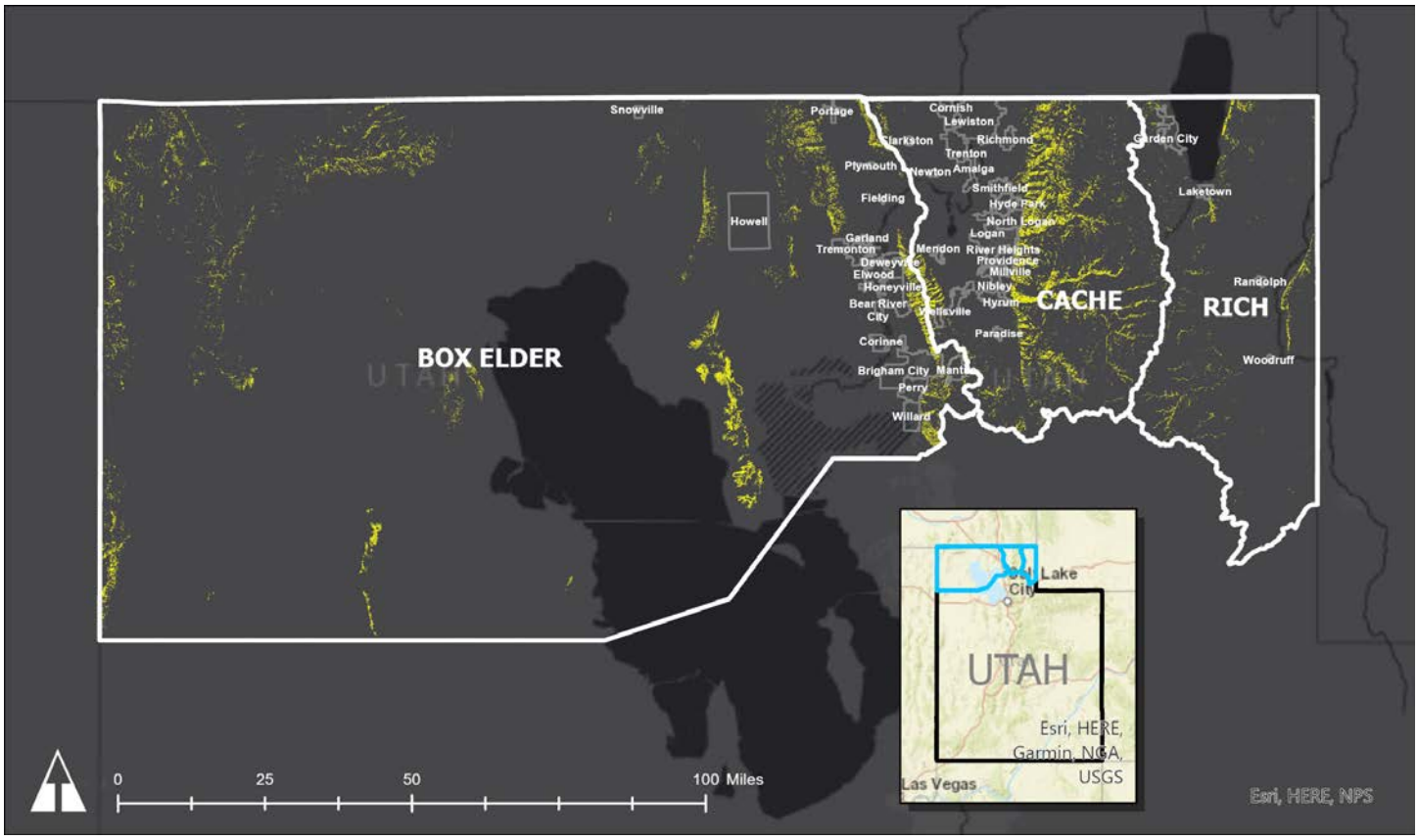
For the purpose of this planning document, the following pages show hazards mapped on a regional scale, including a paragraph or two with summaries about each hazard (those with GIS data). For individual community risk assessments which provide community-level mapping and risk information, visit the online plan at the above web address.

AVALANCHE

Hazard Description: An avalanche is a mass of snow, ice, and debris that slides rapidly down steep mountain slopes at speeds up to 80 mph when triggered by ground shaking, sound, or movement. Dry or slab avalanches are the most common and the deadliest in Utah. They are triggered when heavy snow is rapidly added to weaker layers. Wet avalanches occur during spring thaw events.

Avalanches pose a significant hazard in Utah's mountains between the months of January and April, seasons of heavy snow accumulation and unstable snowpack conditions. Weather, terrain, topography, and snow conditions also impact avalanche activity.

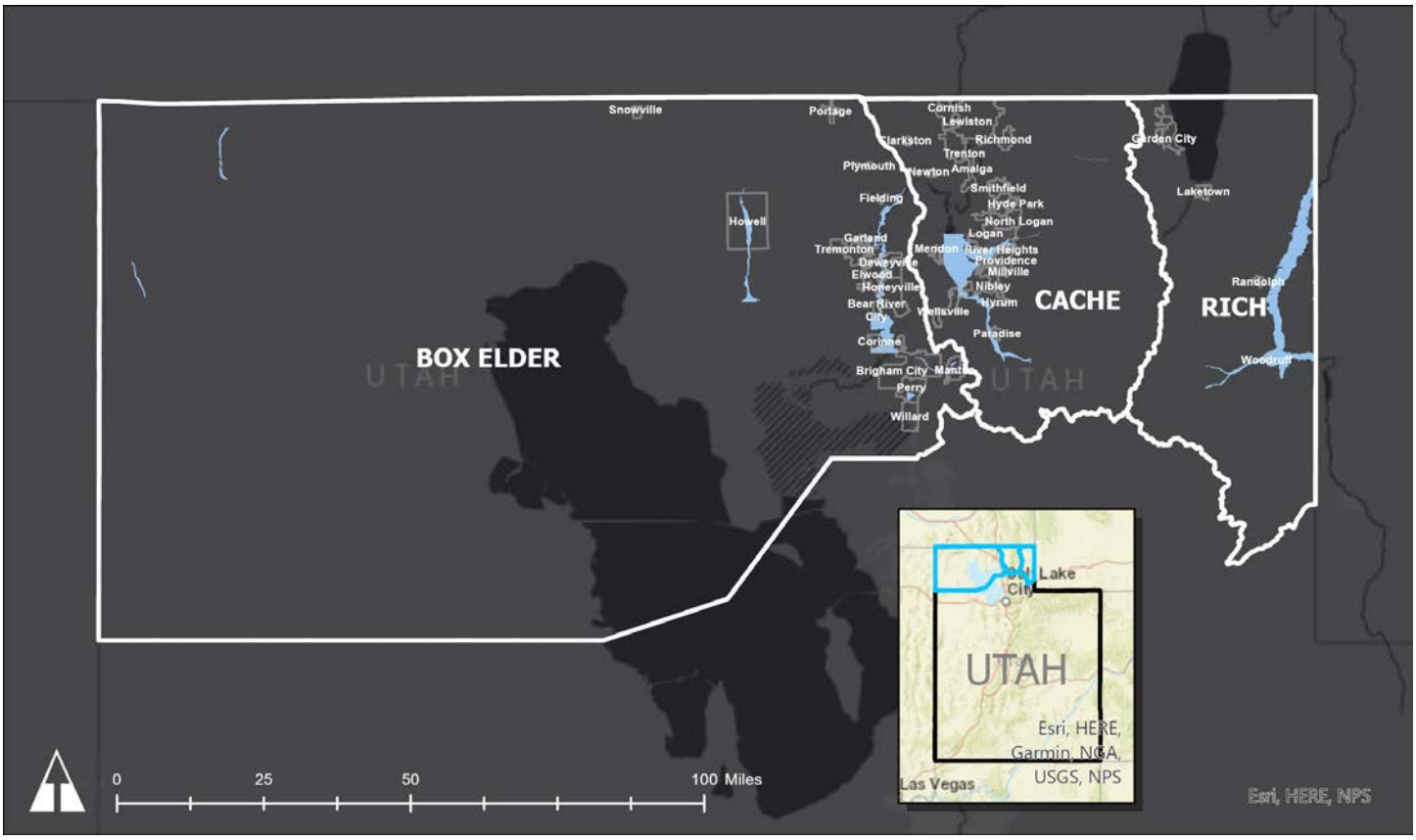
Map Description: This map display areas of avalanche terrain based on areas with slope between 35° to 40°, low profile and bare ground vegetation, and elevation above 5,500 feet.



DAM FAILURE

Hazard Description: A dam failure or dam burst is the sudden, rapid, and uncontrolled release of impounded water or the likelihood of such an uncontrolled release. Dams can fail for one or more of the following reasons: (1)overtopping caused by floods that exceed the capacity of the dam; (2) deliberate acts of sabotage; (3) structural failure of materials used in dam construction; (3) movement and/or failure of the foundation supporting the dam; (4) settlement and cracking of concrete or embankment dam; (5) piping and internal erosion of soil in embankments; and (6) inadequate maintenance and upkeep. See also Flood.

Map Description: This map displays areas of inundation for all high hazard dams under the Utah Division of Water Rights as well as the location of dams. For more information visit: *https://www.waterrights.utah.gov/gisinfo/wrcover.asp*

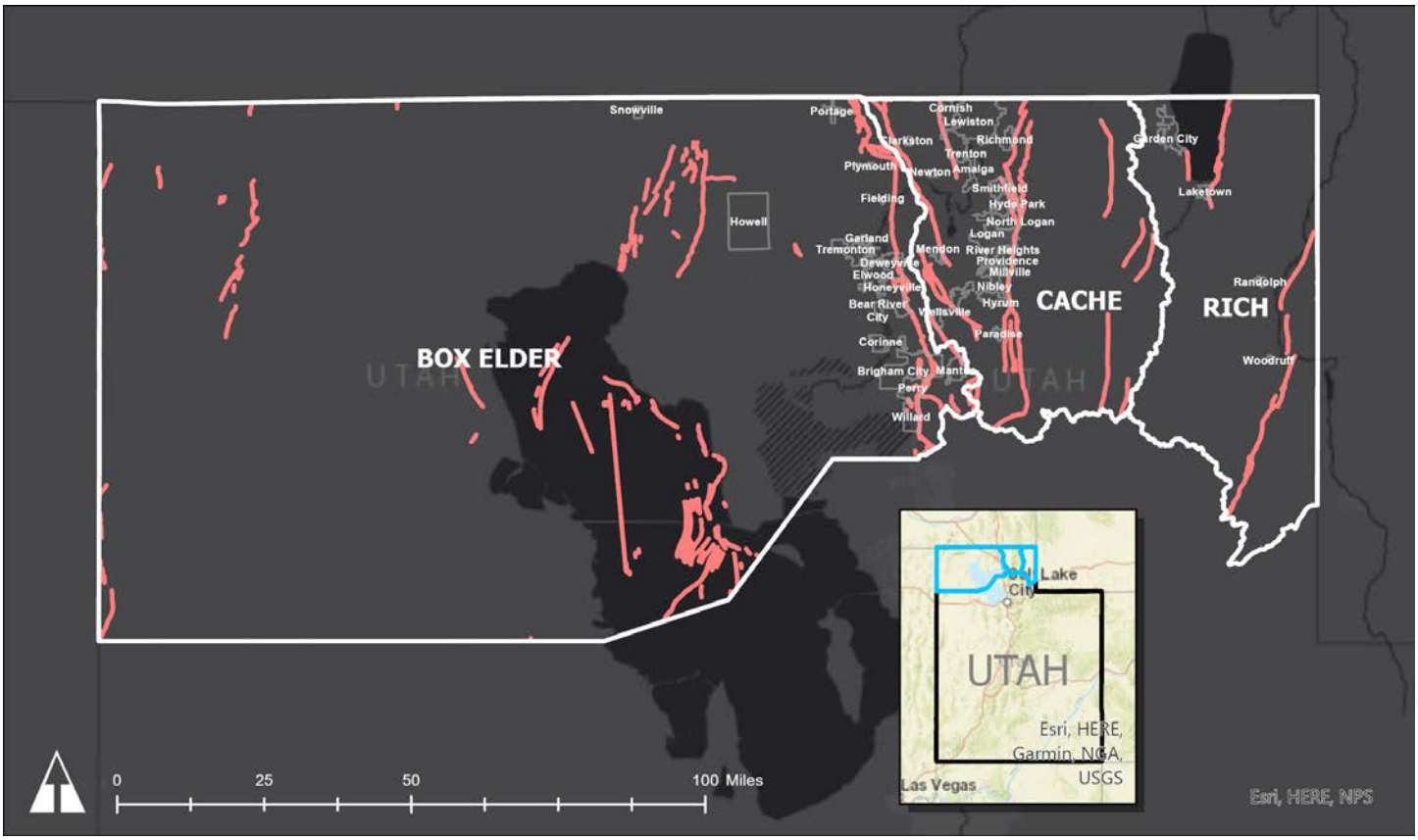


EARTHQUAKE/FAULTS

Hazard Description: Any sudden shaking of the ground caused by seismic waves through the Earth's rocks constitutes an earthquake. Seismic waves are produced when some form of energy stored in Earth's crust is suddenly released, usually when masses of rock straining against one another suddenly fracture and "slip." Earthquakes occur most often along geologic faults, narrow zones where rock masses move in relation to one another. The major fault lines of the world are located at the fringes of the huge tectonic plates that make up Earth's crust.

Certain saturated soft soil can take on the characteristics of a fluid when shaken by an earthquake, resulting in a state called liquefaction. Amplified shaking also results in areas of "soft soils" which includes fill, loose sand, waterfront, and lake bed clays.

Map Description: This map displays the earthquake damage zone (1,500 foot buffer on either side of the quaternary fault) as recommended by the Utah Geological Survey. For more information visit: *https://geology.utah.gov/apps/qfaults/index.html*

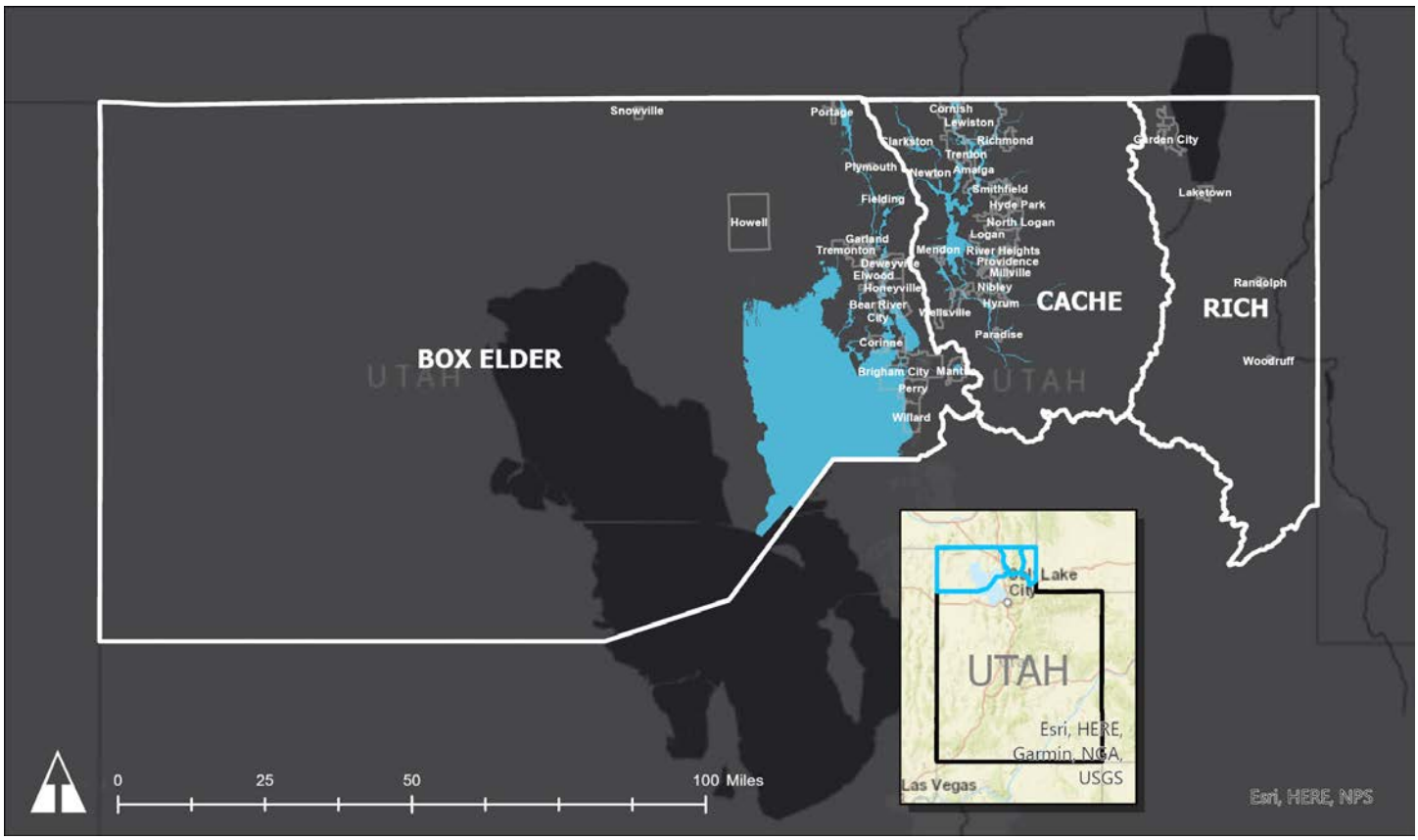


FLOOD - FEMA

Hazard Description: A flood is an overflow of water from rivers, groundwater, or rainfall that submerges areas that are usually dry. The most common cause of flooding is due to rain or snowmelt that accumulates faster than soils can absorb it or rivers can carry it away. Flooding can also result from the failure of a water control structure, such as a levee or dam (see also Dam Failure).

A 1% Annual Chance Flood, or 100-year flood, is a flood that has a 1 percent chance or greater of occurring in any given year. Experiencing a 100-year flood does not decrease the chance of a second 100-year flood occurring that same year or any year that follows. A 100- year flood today, independent of future sea level rise and other climate change effects, has a 26 percent chance of occurring over the life of a 30-year mortgage. Similarly, a 100-year flood today has a 45 percent chance of occurring over the 60-year life of a power substation.

Map Description: This map displays the FEMA identified 100 year floodplain. For more information visit: https://msc.fema.gov/portal/home

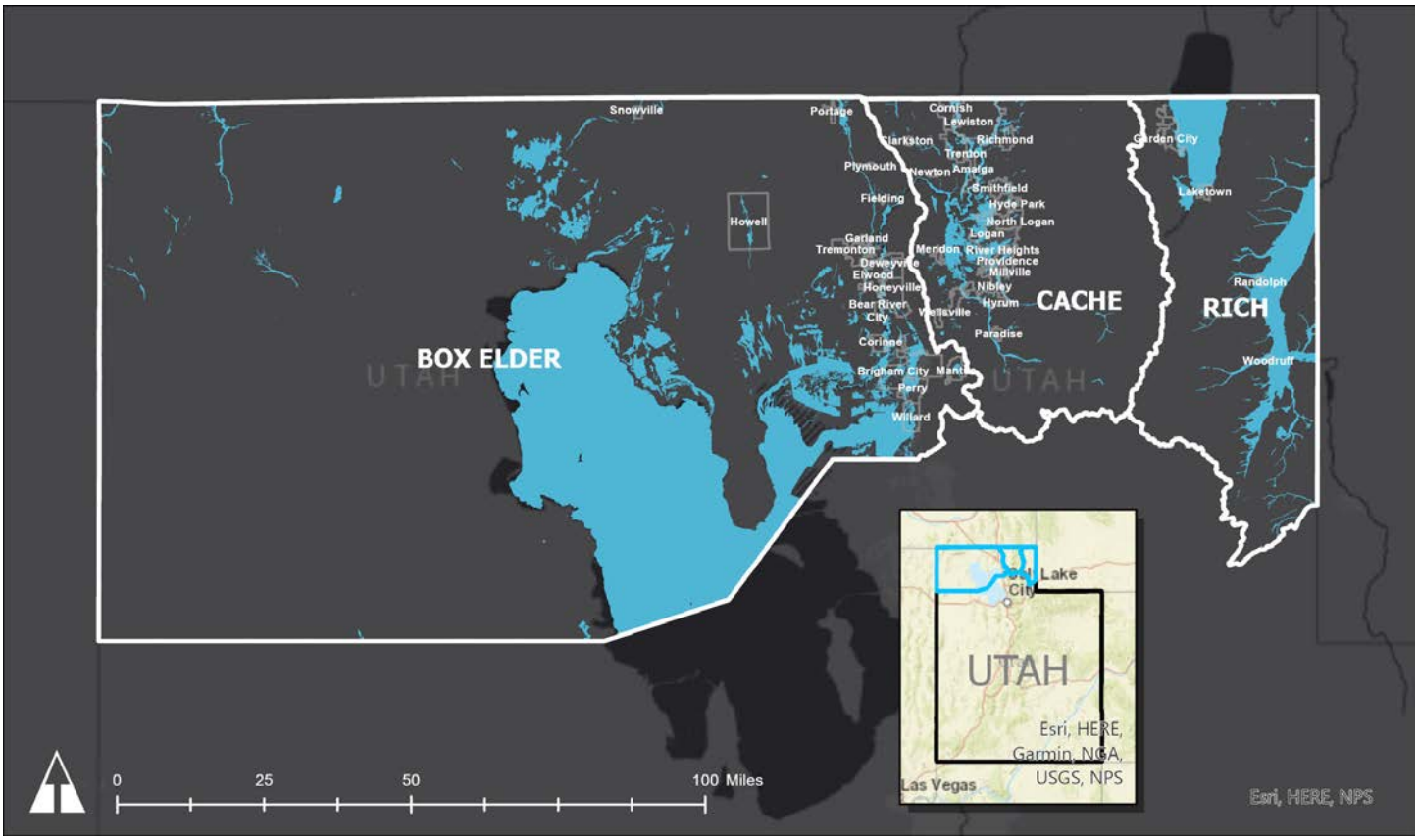


FLOOD - SOIL

Hazard Description: A flood is an overflow of water from rivers, groundwater, or rainfall that submerges areas that are usually dry. The most common cause of flooding is due to rain or snowmelt that accumulates faster than soils can absorb it or rivers can carry it away. Flooding can also result from the failure of a water control structure, such as a levee or dam (see also Dam Failure).

A 1% Annual Chance Flood, or 100-year flood, is a flood that has a 1 percent chance or greater of occurring in any given year. Experiencing a 100-year flood does not decrease the chance of a second 100-year flood occurring that same year or any year that follows. A 100- year flood today, independent of future sea level rise and other climate change effects, has a 26 percent chance of occurring over the life of a 30-year mortgage. Similarly, a 100-year flood today has a 45 percent chance of occurring over the 60-year life of a power substation.

Map Description: This map displays the 100 year floodplain based on NRCS soil survey data (https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/) and was identified based on research by Sangway and Merwade (*https://onlinelibrary.wiley.com/doi/abs/10.1111/1752-1688.12306*).

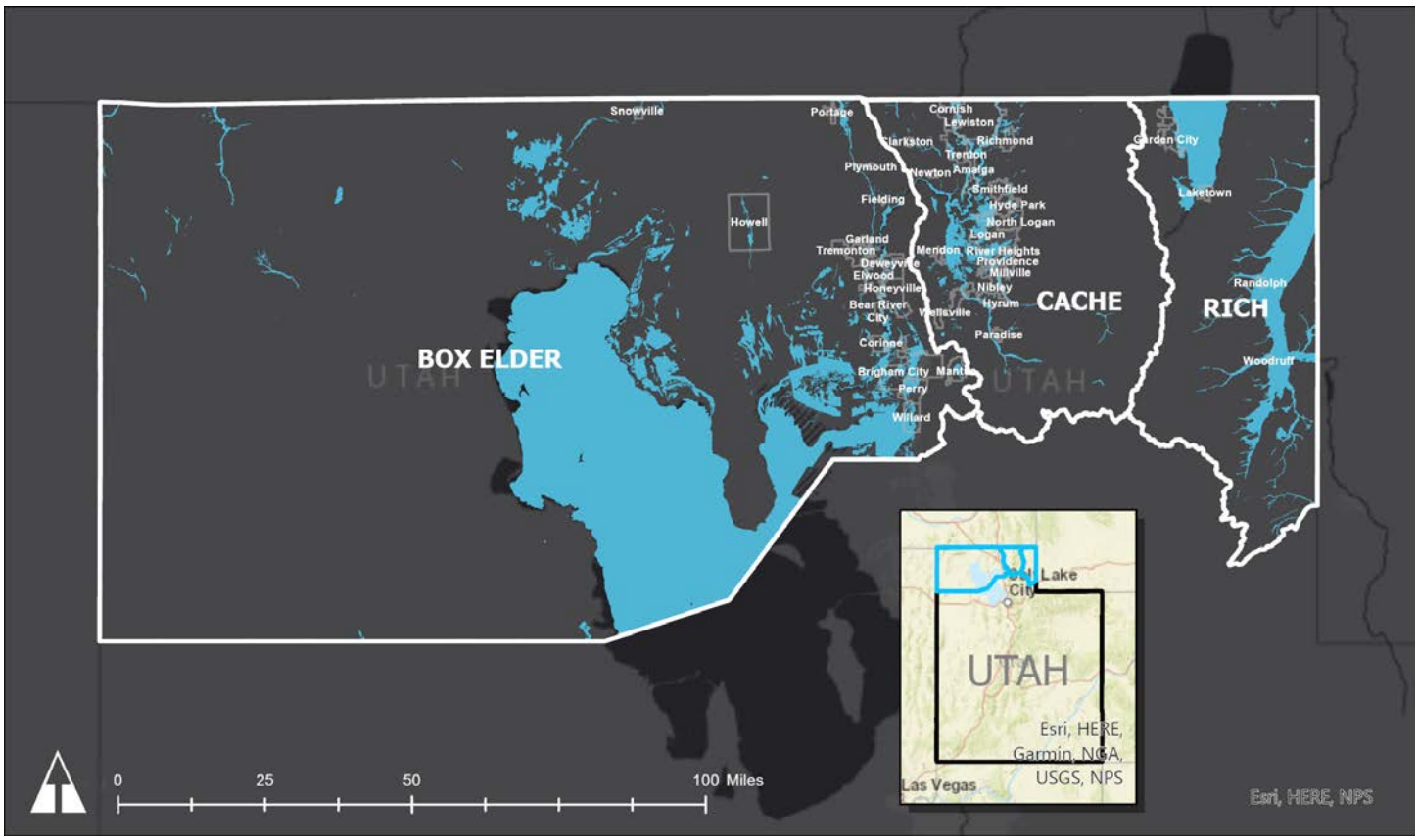


FLOOD - VALLEY BOTTOM

Hazard Description: A flood is an overflow of water from rivers, groundwater, or rainfall that submerges areas that are usually dry. The most common cause of flooding is due to rain or snowmelt that accumulates faster than soils can absorb it or rivers can carry it away. Flooding can also result from the failure of a water control structure, such as a levee or dam (see also Dam Failure).

A 1% Annual Chance Flood, or 100-year flood, is a flood that has a 1 percent chance or greater of occurring in any given year. Experiencing a 100-year flood does not decrease the chance of a second 100-year flood occurring that same year or any year that follows. A 100- year flood today, independent of future sea level rise and other climate change effects, has a 26 percent chance of occurring over the life of a 30-year mortgage. Similarly, a 100-year flood today has a 45 percent chance of occurring over the 60-year life of a power substation.

Map Description: The valley bottom map displays the potential flood plains based on stream networks and elevation data (*https://databasin.org/datasets/95a24aeef6a24996bf8082090fdbd831*).

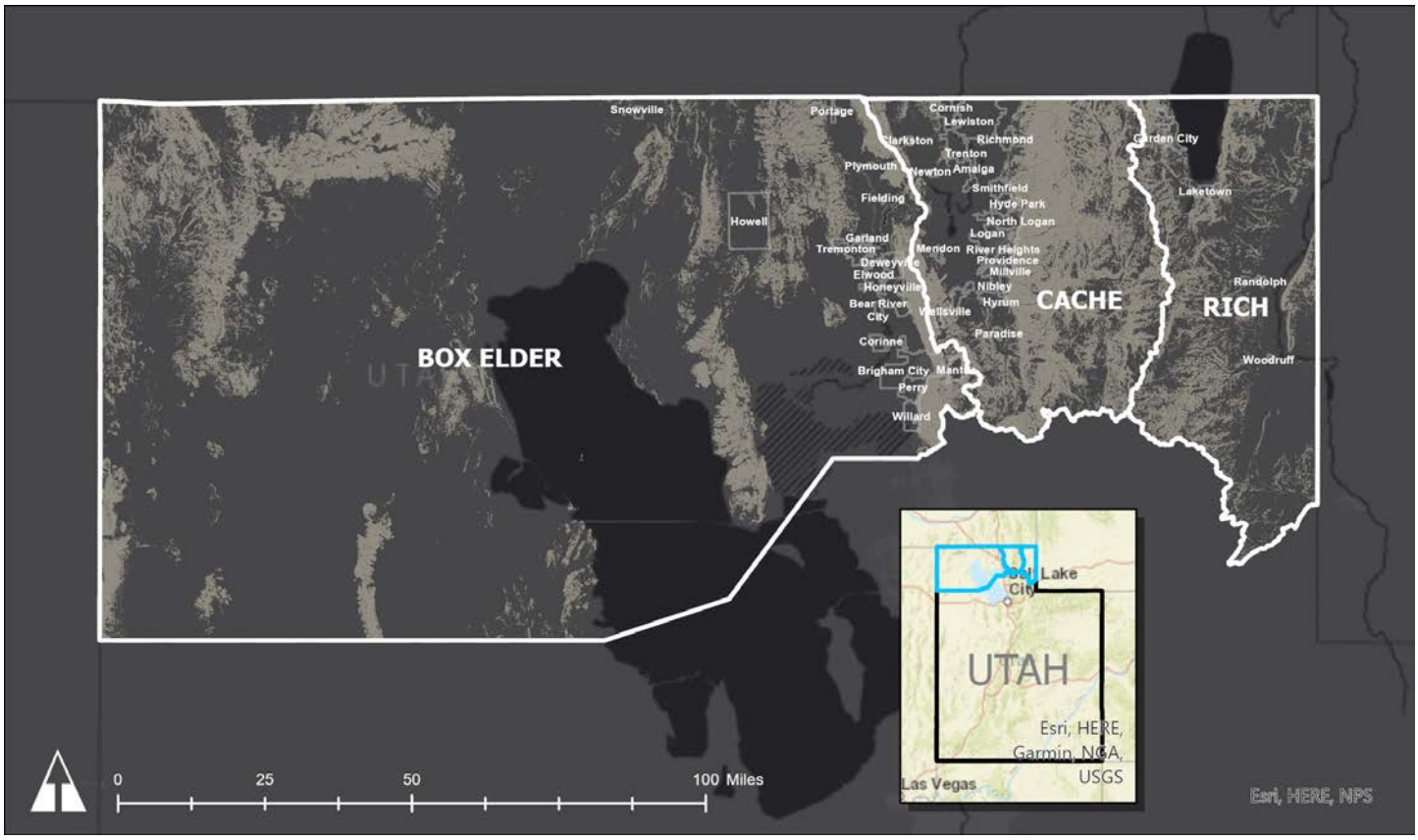


LANDSLIDE

Hazard Description: A landslide is the movement of a mass of rock, debris, or earth down a slope by force of gravity. They flow rapidly, striking at avalanche speeds that can travel several miles, growing in size as they pick up trees, boulders, cars and other materials.

Landslides occur when the slope or soil stability changes from stable to unstable, which may be caused by earthquakes, storms, volcanic eruptions, erosion, fire, or additional human-induced activities. Slopes greater than 10 degrees are more likely to slide, as are slopes where the height from the top of the slope to its toe is greater than 40 feet. Slopes are also more likely to fail if vegetative cover is low and/or soil water content is high. However, landslides can occur with very little slope, sometimes classified as earth slumping or earth flow.

Hazard Description: This map displays moderate to high landslide susceptibility based on research completed by Utah Geological Survey geologists. For more information visit: *https://ugspub.nr.utah.gov/publications/maps/m-228/m-228.pdf*

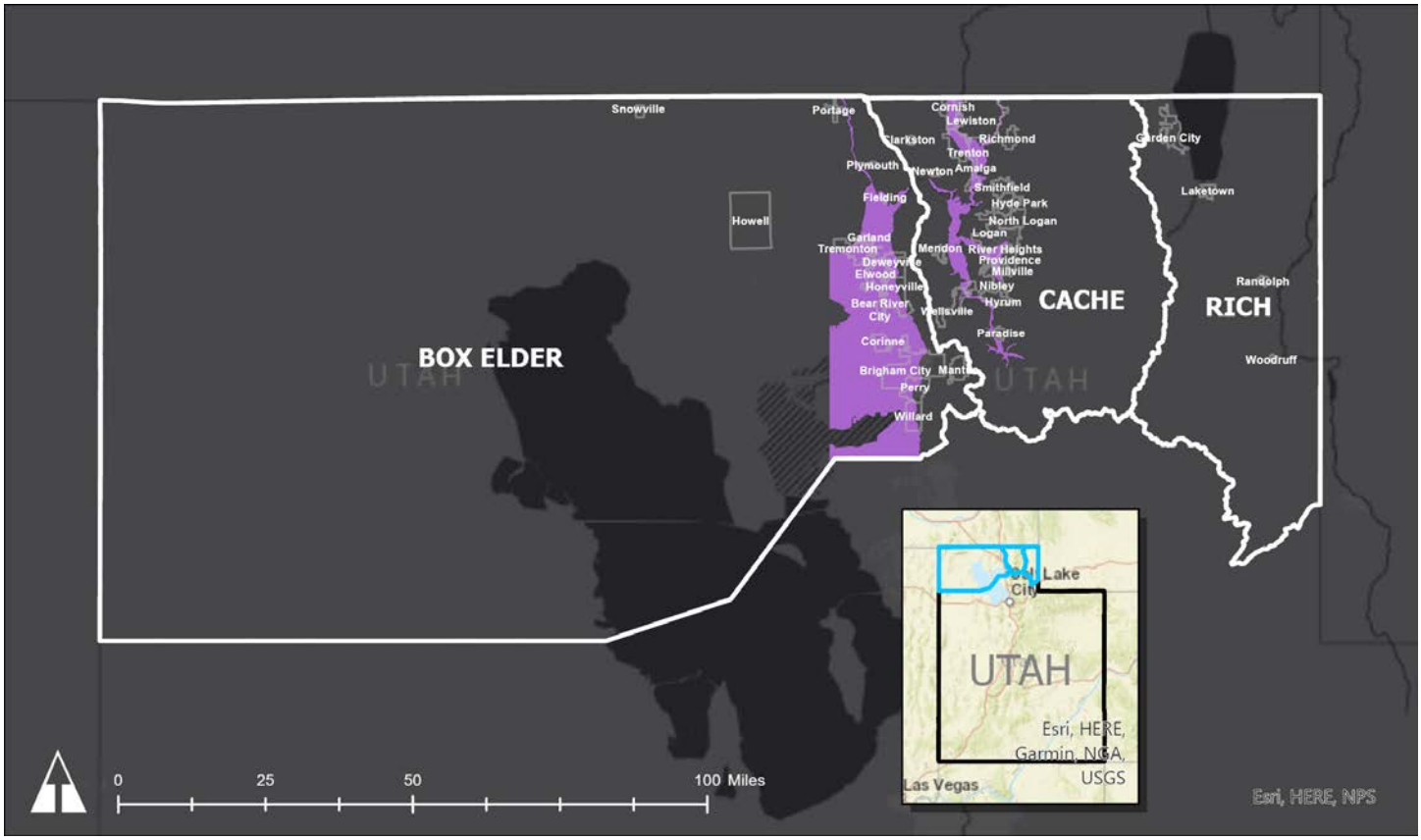


LIQUEFACTION

Hazard Description: Liquefaction occurs when soils that are saturated with water temporarily lose their ability to hold their structure, acting more like a viscous liquid than a solid. It mostly occurs during an earthquake and can damage anything on or in the ground, including buildings and other structures, roads, sewer and water lines, and other infrastructure.

Two conditions must be present in order for liquefaction to occur: 1) The soil must be susceptible to liquefaction, which are most often shallow (0-30 feet), and loose/sandy soils; and, 2) There must be ground shaking (such as during an earthquake) that is strong enough to loosen the soil structure.

Hazard Description: This map displays moderate to high liquefaction potential based on research completed by Utah Geological Survey geologists. For more information visit: *https://geology.utah.gov/hazards/earthquakes/liquefaction/*

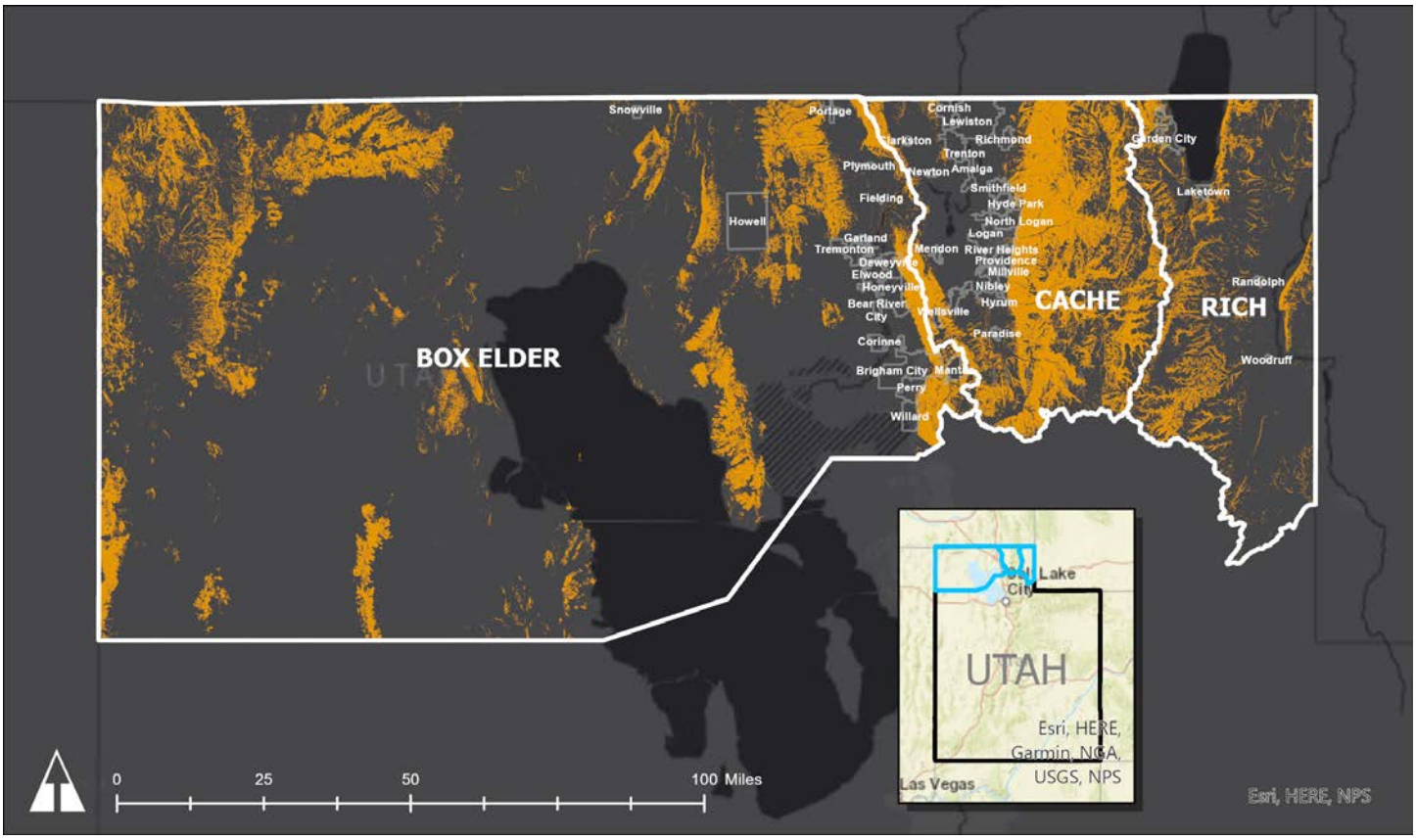


STEEP SLOPE

Hazard Description: A landslide is the movement of a mass of rock, debris, or earth down a slope by force of gravity. They flow rapidly, striking at avalanche speeds that can travel several miles, growing in size as they pick up trees, boulders, cars and other materials.

Landslides occur when the slope or soil stability changes from stable to unstable, which may be caused by earthquakes, storms, volcanic eruptions, erosion, fire, or additional human-induced activities. Slopes greater than 10 degrees are more likely to slide, as are slopes where the height from the top of the slope to its toe is greater than 40 feet. Slopes are also more likely to fail if vegetative cover is low and/or soil water content is high. However, landslides can occur with very little slope, sometimes classified as earth slumping or earth flow.

Hazard Description: This map displays areas of steep slopes (30 percent slope or greater) and was developed using the U.S. Geologic Survey National Elevation Dataset. For more information visit: *https://www.usgs.gov/core-science-systems/national-geospatial-program/national-map*



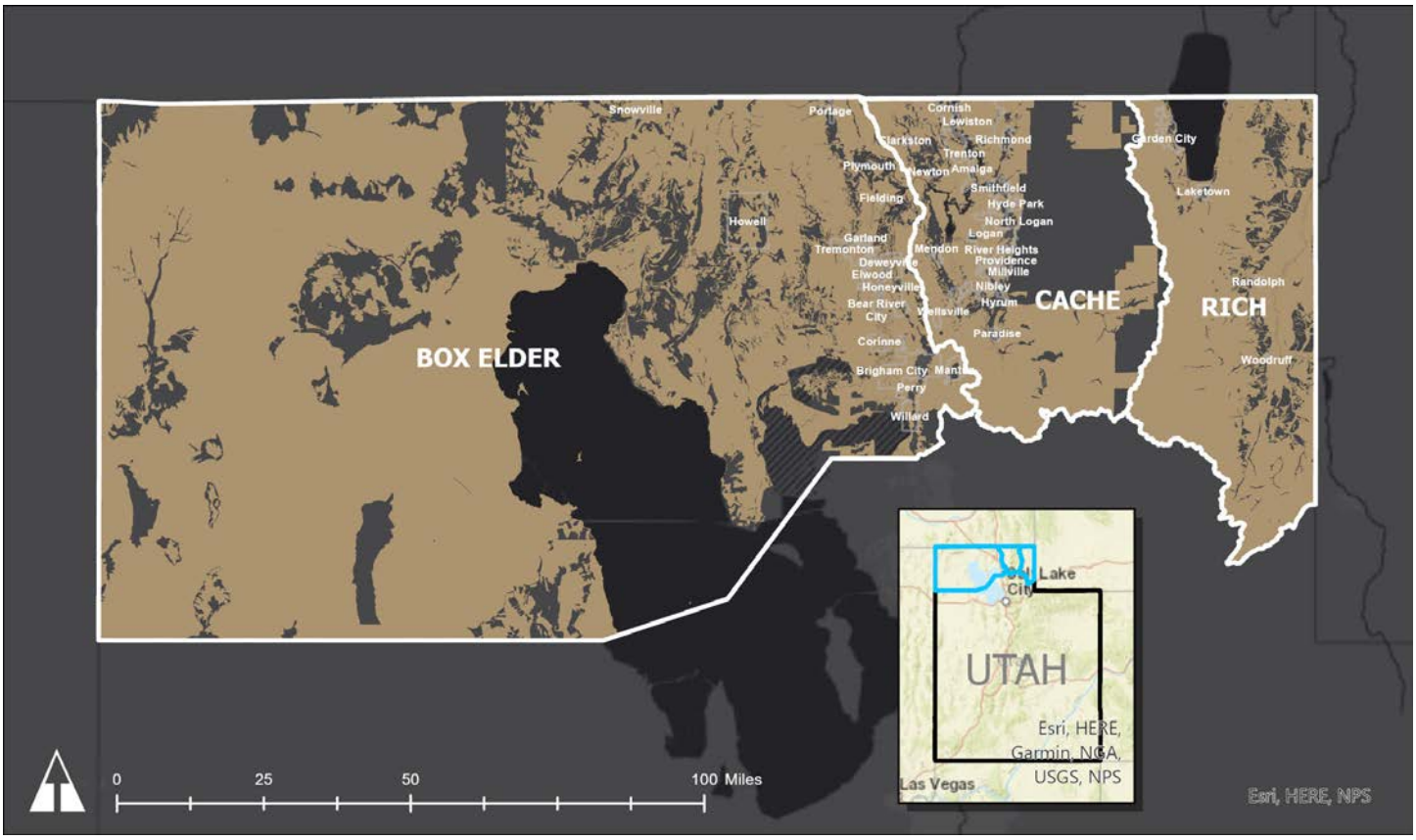
PROBLEM SOILS (WITH BASEMENTS)

Hazard Description: Problem soils are a group of hazards related to the specific properties of soils, and can include:

- Collapsible soil: Soils that have considerable strength when in a day, natural state, but significantly settle due to hydrocompaction (reduction of air space within the soil) when wetted;
- Expansive soil: Soil with high clay content that swells when wet and shrinks when dried; and
- Subsidence : Sinking of the ground caused by groundwater depletion and/or underground mine subsidence or collapse

Problem soils can cause extensive damage to structures and foundations, and may also damage pavements after construction. They have caused an undetermined, but very significant amount of infrastructure damage and resulting economic impact.

Map Description: This map displays soils not suitable for dwellings with basements based on soil parameters (see reference section USDA SSURGO 1. Soils Not Suitable for Dwellings with Basements for more information).



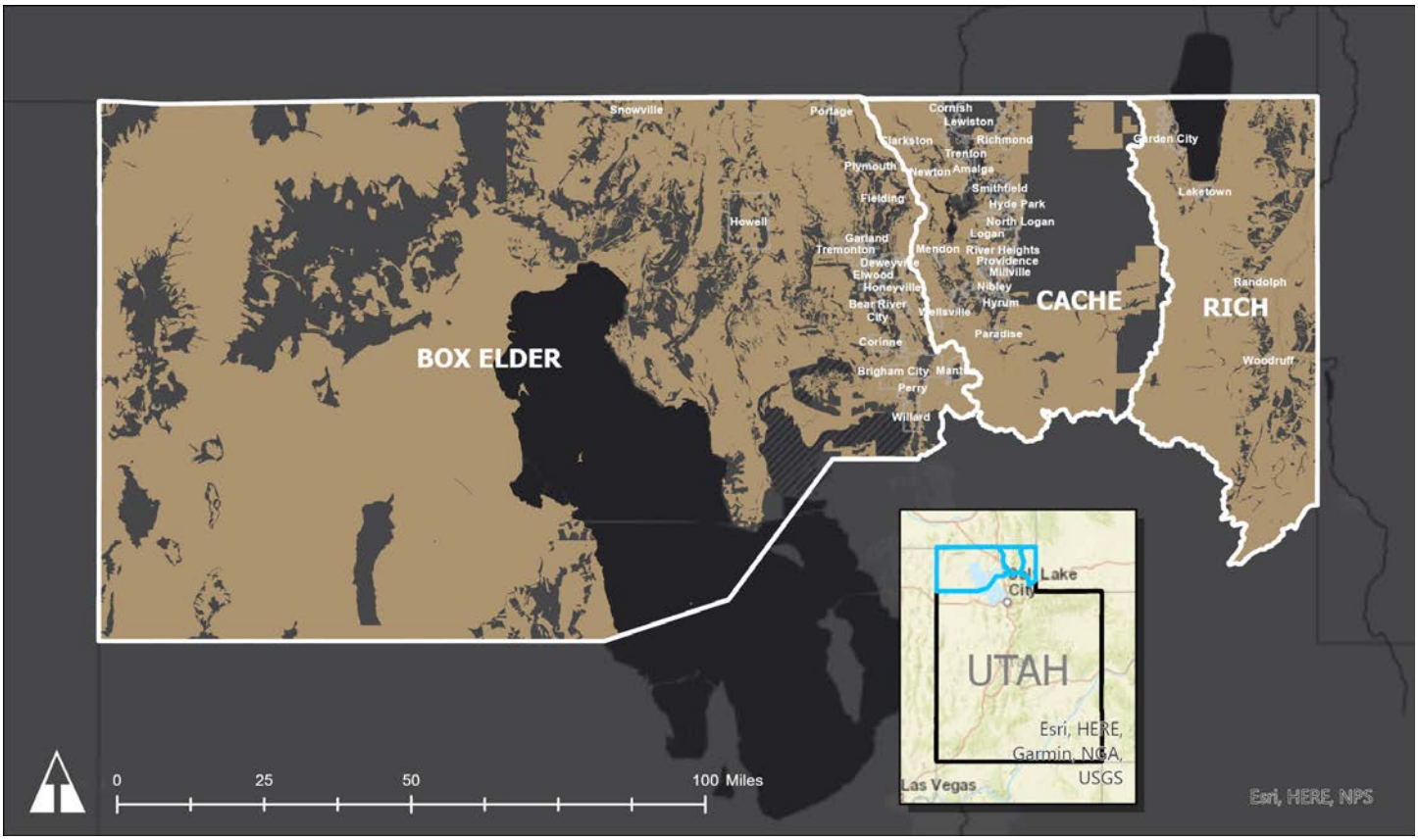
PROBLEM SOILS (WITHOUT BASEMENTS)

Hazard Description: Problem soils are a group of hazards related to the specific properties of soils, and can include:

- Collapsible soil: Soils that have considerable strength when in a day, natural state, but significantly settle due to hydrocompaction (reduction of air space within the soil) when wetted;
- Expansive soil: Soil with high clay content that swells when wet and shrinks when dried; and
- Subsidence : Sinking of the ground caused by groundwater depletion and/or underground mine subsidence or collapse

Problem soils can cause extensive damage to structures and foundations, and may also damage pavements after construction. They have caused an undetermined, but very significant amount of infrastructure damage and resulting economic impact.

Map Description: This map displays soils not suitable for dwellings without basements based on soil parameters (see reference section USDA SSURGO 2. Soils Not Suitable for Dwellings without Basements for more information).

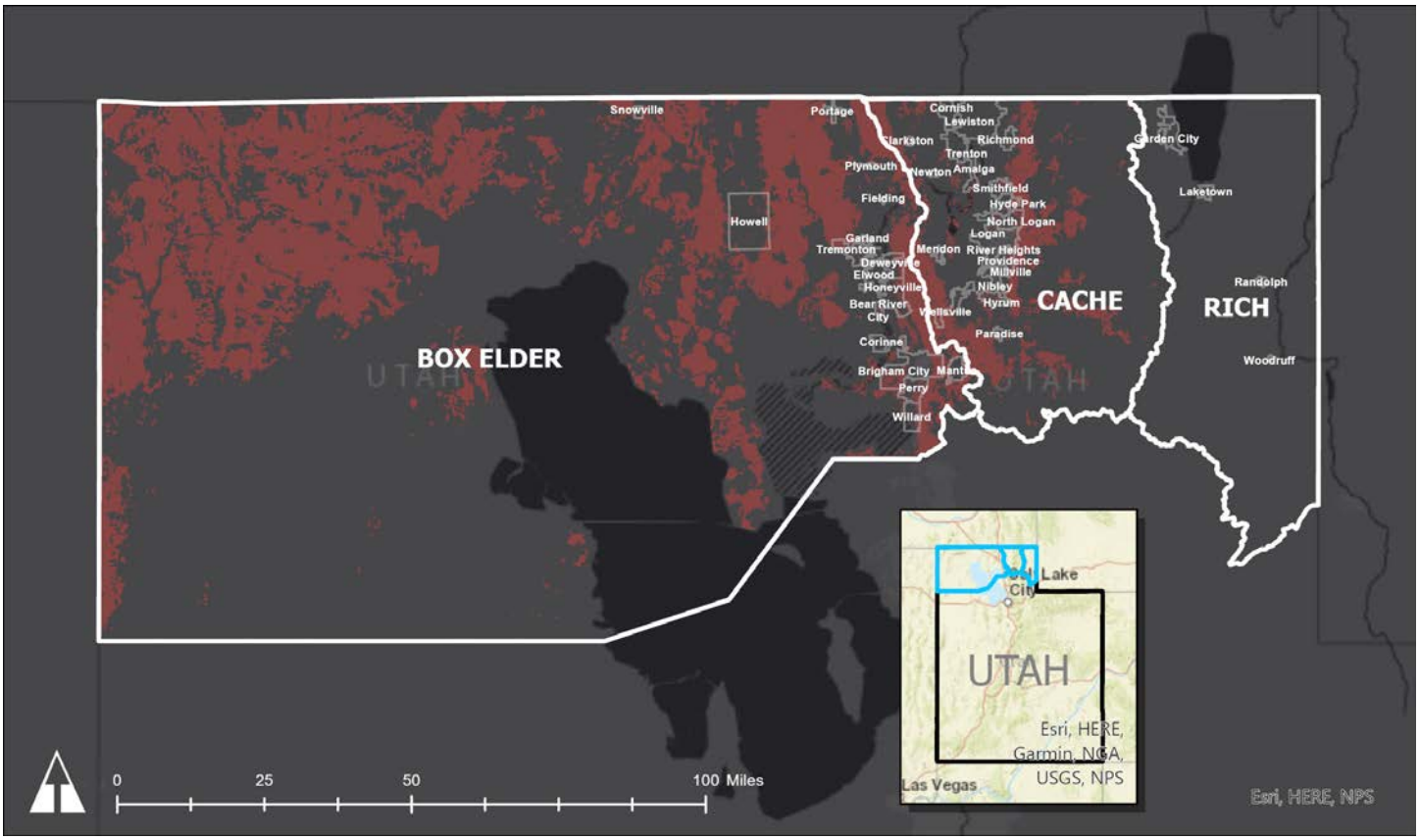


WILDFIRE - UTAH FFSL

Hazard Description: A wildfire is any outdoor fire that is not controlled, supervised, or arranged. Wildfire probability depends on fuel, weather and topography. Wildfires can occur in the wildland or the wildland urban interface. A wildland is an area where development is almost nonexistent, except for roads, railroads, or power lines. Wildland urban interface is an area where structures and other human development meet or intermingle with wildland or vegetation fuels.

Fuels are anything that will burn and include vegetation and structures. The weather, such as high temperatures, low humidity and high winds increase the likelihood that a wildfire will spread. Topography affects speed at which a wildfire will spread. A fire will move more quickly uphill which causes hot gases to rise in front of it. These gases in turn, pre-heat and dry vegetation ahead of the wildfire causing it to catch fire more rapidly.

Hazard Description: This map displays areas of moderate to high wildfire threat developed by the Utah Division of Forestry, Fire and State Lands and historical wildfire occurrences from 1980-2016. For more information visit: *https://wildfirerisk.utah.gov/*

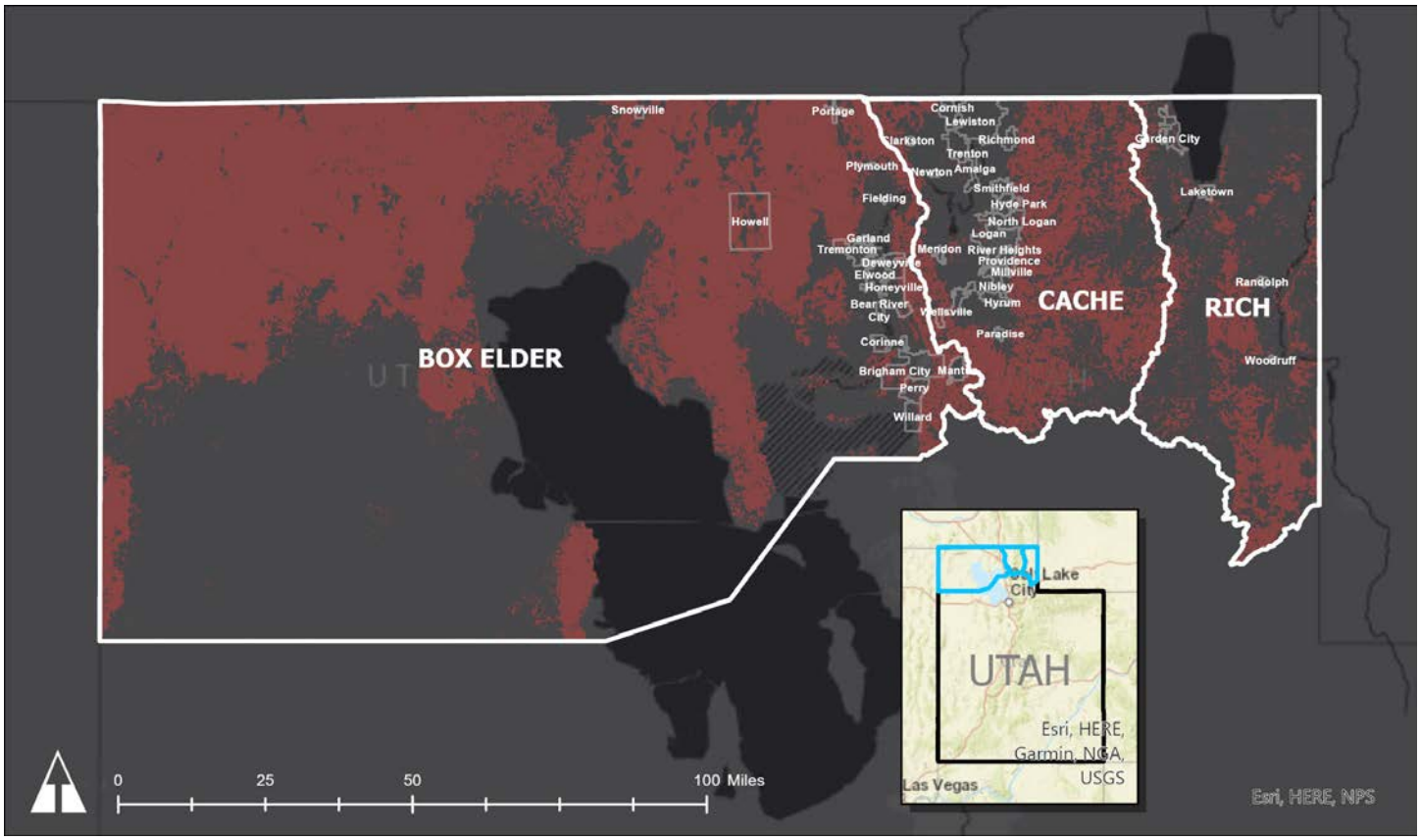


WILDFIRE - U.S. FOREST SERVICE

Hazard Description: A wildfire is any outdoor fire that is not controlled, supervised, or arranged. Wildfire probability depends on fuel, weather and topography. Wildfires can occur in the wildland or the wildland urban interface. A wildland is an area where development is almost nonexistent, except for roads, railroads, or power lines. Wildland urban interface is an area where structures and other human development meet or intermingle with wildland or vegetation fuels.

Fuels are anything that will burn and include vegetation and structures. The weather, such as high temperatures, low humidity and high winds increase the likelihood that a wildfire will spread. Topography affects speed at which a wildfire will spread. A fire will move more quickly uphill which causes hot gases to rise in front of it. These gases in turn, pre-heat and dry vegetation ahead of the wildfire causing it to catch fire more rapidly.

Hazard Description: This map displays areas of moderate to high wildfire hazard potential developed by the U.S. Forest Service and historical wildfire occurrences from 1980-2016. For more information visit: *https://www.firelab.org/project/wildfire-hazard-potential*



A comprehensive table showing risk profiles for each natural hazard in the Bear River Region, collectively, identified during the planning process.

Regional natural hazard profiles and risk matrices

The table above shows risk profiles for every natural hazard identified throughout the planning process. Each profile is based on averages from all three counties considering the following three components of risk:

- **EXPOSURE to the hazard**
- **PROBABILITY of a future hazard event**
- **SEVERITY of a potential of a hazard event**

These components were averaged together to create an overall regional risk classification of either low, moderate, or high. While most hazards in the region, collectively, were categorized as a moderate risk, the hazard profiles and risk matrices for each individual county indicate much more diversity when considering geography, geology and soils, topography, vegetation types, localized climate, population characteristics, housing density, and many other factors.

The next three sections illustrate the diversity of various hazard risks for each respective county for each natural hazard identified in this plan.

For definitions of each natural hazard in the Bear River Region, visit the Utah Hazard Mitigation website at **hazards.utah.gov**. Scroll down until you see the hazard you would like to learn more about, and click on the photo.

Countywide risk matrices: Exposure, probability, and severity

Risks to each natural hazard for each county in the Bear River Region were analyzed during the planning process. Risk was determined by considering the three elements of exposure, probability, and severity.

Exposure, or the geographic overlap of natural hazard areas on community assets, was determined for the following 5 categories:

- People, businesses, and property
- Critical facilities and infrastructure
- Working lands
- Natural systems
- Recreation amenities

On the next several pages are tables showing risk matrices for each county, including exposure, probability, severity, and combined matrices. Notice the hazard names at the top of the exposure table in green text - these are

hazards with GIS data available. The figures for those hazards were strictly based on potential loss numbers, and whether or not 30% or more of amenities were potentially impacted by the hazard. The hazards listed in blue text, where GIS data did not exist, were estimated by BRAG staff based on historical exposure and professional opinion, and were vetted through county emergency management staff.

Probability scores were based on qualitative assessments of historical events and the likelihood of more events occurring within the next 5 years.

Severity scores were based on the scale and level of damage of past events, or the severity of future events according to local natural hazards experts. Severity was also determined for the same 5 categories as they were for exposure.

Combined risk

After averages were determined for each risk factor, scores for exposure, probability, and severity were added together to illustrate combined risk scores. These combined risk scores provide local governments with a sense of where their highest risks are for each respective natural hazard. Combined risk data is not intended to be all inclusive or perfectly representative, but may help local communities prioritize mitigation projects strategies to protect lives, property, infrastructure, and other amenities as practical, efficient, and cost effective as possible.

The next three pages contain risk matrices and summary tables for each respective county in the Bear River Region:

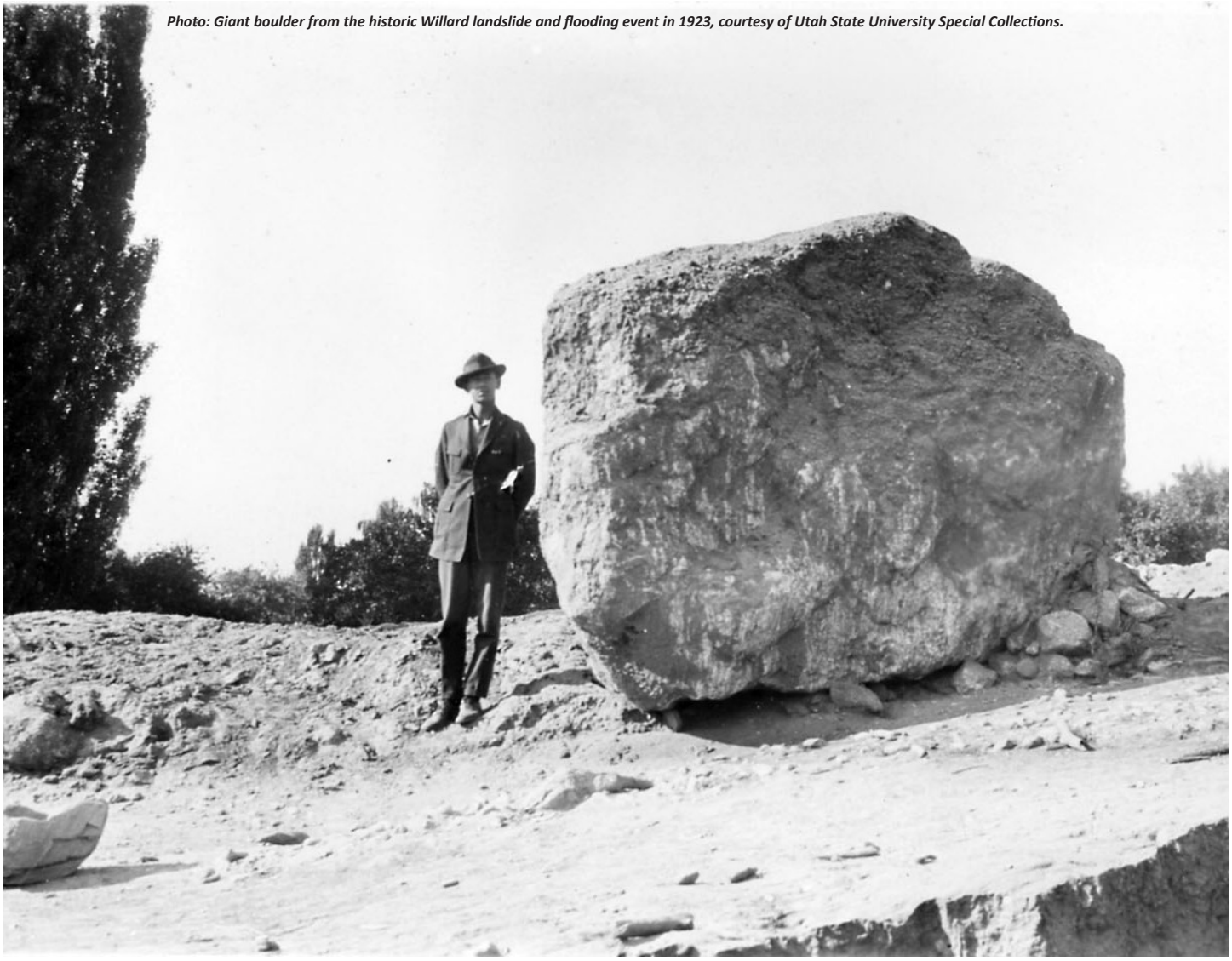


Photo: Giant boulder from the historic Willard landslide and flooding event in 1923, courtesy of Utah State University Special Collections.

BOX ELDER COUNTY EXPOSURE SCORES PER HAZARD

CATEGORY	Wildfire (Combined)	Flood (Combined)	Dam Failure	Faults	Landslide	Liquefaction	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche Terrain	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
People, Businesses, and Property	1	1	1	1	1	3	0	3	3	0	2	2	2	2	1	3	3	1	1	0	1
Critical Facilities and Infrastructure	3	1	0	1	1	1	1	3	3	0	1	2	1	1	0	0	2	1	2	0	2
Working Lands	2	1	1	1	1	3	1	3	3	0	0	1	2	3	3	0	3	1	1	0	0
Natural Systems	2	1	1	2	2	3	1	3	3	0	1	2	2	2	2	0	2	0	2	0	0
Recreation Amenities	3	2	1	1	1	1	1	3	3	0	0	1	1	2	2	0	1	0	2	0	2
TOTAL	11	6	4	6	6	11	4	15	15	0	4	8	8	10	8	3	11	3	8	0	5
AVERAGE	2.2	1.2	0.8	1.2	1.2	2.2	0.8	3.0	3.0	0.0	0.8	1.6	1.6	2.0	1.6	0.6	2.2	0.6	1.6	0.0	1.0

Exposure Scoring Methodology for Hazards with GIS data (green hazard headings): 1) Losses for each community were collectively added together per county for each hazard. 2) Comprehensive county losses per hazard were then calculated by type as a percent of the total. 3) Types of amenities and facilities were grouped into: People, businesses, and property; Critical Facilities and Infrastructure; Working Lands; Natural Systems; and Recreation Amenities. 4) Percent losses for each category were then averaged for each natural hazard. For example, percentages for recreation amenities potentially affected by landslides were all averaged to give one loss value. 5) These averaged percentages were then translated into numerical scores: **0(Very Low) = less than 1%; 1(Low) = 1%-15%; 2 (Moderate) = 15%-30%; and 3 (High) = 30%+**

Other Notes: Low, Moderate, and High Values were based on other recent hazard mitigation plans and studies, where greater than 30% of losses was generally considered significant. Wildfire and Flood hazards included multiple datasets. As such, percentages were averaged for each dataset, then averaged again for each hazard collectively.

Non-GIS hazard (blue hazard headings) exposure scores were estimated based on the potential for 30% or more of the category amenities to be exposed to each hazard at any given time.

BOX ELDER COUNTY PROBABILITY SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults (Earthquake)	Landslide	Liquefaction	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
Probability Score	3	3	1	3	2	3	1	1	1	2	2	1	3	2	2	3	3	1	1	0	2

*Probability scores based on qualitative assessments of historical events and the likelihood of more events occuring within the next 5 years. **Scores range from 0 to 3; 0 = Unlikely, 1 = Somewhat Likely, 2 = Likely, and 3 = Very Likely.** Note: For hazard types listed above that do not occur as an event, per se, a probability score of 1 was used to represent a constant, but low, probability of occurance. For example, problem soils, steep slopes, and aluvial fans are prevelent in the Bear River Region. However, each of these are present as existing conditions only, and do not occur as specific events, while other related hazards, such as landslides, do.

BOX ELDER COUNTY SEVERITY SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults	Landslide	Liquefaction	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche**	Volcanic	Seasonal Population Growth
People, Businesses, and Property	2	2	3	2	3	3	1	1	1	2	2	1	1	1	1	3	3	3	2	3	1
Critical Facilities and Infrastructure	2	2	2	3	2	3	2	1	1	1	1	1	1	1	0	0	2	2	2	3	2
Working Lands	3	2	1	0	1	2	0	0	0	1	0	0	2	3	3	0	3	2	1	3	0
Natural Systems	2	1	2	0	2	1	1	0	0	2	1	1	3	3	3	0	2	2	1	3	2
Recreation Amenities	1	1	2	1	1	1	1	0	0	1	1	1	2	2	2	0	1	1	2	3	2
TOTAL	10	8	10	6	9	10	5	2	2	7	5	4	9	10	9	3	11	10	8	15	7
AVERAGE	2.0	1.6	2.0	1.2	1.8	2.0	1.0	0.4	0.4	1.4	1.0	0.8	1.8	2.0	1.8	0.6	2.2	2.0	1.6	3.0	1.4

*Scores were determined based on the severity of past events, or the severity of potential future events. Severity is defined as causing a great amount of damage in relation to each respective category. **Scores for each respective category range from 0 to 3; 0 = Not Severe, 1 = Somewhat Severe, 2 = Severe, and 3 = Very Severe.** Average scores were calculated for each hazard to determine overall relative severity. **It is very unlikely that a seiche event will occur in Cache County, so a severity rating is irrelevent.

BOX ELDER COUNTY COMBINED RISK SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults	Landslide	Liquefaction	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
Exposure (Average)	2.2	1.2	0.8	1.2	1.2	2.2	0.8	3.0	3.0	0.0	0.8	1.6	1.6	2.0	1.6	0.6	2.2	0.6	1.6	0.0	1.0
Probability	3.0	3.0	1.0	3.0	2.0	3.0	1.0	1.0	1.0	2.0	2.0	1.0	3.0	2.0	2.0	3.0	3.0	1.0	1.0	0.0	2.0
Severity (Average)	2.0	1.6	2.0	1.2	1.8	2.0	1.0	0.4	0.4	1.4	1.0	0.8	1.8	2.0	1.8	0.6	2.2	2.0	1.6	3.0	1.4
TOTAL	7.2	5.8	3.8	5.4	5.0	7.2	2.8	4.4	4.4	3.4	3.8	3.4	6.4	6.0	5.4	4.2	7.4	3.6	4.2	3.0	4.4

Scores were based on a scale ranging from 1 to 9; 9 representing the highest risk.

CACHE COUNTY EXPOSURE SCORES PER HAZARD

CATEGORY	Wildfire (Combined)	Flood (Combined)	Dam Failure	Faults	Landslide	Liquefaction	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche Terrain	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
People, Businesses, and Property	1	1	1	1	1	1	0	3	3	0	3	2	2	2	1	3	3	1	0	0	1
Critical Facilities and Infrastructure	2	1	1	1	3	1	2	3	3	1	1	1	1	1	0	0	2	1	0	0	1
Working Lands	1	1	1	1	1	1	1	3	3	0	0	1	2	3	3	0	3	1	0	0	0
Natural Systems	2	2	2	1	2	1	1	2	3	1	1	2	2	2	2	0	2	0	0	0	2
Recreation Amenities	2	3	1	1	2	2	1	3	3	1	0	1	1	2	2	0	1	0	0	0	2
TOTAL	8	8	6	5	9	6	5	14	15	3	5	7	8	10	8	3	11	3	0	0	6
AVERAGE	1.6	1.6	1.2	1.0	1.8	1.2	1.0	2.8	3.0	0.6	1.0	1.4	1.6	2.0	1.6	0.6	2.2	0.6	0.0	0.0	1.2

Exposure Scoring Methodology for Hazards with GIS data (green hazard headings): 1) Losses for each community were collectively added together per county for each hazard. 2) Comprehensive county losses per hazard were then calculated by type as a percent of the total. 3) Types of amenities and facilities were grouped into: People, businesses, and property; Critical Facilities and Infrastructure; Working Lands; Natural Systems; and Recreation Amenities. 4) Percent losses for each category were then averaged for each natural hazard. For example, percentages for recreation amenities potentially affected by landslides were all averaged to give one loss value. 5) These averaged percentages were then translated into numerical scores: **0(Very Low) = less than 1%; 1(Low) = 1%-15%; 2 (Moderate) = 15%-30%; and 3 (High) = 30%+**

Other Notes: Low, Moderate, and High Values were based on other recent hazard mitigation plans and studies, where greater than 30% of losses was generally considered significant. Wildfire and Flood hazards included multiple datasets. As such, percentages were averaged for each dataset, then averaged again for each hazard collectively.

Non-GIS hazard (blue hazard headings) exposure scores were estimated based on the potential for 30% or more of the category amenities to be exposed to each hazard at any given time.

CACHE COUNTY PROBABILITY SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults (Earthquake)	Landslide	Liquefaction	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
Probability Score	3	3	1	2	2	2	1	1	1	3	3	1	3	2	2	3	3	1	0	0	2

*Probability scores based on qualitative assessments of historical events and the likelihood of more events occuring within the next 5 years. **Scores range from 0 to 3; 0 = Unlikely, 1 = Somewhat Likely, 2 = Likely, and 3 = Very Likely.** Note: For hazard types listed above that do not occur as an event, per se, a probability score of 1 was used to represent a constant, but low, probability of occurance. For example, problem soils, steep slopes, and aluvial fans are prevelent in the Bear River Region. However, each of these are present as existing conditions only, and do not occur as specific events, while other related hazards, such as landslides, do.

CACHE COUNTY SEVERITY SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults	Landslide	Liquefaction	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche**	Volcanic	Seasonal Population Growth
People, Businesses, and Property	2	2	3	2	3	3	1	1	1	2	3	1	1	1	1	3	3	3	0	3	1
Critical Facilities and Infrastructure	2	2	2	3	2	3	2	1	1	2	2	1	1	1	0	0	2	2	0	3	2
Working Lands	2	1	1	0	1	2	0	0	0	1	0	0	2	3	3	0	3	2	0	3	0
Natural Systems	2	1	2	0	2	1	1	0	0	2	1	1	3	3	3	0	2	2	0	3	2
Recreation Amenities	2	1	2	1	1	2	1	0	0	1	1	1	2	2	2	0	1	1	0	3	2
TOTAL	10	7	10	6	9	11	5	2	2	8	7	4	9	10	9	3	11	10	0	15	7
AVERAGE	2.0	1.4	2.0	1.2	1.8	2.2	1.0	0.4	0.4	1.6	1.4	0.8	1.8	2.0	1.8	0.6	2.2	2.0	0.0	3.0	1.4

*Scores were determined based on the severity of past events, or the severity of potential future events. Severity is defined as causing a great amount of damage in relation to each respective category. **Scores for each respective category range from 0 to 3; 0 = Not Severe, 1 = Somewhat Severe, 2 = Severe, and 3 = Very Severe.** Average scores were calculated for each hazard to determine overall relative severity. **It is very unlikely that a seiche event will occur in Cache County, so a severity rating is irrelevent.

CACHE COUNTY COMBINED RISK SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults	Landslide	Liquefaction	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
Exposure (Average)	1.6	1.6	1.2	1.0	1.8	1.2	1.0	2.8	3.0	0.6	1.0	1.4	1.6	2.0	1.6	0.6	2.2	0.6	0.0	0.0	1.2
Probability	3.0	3.0	1.0	2.0	2.0	2.0	1.0	1.0	1.0	3.0	3.0	1.0	3.0	2.0	2.0	3.0	3.0	1.0	0.0	0.0	2.0
Severity (Average)	2.0	1.4	2.0	1.2	1.8	2.2	1.0	0.4	0.4	1.6	1.4	0.8	1.8	2.0	1.8	0.6	2.2	2.0	0.0	3.0	1.4
TOTAL	6.6	6.0	4.2	4.2	5.6	5.4	3.0	4.2	4.4	5.2	5.4	3.2	6.4	6.0	5.4	4.2	7.4	3.6	0.0	3.0	4.6

Scores were based on a scale ranging from 1 to 9; 9 representing the highest risk.

RICH COUNTY EXPOSURE SCORES PER HAZARD

CATEGORY	Wildfire (Combined)	Flood (Combined)	Dam Failure	Faults	Landslide	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche Terrain	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
People, Businesses, and Property	1	2	1	1	1	0	3	3	0	1	1	1	2	1	3	3	1	1	0	3
Critical Facilities and Infrastructure	2	3	1	1	1	1	3	3	0	0	1	0	0	0	0	2	1	1	0	3
Working Lands	2	2	1	1	2	1	3	3	0	0	0	2	3	3	0	3	1	0	0	0
Natural Systems	2	3	1	1	1	1	3	3	0	0	1	2	2	2	0	2	0	0	0	2
Recreation Amenities	2	2	1	1	2	1	3	3	0	0	1	1	2	2	0	1	0	2	0	2
TOTAL	9	12	5	5	7	4	15	15	0	1	4	6	9	8	3	11	3	4	0	10
AVERAGE	1.8	2.4	1.0	1.0	1.4	0.8	3.0	3.0	0.0	0.2	0.8	1.2	1.8	1.6	0.6	2.2	0.6	0.8	0.0	2.0

Exposure Scoring Methodology for Hazards with GIS data (green hazard headings): 1) Losses for each community were collectively added together per county for each hazard. 2) Comprehensive county losses per hazard were then calculated by type as a percent of the total. 3) Types of amenities and facilities were grouped into: People, businesses, and property; Critical Facilities and Infrastructure; Working Lands; Natural Systems; and Recreation Amenities. 4) Percent losses for each category were then averaged for each natural hazard. For example, percentages for recreation amenities potentially affected by landslides were all averaged to give one loss value. 5) These averaged percentages were then translated into numerical scores: **0(Very Low) = less than 1%; 1(Low) = 1%-15%; 2 (Moderate) = 15%-30%; and 3 (High) = 30%+**

Other Notes: Low, Moderate, and High Values were based on other recent hazard mitigation plans and studies, where greater than 30% of losses was generally considered significant. Wildfire and Flood hazards included multiple datasets. As such, percentages were averaged for each dateset, then averaged again for each hazard collectively.

Non-GIS hazard (blue hazard headings) exposure scores were estimated based on the potential for 30% or more of the category amenities to be exposed to each hazard at any given time.

RICH COUNTY PROBABILITY SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults (Earthquake)	Landslide	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
Probability Score	3	3	1	1	2	1	1	1	2	1	1	3	2	2	3	3	1	1	0	3

*Probability scores based on qualitative assessments of historical events and the likelihood of more events occuring within the next 5 years. **Scores range from 0 to 3; 0 = Unlikely, 1 = Somewhat Likely, 2 = Likely, and 3 = Very Likely.** Note: For hazard types listed above that do not occur as an event, per se, a probability score of 1 was used to represent a constant, but low, probability of occurance. For example, problem soils, steep slopes, and aluvial fans are prevelent in the Bear River Region. However, each of these are present as existing conditions only, and do not occur as specific events, while other related hazards, such as landslides, do.

RICH COUNTY SEVERITY SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults	Landslide	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
People, Businesses, and Property	2	2	3	2	2	1	1	1	2	2	1	1	1	1	3	3	3	2	3	1
Critical Facilities and Infrastructure	2	2	2	3	3	2	1	1	2	1	1	1	1	0	0	2	2	1	3	3
Working Lands	3	1	1	0	1	0	0	0	1	0	0	2	3	3	0	3	2	0	3	0
Natural Systems	2	1	2	0	1	1	0	0	2	1	1	2	3	3	0	2	2	1	3	2
Recreation Amenities	2	1	1	0	1	1	0	0	1	1	1	2	2	2	0	1	1	2	3	2
TOTAL	11	7	9	5	8	5	2	2	8	5	4	8	10	9	3	11	10	6	15	8
AVERAGE	2.2	1.4	1.8	1.0	1.6	1.0	0.4	0.4	1.6	1.0	0.8	1.6	2.0	1.8	0.6	2.2	2.0	1.2	3.0	1.6

*Scores were determined based on the severity of past events, or the severity of potential future events. Severity is defined as causing a great amount of damage in relation to each respective category. **Scores for each respective category range from 0 to 3; 0 = Not Severe, 1 = Somewhat Severe, 2 = Severe, and 3 = Very Severe.** Average scores were calculated for each hazard to determine overall relative severity.

RICH COUNTY COMBINED RISK SCORES PER HAZARD

CATEGORY	Wildfire	Flood	Dam Failure	Faults	Landslide	Steep Slopes	Problem Soils (No Bsmt)	Problem Soils (Bsmt)	Avalanche	Air Quality	Aluvial Fans	Climate Change	Drought	Insect Infestation/ Plant Disease	Radon	Severe Weather	Tornado	Seiche	Volcanic	Seasonal Population Growth
Exposure (Average)	1.8	2.4	1.0	1.0	1.4	0.8	3.0	3.0	0.0	0.2	0.8	1.2	1.8	1.6	0.6	2.2	0.6	0.8	0.0	2.0
Probability	3.0	3.0	1.0	1.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	3.0	2.0	2.0	3.0	3.0	1.0	1.0	0.0	3.0
Severity (Average)	2.2	1.4	1.8	1.0	1.6	1.0	0.4	0.4	1.6	1.0	0.8	1.6	2.0	1.8	0.6	2.0	2.0	1.2	2.8	1.6
TOTAL	7.0	6.8	3.8	3.0	5.0	2.8	4.4	4.4	3.6	2.2	2.6	5.8	5.8	5.4	4.2	7.2	3.6	3.0	2.8	6.6

Scores were based on a scale ranging from 1 to 9; 9 representing the highest risk.

Photo: New development on the benches of Cache Valley.

Implications for future growth

While the type and location of future development in the county and within each jurisdiction can be difficult to accurately project, both temporally and spatially, it is important to consider implications various natural hazards may have on future populations and community assets.

Most of the time, developers prefer to build on land that provides the best return on investment. Land that is already near existing infrastructure, is inexpensive to purchase, and requires minimal improvements for construction is the most likely to be developed first. However, when these less expensive properties are built out, development patterns often shift to those that provide better views, larger lots, more amenities, and better access to the outdoors. Often, these lots are located on steeper hillsides and benches, canyons and drainage areas, or other places that were not developed early on for a variety of other reasons.

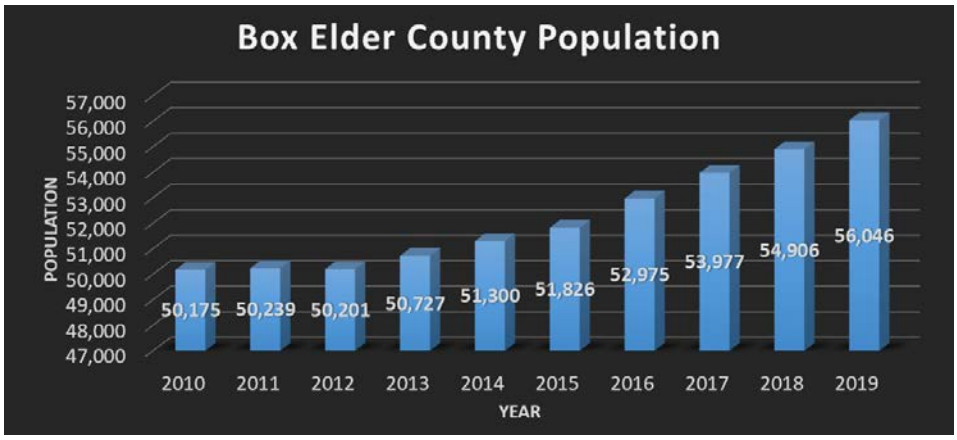
Consequently, some communities in the Bear River Region do not currently have significant risks to residential areas from natural hazards, especially the smaller more rural cities and towns. However, as those cities and towns eventually expand, especially those that are already located close to larger cities, some of these communities could see risks to residential areas and other community assets increase dramatically in the next 10 or 20 years.

Below are summaries for each county regarding potential future development patterns, and potential risks to those areas from various natural hazards.

Box Elder County

Between 2010 and 2019, Box Elder County's population increased from 50,175 residents to 56,046. This is equates to between roughly 1% and 2% growth per year.

Overall, most of the recent growth in Box Elder County has occurred in Perry, Willard, Brigham City, and Tremonton.



Population data citation: Annual Estimates of the Resident Population for Counties in Utah: April 1, 2010 to July 1, 2019 (CO-EST2019-ANNRES-49)

In Perry and Willard, most of the new growth is expected to occur along eastern benches and open areas on the periphery of existing developments. Much of this growth could be located along the Brigham City segment of the Wasatch Fault, as well as wildland-urban interface areas near the base of the mountains. Likewise, canyon drainages exist in similar areas in higher elevations above the towns. If development is allowed in these drainages, or in alluvial fans downhill from these areas, there is also a potential risk for debris flows following a heavy rain event. Wildfires in the summer, followed by significant rain or snowmelt events in the fall or following spring could exacerbate these impacts. Low elevation properties west of town could also be impacted as development occurs, via high water table and potential liquefaction risk areas.

Brigham City is seeing steady growth north and west of town. Some of these areas are in lower elevations where potential flood risk, high water table, and potential liquefaction risk exists. Risks in Willard and Perry also exists on steeper hillsides east of town, where wildfires could occur, or drainage areas could flood and cause severe damage if structures are located in those areas.

Tremonton has experienced steady and significant growth in the past few years. Most of the new development has occurred on the fringes of town, near existing residential areas. Some homes have been constructed east of the Malad River drainage. The greatest risks to future development in Tremonton collectively is likely in flood and landslide hazard areas near the Malad and Bear River drainages, so those areas should be avoided in order to reduce potential losses.

Development for the remainder of Box Elder County communities will likely occur in safe, lower elevation areas first. However, as communities grow, that development will likely move to areas with a high water table that are prone to flooding; steeper benches and hillsides, canyon drainages, and along river corridors. Recent development has occurred along the Bear River, specifically, where, although the FEMA 100-year floodplain was legally modified, significant risk still exists for flooding and landslides along steep river banks. Again, development along these large river drainages and corridors will pose significant risks to residents and community assets.

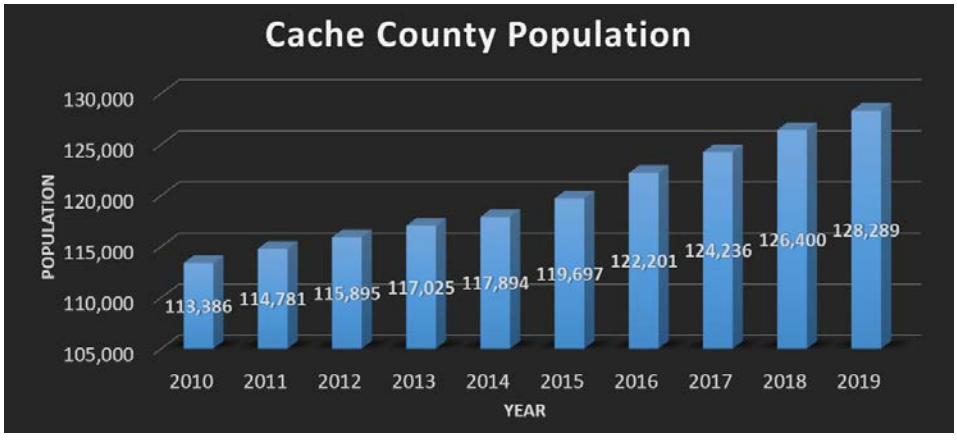
Cache County

Between 2010 and 2019, Cache County's population increased from 113,386 residents to 128,289. This is equates to between roughly 1% and 2.5% growth per year.

Most of the southern and eastern sides of Cache Valley have been growing at a steady rate. The communities on the south end of the valley, namely Wellsville, Mendon, Hyrum, and Paradise, are all experiencing growth in what used to be lower-elevation agricultural fields. The most significant risk for these developments are drainage areas from nearby canyons, geologic faults on the benches, and high water table and liquefaction areas in lower elevations. Steep slopes along rivers (Bear, Little Bear, Blacksmith Fork) and reservoir edges (Hyrum Reservoir in particular), are also places where development pressures may increase over time, and should be planned carefully to avoid potential losses.

Development is also occurring in Logan, Nibley, Millville, and Providence in low-elevation areas with potential high water tables and flood risk. In most cases, this is not an issue unless homes and other structures have basements, in which cases substantial damage could occur, especially during high rain or snow melt events.

In general, all of the east bench communities in Cache Valley are experiencing increasing development pressures along the benches and higher-elevation slopes. This, of course, is where



Population data citation: Annual Estimates of the Resident Population for Counties in Utah: April 1, 2010 to July 1, 2019 (CO-EST2019-ANNRES-49)

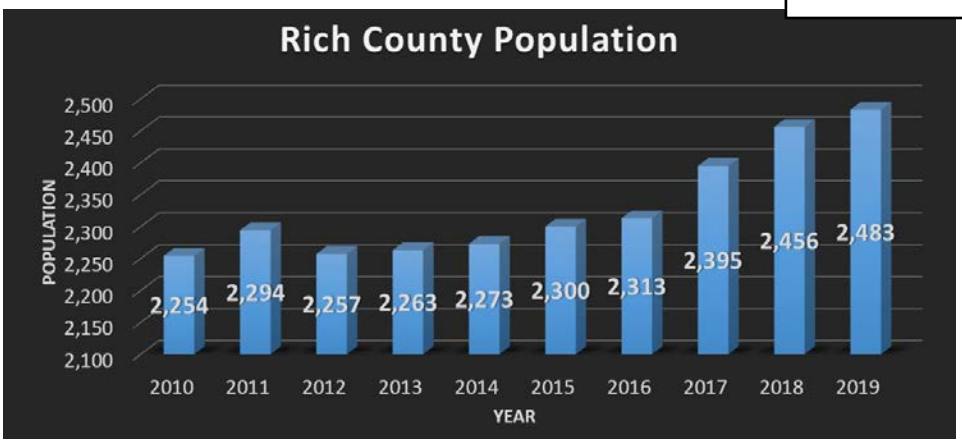
high risk exists from landslides, geologic faults, and wildfire. Likewise, if development occurs in drainage areas near the canyons, there is an increased risk for flooding and debris flows, the latter being triggered by high rain events after a wildfire has occurred, stripping the landscape of structural vegetation.

As these, and other, communities build out, there will also likely be pressure build along river corridors, including the Logan, Blacksmith, Little Bear, Bear, and Cub Rivers. Steep banks along the river banks and in the greater river basin areas can be hot spots for landslides, which have occurred on a fairly regular basis in Cache Valley.

Small communities in particular should be very careful with how they build out in the future. Historic grid pattern developments as they were laid out by pioneers in the late 19th Century, largely avoided some of the more severe hazard areas. As communities grow, it is essential that they use the best data available to inform local land use ordinances, in order to avoid potential losses to their community.

Rich County

Between 2010 and 2019, Rich County's population increased from 2,254 residents to roughly 2,483. This is equates to between roughly 1% and 2.5% growth per year. However, Rich County population figures are sometimes misleading. During the summer months, populations swell from 2,400 year-round residents, to between 30,000 to 60,000 on any given weekend, due to high visitation at Bear Lake (includes both Idaho and Utah visitation numbers).



Population data citation: Annual Estimates of the Resident Population for Counties in Utah: April 1, 2010 to July 1, 2019 (CO-EST2019-ANNRES-49)

Probably the greatest challenge in Rich County related to development in natural hazard areas, are the homes being constructed both on the beach front, and on steeper hillsides near U.S. Forest Service boundaries. Flooding is an obvious issue along the lake shore, especially during extreme weather events and in years with higher rainfall or extraordinary snow melt events in general. Likewise, if an earthquake occurs along either the west or east faults, especially the east fault located under the lake bed, a seiche (a small tsunami) is a likely risk.

Garden City, Laketown, and the unincorporated county near the lake have the highest development pressures in the county. Any properties with either access to, or views of, the lake are, generally, considered highly desirable. West of Garden City, along most of the hillsides parallel to the lake shore, homes are being constructed at an alarming rate. Many of these homes are at risk from either wildfires or landslides. North of Laketown and on the east side of Garden City near the lake shore, properties are selling quickly and for disproportionately higher values than other local nearby properties. These homes may also be at risk from flooding, liquefaction during an earthquake, or a seiche.

While Randolph and Woodruff are not growing at the same rate as the lakeside communities, there is some growth occurring. Both communities have higher than normal risks for flooding. Much of this is likely due to their proximity to the Bear River drainage, where high water tables or certain soils may be conducive to wet conditions.

Photo of Woodruff, Utah courtesy of Google Maps

Community Sections

Specific community risk assessments are available to view and download via the interactive online plan located at: **https://brag.maps.arcgis.com/apps/MapSeries/index.html?appid=fc507e02862e42cbbf627437c1658549**.

These individual community risk assessments provide a much more detailed assessment of current risks from each natural hazard in the region (at least those with GIS data). Technical analyses were conducted to provide comprehensive lists of potential losses for each city, town, and county, and potential loss tables were created. Likewise, mitigation strategies were vetted through local working groups and local elected and appointed officials and staff, and are also available for viewing online or for download.

This plan can be combined with these community-specific documents to create a complete plan for cities, towns, and counties which they can then adopt in local public meetings, or reference as a printed hard-copy of the plan. Communities can also adopt the online plan in its entirety.

***FOR DETAILED RISK ASSESSMENTS, POTENTIAL LOSS TABLES, AND MITIGATION STRATEGY LISTS, VIEW OR DOWNLOAD COMMUNITY-SPECIFIC SECTIONS ON THE PLAN WEBSITE AT: https://brag.maps.arcgis.com/apps/MapSeries/index.html?appid=fc507e02862e42cbbf627437c1658549 -**

Photo: Waterford, NY landslide in May of 2020 (https://www.timesunion.com/news/article/Waterford-landslide-still-moving-15254487.php).

Implementation Resources

While learning about natural hazards and potential risks to local communities is the first step to reducing losses from natural hazard events, implementing mitigation strategies is the key to actually saving lives, property, critical facilities, and other community assets. Below are several key resources to help you get started with implementing mitigation strategies in your community.

Local land use ordinances

According to the *2019 Mitigation Saves Report* by the National Institute of Building Sciences, adopting hazard mitigation-specific model ordinances can give a 11:1 return on investment to local governments! For little or no cost, local governments can customize and adopt a fairly simple geologic or flood hazard land use ordinance. These ordinances may prevent development in extreme hazard areas like active landslides or steep slopes, or, in most cases, they may only require slight changes in design and engineering following a special hazard-specific study.

These local ordinances can reduce liability for local governments dramatically, and can help protect the health, welfare, and safety of local residents.

See the graphic on the next page for a list of Benefit/Cost Ratios (BCRs) for various types of mitigation strategies.

The State of Utah has several effective model ordinances that can serve as great starting points for local governments:

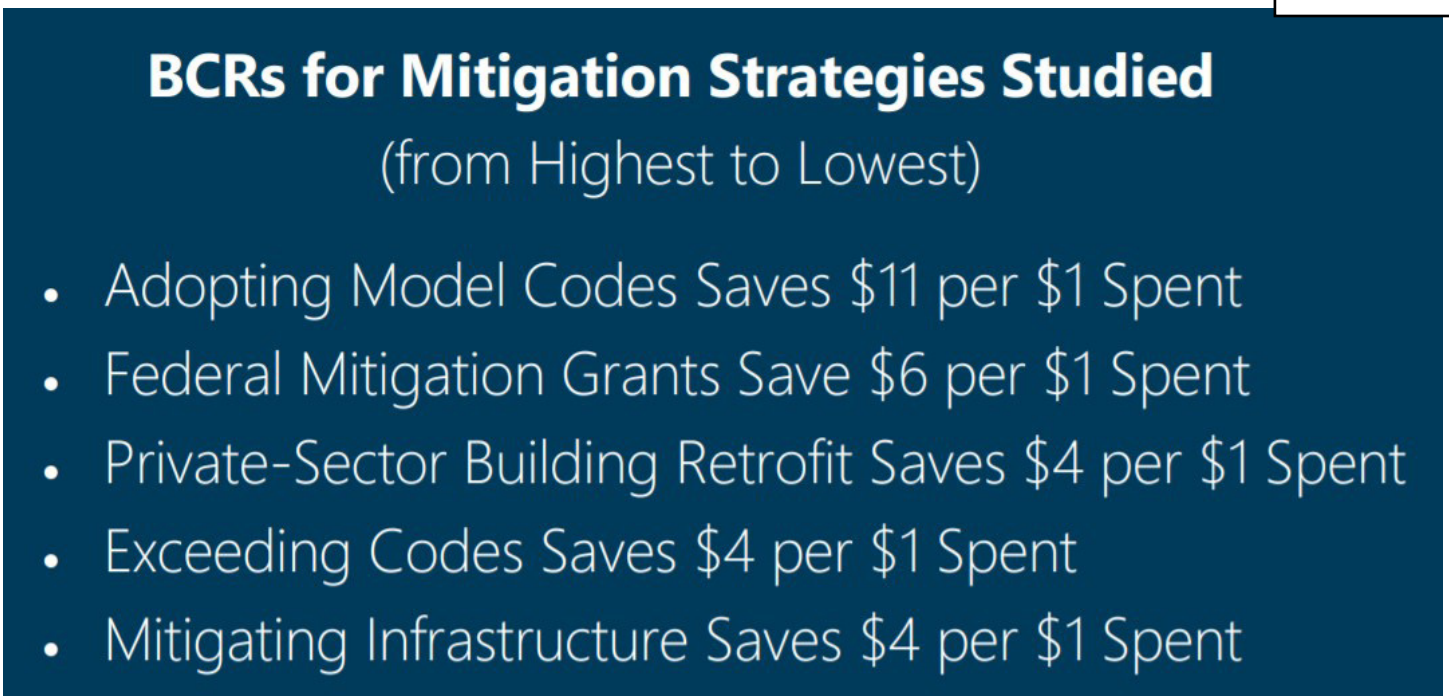
- **UGS GEOLOGIC HAZARDS MODEL ORDINANCE (UGS)**
- **UTAH DEM CASE D FLOOD MODEL ORDINANCE (Utah DEM)**
- **UTAH DEM HIGHER STANDARD FLOOD MODEL ORDINANCE (Utah DEM)**

**The Utah Geological Survey (UGS) and the Utah Division of Emergency Management (Utah DEM) staff can provide assistance with customizing model ordinances for your city, town, or county.*

Contact Steve Bowman with UGS at 801-537-3304 or stevebowman@utah.gov. Contact Kathy Holder with Utah DEM at 801-538-3332 or kcholder@utah.gov.

Grants/loans

- FEMA BRIC Grants (Formerly "Pre-Disaster Mitigation") 75% funded (25% local match). Apply through the State Division of Emergency Management. All projects must be included in this pre-disaster mitigation plan in order to apply. Visit the BRIC website for more information.
- Community Development Block Grants (CDBG) 100% funded (but 10% or more local match will make application more competitive). Can fund infrastructure projects (sewer/water), community buildings, emergency response vehicles/facilities, etc. For lower income communities or areas (80% AMI or less for 50%+ of residents)
- Permanent Community Impact Fund Board (CIB)



Source: National Institute of Building Sciences, 2019 Mitigation Saves Report

Planning grants: 50% funded (50% cash match). Infrastructure or large capital project grants (match varies for non-planning grants). Eligible entities include local governments, districts, or post-secondary education institutions. Low-interest loans also available for total or as part of grant/loan combination. Other mitigation and planning resources

- Site specific geologic hazards data, assessments and studies from the Utah Geological Survey
- Flood hazard data and mapping from the Utah DEM and/or FEMA
- Wildfire mitigation planning and projects from Utah FFSL (Visit https://ffsl.utah.gov/wp-content/)

In addition to all of these great resources, FEMA has a comprehensive webpage devoted to implementation, integration, and maintenance of mitigation planning activities. It includes resources, guides, best practices, case studies, and other helpful information. To access these resources, visit: **https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning/implementing**

Likewise, FEMA has also provided a list of mitigation ideas in a 2013 document titled, "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards," available here: **https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf**

Photo (right): Goats reducing fuel loads along the Wasatch Front courtesy of Utah Forestry, Fire, and State Lands.

Appendices

APPENDIX A - References and Works Cited

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APPENDIX B – Meeting Agendas and Attendance Lists

AGENDA

Pre-Disaster Mitigation Plan Update

REGIONAL KICK-OFF MEETING

Tuesday, December 4th, 2018 - 11:00 A.M. to 1:30 P.M.

Cache County Sheriff's Office
1225 West 200 North Valley View
Logan, Utah 84321
(3rd Floor Training Rooms)

11:00 A.M.	**Welcome, Introductions, and Benefits of Hazard Mitigation Planning**	**WILL LUSK -** ***Cache County Emergency Manager***
11:20 A.M.	**Pre-Disaster Mitigation Planning in the State of Utah**	**ERIC MARTINEAU -** ***Utah Division of Emergency Management***
12:00 Noon	***Lunch (Provided)***	
12:20 P.M.	**The Plan Update Process for the Bear River Region**	**ZAC COVINGTON and SCOTT MCCOMB -** ***BRAG Staff***
1:00 P.M.	**Input on Working Groups and the Planning Process**	***Facilitated by BRAG Staff***
1:30 P.M.	**Adjourn**	

12/4/18 Kick-off Meeting Attendance List

Name	Organization	E-mail Address
Zac Covington	BRAG	zach@brag.utah.gov
Emily Thomas	Brigham City engineers office	emily@jonescivil.com
Eric Martinez	DEM	emartinez@utah.gov
Mitch Poulsen	BLRC	mpoulsen@cut.net
Will Lusk	Cache County EM	WLUSK@CACHESHERIFF.org
Rick Williams	N. Bay EM	rick@northbayfire.com
Aubrey Larsen	UTAH CDO	aubreychristensen@utah.gov
Brian Carver	BRAG	brianc@brag.utah.gov
Scott McComb	BRAG	scottm@brag.utah.gov
Scott Lyons	BEC	slyons@boxelder county.org
Marcus Wager	BEC	MWager@boxelder county.org
MATT BILODEAU	CACHE CO SHERIFFS OFFICE	MBILODEAU@CACHESHERIFF.ORG
Kimberly Giles	Utah Div. of Emerg. Mngt.	Kgiles@utah.gov
Josh Runhaar	CACHE COUNTY	Josh.Runhaar@CACHE COUNTY.ORG
Craig Buttars	Cache County	craig.buttars@cachecounty.org
Ember Herrick	DEM	esherrick@utah.gov

AGENDA

BOX ELDER COUNTY - RISK ASSESSMENT MEETING

Thursday, March 21st – 12:00 P.M to 2:30 P.M.

Box Elder County Courthouse
1 S. Main St
Brigham City, Utah 84321
Commission Chambers Room 23

12:00 P.M.	**Welcome and Introductions**	**MARK MILLET - *Box County Emergency Manager***
12:05 P.M.	***Breakfast (Provided)***	
12:20 P.M.	**Review of Community Critical Facilities and Infrastructure**	**ZAC COVINGTON - *BRAG Regional Planner***
12:40 P.M.	**Presentation on Wildfire Hazard**	**KEN THEIS – *WUI Coordinator, Utah FFSL***
1:00 AP.M.	***10-Minute Break***	
1:10 P.M.	**Presentation on Geologic Hazards**	**STEVE BOWMAN & RICHARD GIRAUD *Utah Geological Survey***
1:50 P.M.	**Online Natural Hazard Maps and Layers**	***BRAG Staff***
2:20 P.M.	**Next Steps**	**MARK MILLET**
2:30 P.M.	**Adjourn**	

3/21/19 BEC RA Meeting Attendance List

3/21/19 - BRAG PDMP MAG. (BEC)

Name	Organization	E-mail Address
JAMES TURNER	USFS UINTA-WASATCH-CACHE	JTURNER@FS.FED.US
Jennefer Parker	USFS - Logan RD	jenneferparker@fs.fed.us
Mike Dunphy	USFS Bear River	michael_dunphy@fs.us
Ken Theis	FFSL	ktheis@utah..gov
Mike Weebed	Bear River Health Dept	mweibel@brhd.org
Kimberly Giles	State DEM	Kgiles@utah.gov
CHRIS HOWARD	BRIGHAM CITY	CHOWARD@BCUTAH.ORG.
Lanette Sorensen	Garland City	lanette@garlandutah.org
BRUCE BLAKE	BEAR RIVER CITY	doix12@frontiernet.net
Steve Bowman	Utah Geological Survey	stevebowman@utah.gov
Aubrey Larsen	UT Community Dev. Office	aubreychristensen@utah.gov
Scott Lyons	BEC Comm. Dev.	slyons@boxeldercounty.org
Marcus Wager	Box Elder County	Mwager@boxeldercounty.org
Mark Bradley	Brigham City	mbradley@bcutah.org
Eric Martineau	Utah DEM	emartineau@utah.gov
Ember Herrick	Utah DEM	esherrick@utah.gov

AGENDA

CACHE COUNTY - RISK ASSESSMENT MEETING

Wednesday, April 10th – 8:30 A.M to 11 A.M.

Cache County Sheriff's Office
1225 West 200 North Valley View
Logan, Utah 84321
(3rd Floor Training Rooms)

8:30 A.M.	**Welcome and Introductions**	**WILL LUSK - *Cache County Emergency Manager***
8:35 A.M.	***Breakfast (Provided)***	
8:50 A.M.	**Review of Community Critical Facilities and Infrastructure**	**ZAC COVINGTON - *BRAG Regional Planner***
9:10 A.M.	**Presentation on Wildfire Hazard**	**KEN THEIS – *WUI Coordinator, Utah FFSL***
9:30 A.M.	***10-Minute Break***	
9:40 A.M.	**Presentation on Geologic Hazards**	**STEVE BOWMAN & RICHARD GIRAUD *Utah Geological Survey***
10:20 A.M.	**Online Natural Hazard Maps and Layers**	***BRAG Staff***
10:50 A.M.	**Next Steps**	**WILL LUSK**
11:00 A.M.	**Adjourn**	

4/10/19 CC RA Meeting Attendance List (Page 1)

CACHE CNTY PDMP RA MTG 4/10

Name	Organization	E-mail Address
Scarlet Bankhead	Providence City	~~sbankhead@providence-utah.gov~~
Rob Stapley	Providence City	RStapley@providence.Utah.gov
Rick Williams	Nibley City	rick@nibleycity.com
Harvey Mecham	Millville City	Harvey@millvilleCity.ORG
Clay Bodily	Smithfield City	cbodily@smithfield city.org
David Zook	Nibley City	david@nibleycity.com
BRIAN CARVER	BRAG	briane@brag.Utah.gov
JAMES TURNER	USFS LOGAN RD	JTURNER@FS.FED.US
Steven Liechty	Rocky Mtn. Power	steven.liechty@rockymountainpower.net
Kyle Lindsay	Logan City Emergency Mannagmt	Kyle.lindsay@logancityutah.org
Kyle Hamilton	Cache Valley Hospital	Kyle.Hamilton@HCAhealthcare.com
KEN MATHYS	UTAH DNR FFHSL	KMATHYS@UTAH.GOV
KEITH LARSEN	BEAR RIVER HEALTH DEPT	KLARSEN@BRHD.ORG
Stephanie Miller	Hyrum City	smiller@hyrumcity.com
Susan Smart	Ref. ZCFD	bsjsmart@juno.com
Elaine Goodey	Clarkston City	tregoodey@gmail.com

[PAGE 1 OF 2]

4/10/19 CC RA Meeting Attendance List (Page 2)

CACHE COUNTY PDMP RA MTG 4/10

Name	Organization	E-mail Address
Stephen Nelson	Nibley City	stephen@nibleycity.com
Rich Giraud	Utah Geological Survey	richardsiraud@utah.gov
Alan Luce	North Logan	alan@northlogancity.org
Spencer Burt	North Logan	spencer@northlogancity.org
Gordon Anderson	Newton	gordon@anderstein.org
Sharidean Flint	Hyde Park	mayor@hydeparkcity.org
~~Sandy Spendlove~~	North Logan	Sandy.Spendlove@yahoo.com
ANGIE ZETTERQUIST	Cache County	angie.zetterquist@gmail.com
Steve Bowman	Utah Geological Survey	stevebowman@utah.gov
Mark Branson	Great Basin Fire Science Exchange	mark.branson@usu.edu
Jesse Walker	American Red Cross of Northern Utah	jessewalkerphoto@gmail.com
Esther Herrick	DEM	esherrick@utah.gov
Eric Martineau	DEM	emartineau@utah.gov
Will Lusk	Cache Co EM	WLUSK@CACHESHERIFF.org
Scott McComb	BRAG	Scottm@brag.utah.gov
Tom Covington	BRAG	

[PAGE 2 OF 2]

AGENDA

RICH COUNTY - RISK ASSESSMENT MEETING

Wednesday, April 10th – 12:30 P.M. to 3:00 P.M.

Garden City Town Center
(North Conference Room)
69 N. Paradise Parkway
Garden City, UT 84028

12:30 P.M.	**Welcome and Introductions**	**BRYCE NIELSON - *Rich County Emergency Manager***
12:35 P.M.	***Lunch (Provided)***	
12:50 P.M.	**Review of Community Critical Facilities and Infrastructure**	**ZAC COVINGTON - *BRAG Regional Planner***
1:10 P.M.	**Presentation on Wildfire Hazard**	**KEN THEIS – *WUI Coordinator, Utah FFSL***
1:30 P.M.	***10-Minute Break***	
1:40 P.M.	**Presentation on Geologic Hazards**	**STEVE BOWMAN & RICHARD GIRAUD *Utah Geological Survey***
2:20 P.M.	**Online Natural Hazard Maps and Layers**	***BRAG Staff***
2:50 P.M.	**Next Steps**	**BRYCE NIELSON**
3:00 P.M.	**Adjourn**	

4/10/19 RC RA Meeting Attendance List

Rich County PDMP RA mtg. 4/10/19

Name	Organization	E-mail Address
Ember Herrick	DEM	esherrick@utah.gov
Rich Giraud	Utah Geological Survey	richardgiraud@utah.gov
Ethan Hallows	SITLA	ehallows@utah.gov
Steve Bowman	Utah Geological Survey	stevebowman@utah.gov
Bryce [illegible]	Rich EM	[illegible]
Mike Weibel	Bear River Health Dept	mweibel@brhd.org
Aaron Roneuser	NRCS	aaron.roneuser@usda.gov
Taylor Payne	Utah Grazing Improvement Program	taylorpayne@utah.gov
Mitch Poulsen		
Eric Martineau	DEM	emartineau@utah.gov
Steve Vieotty	Rocky Mountain Power	steven.vieotty@rockymountainpower.net
MIKE WAHLBERG	GARDEN CITY FIRE DIST.	gardencityfiredistrict@gmail.com
Scott McComb	BRAG	scottm@brag.utah.gov
Blaine Hamp	FFSL	Blainhamp@utah.gov
Dan Ames	RICH Co. FFSL	danames@ut.gov
JAMES TURNER	USFS LOGAN RD	JTURNER@FS.FED.US
Zan Covington	BRAG	

AGENDA

BOX ELDER COUNTY MITIGATION STRATEGIES MEETING

2020 Pre-Disaster Mitigation Plan Update

Thursday, January 30, 2020 – from 5:00 to 7:00 PM

Box Elder County Commission Chambers
Historic Box Elder County Courthouse
1 S. Main Street
Brigham City, UT 84032

5:00 P.M.	**Welcome and Introductions**	**MARK MILLETT – *Box Elder County Emergency Manager***
5:10 P.M.	**FEMA-Approved Mitigation Strategies and Flood Ordinances**	**ERIC MARTINEAU – *Utah Department of Public Safety***
5:35 P.M.	**Geologic Hazards Model Ordinance**	**RICH GIRAUD – *Utah Geological Survey***
6:00 P.M.	***DINNER (Provided)***	
6:20 P.M.	**Community Potential Loss Analysis**	**ZAC COVINGTON *Bear River Association of Governments***
6:40 P.M.	**Mitigation Strategies Exercise**	**ZAC COVINGTON**
6:55 P.M.	**Next Steps**	**MARK MILLETT**
7:00 P.M.	**Adjourn**	

1/30/20 BEC MS Meeting Attendance List (Page 1)

Name	Organization	E-mail Address
Paul Fulgham	Tremonton City	pfulgham@tremontoncity.com
SHAWN WARNICK	" "	SWARNICK@TREMONTONCITY.COM
STEVE BENCH	TREMONTON	sbench@tremontoncity.com
Roger Fridal	Tremonton City	mayor@tremontoncity.com
Brad Stevenson	Deweyville town	bcstevenson@Hotmail.com
Carl Markley	BRWCD	carlm@brwcd.
Kevin Jeppsen	Perry City	Kevin.jeppsen@perrycity.org
THAYNE CLARK	Bowen Collins	tclark@bowencollins.com
Ken Theis	Utah DNR - FFSL	ktheis@utah.gov
Kevin Barjenbruch	National weather Service	Kevin.barjenbruch@noaa.gov
Mike Weibel	Bear River Health Dept	mweibel@brhd.org
Kimberly Giles	Utah Div. Emerg. Mngt	kgiles@utah.gov
CHRIS HOWARD	BRIGHAM CITY	CHOWARD@BCUTAH.ORG
Lanette, Sorensen	Garland City	lanette@garlandutah.org
Paul Larsen	Brigham City	plarsen@bcutah.org
MARK BRADLEY	BRIGHAM CITY	mbradley@bcutah.org

1/30/20 BEC MS Meeting Attendance List (Page 2)

Name	Organization	E-mail Address
Anthony Wilkinson	Brigham City	awilkinson@bcutah.org
Robert Barnhill	Perry	robert.barnhill@perrycity.org
Scott Lyons	Box Elder County	slyons@boxeldercounty.org
Zac Covington	BRAG	
Mark Millett	Box Elder County	mmillett@boxeldercounty.org
Rich Giraud	Utah Geological Survey	richardgiraud@utah.gov
Jeff Sanders	Honeyville City	Jeff.Sanders1@frontier.com
BRIAN J. ANDERSON	Bear River City	bri.anderson@comcast.net
JAMES MORGAN	UTAH STATE PARKS	JAMESMORGAN@UTAH.GOV
Sharon Normoyle	Bear River City	Shardan97@gmail.com

AGENDA

CACHE COUNTY MITIGATION STRATEGIES MEETING

2020 Pre-Disaster Mitigation Plan Update

Monday, February 10th, 2020 – from 5:00 to 7:00 PM

Cache County Sheriff's Office
1225 West 200 North Valley View
Logan, Utah 84321
(3rd Floor Training Rooms)

5:00 P.M.	**Welcome and Introductions**	**WILL LUSK – *Cache County Emergency Manager***
5:10 P.M.	**FEMA-Approved Mitigation Strategies and Floodplain Model Ordinances**	**BRANDON WEBB – *FEMA – SLC Office***
5:35 P.M.	**Geologic Hazards Model Ordinance**	**STEVE BOWMAN – *Utah Geological Survey***
6:00 P.M.	***DINNER (Provided)***	
6:20 P.M.	**Community Potential Loss Analysis**	**ZAC COVINGTON *Bear River Association of Governments***
6:40 P.M.	**Mitigation Strategies Exercise**	**ZAC COVINGTON**
6:55 P.M.	**Next Steps**	**WILL LUSK**
7:00 P.M.	**Adjourn**	

2/10/20 CC MS Meeting Attendance List (Page 1)

Name	Organization	E-mail Address
Harry Meadows	McMullin City	Harry@Mcmullincity.org
Jodey Kimball	CVTD	jkimball@cvtdbus.org
Angie White	BRHD	awhite@brhd.org
Kyle Lindsay	Logan Fire Dept	Kyle.lindsay@logan utah.org
Sandy Spendlove	North Logan EM	sandy.spendlove@yahoo.com
Kimberly Giles	State BEM	Kgiles@utah.gov
Vic Little	Paradise Town	VLittle@Paradise.utah.gov
Kevin Barjenbruch	NWS	kevin.barjenbruch@noaa.gov
Brent Speth	Providence	bspeth@providence.utah.gov
Sharidean Flint	Hyde Park	mayor@hydeparkcity.org
Ryan Snow	Providence	RyanSnow12@providence.utah.gov
Rob Stapley	providence City	RStapley@providence.Utah.gov
Jesse Walker	Red Cross	jesse.walker@redcross.org
Terrie Wierenga	Richmond	twierenga@richmondutah.org
Jennefer Parker	Forest Service - Logan RD	jennefer.parker@usda.gov
Kelly Field	Lewiston City	mayorfield@gmail.com

2/10/20 CC MS Meeting Attendance List (Page 2)

Name	Organization	E-mail Address
Stephen Nelson	Nibley City	stephen@nibleycity.com
Gordon Anderson	Newton City	gordon@andersTein.org
Steve Bowman	DNR/Utah Geological Survey	stevebowman@utah.gov
Susan Smart	LCFD ret.	bsjsmart@juno.com
Ken Theis	FFSL - BRA	ktheis@utah.gov
Matt Coombs	FFSL - BRA	mattcoombs@utah.gov
Alan Luce	North Logan City	alan@northlogancity.org
Jordan Oldham	North Logan	jordan@northlogancity.org
JAMES TURNER	USFS LOGAN RANGER DISTRICT	JAMES.C.TURNER@USDA.gov
Brandon Webb	FEMA	brandon.webb2@fema.dhs.gov

AGENDA

RICH COUNTY MITIGATION STRATEGIES MEETING

2020 Pre-Disaster Mitigation Plan Update

Tuesday, January 7, 2020 – from 5:00 to 7:00 PM

Garden City Offices
Lakeview Conference Room (North bldg.)
69 N. Paradise Parkway
Garden City, UT 84028

5:00 P.M.	**Welcome and Introductions**	**BRYCE NIELSON – *Rich County Emergency Manager***
5:10 P.M.	**FEMA-Approved Mitigation Strategies and Flood Ordinances**	**EMBER HERRICK – *Utah Department of Public Safety***
5:40 P.M.	**Geologic Hazards Model Ordinance**	**STEVE BOWMAN – *Utah Geological Survey***
6:00 P.M.	***DINNER (Provided)***	
6:20 P.M.	**Community Potential Loss Analysis**	**ZAC COVINGTON *Bear River Association of Governments***
6:40 P.M.	**Mitigation Strategies Exercise**	***Zac Covington***
6:55 P.M.	**Next Steps**	**BRYCE NIELSON**
7:00 P.M.	**Adjourn**	

1/7/20 RC MS Meeting Attendance List

Name	Organization	E-mail Address
MIKE WAHLBERG	GARDEN CITY FIRE DIST.	gardencityfiredistrict@gmail.com
Kevin Barjenbruch	NWS WFO Salt Lake City, UT	kevin.barjenbruch@noaa.gov
Ken Theis	FFSL - BRA	ktheis@utah.gov
DAN AMES	FFSL/RICH Co.	danames@utah.gov
JAMES TURNER	USFS / LOGAN RD FIRE	JAMES.C.TURNER@USDA.GOV
Steve Bowman	Utah Geological Survey, DNR	stevebowman@utah.gov
ELDON J. KEARL	Rich-B.h.c. E-Com	ELDON.KEARL@gmail.com
Taylor M. Payne	Dept. Ag & Food	taylor payne@utah.gov
Kimberly Giles	State Div. of Emerg. Mngt.	Kgiles@utah.gov
Bill Cox	Rich County	rcaging@allwest.net
Mike Leonhardt	Garden City MAYOR	Mikel@gardencityut.us
Sim Weston	Rich County	ponderosa_03@yahoo.com
Bryce Nielson	Rich Co EM	bryce.nielson@gmail.com
Kristin Buys	Bear Lake Community Health Care	kbuys@cvchc.org
PHIL COLLINS	NORTHERN UTAH HEALTHCARE COALITION	PCOLLINS@BRHD.ORG
Scott McComb	Bear River Association of Gov'ts	scottm@brag.utah.gov
Ember Herrick	Utah DEM	
	BRAG	

Regional Adoption Meeting Agenda and Attendance (Online)

AGENDA

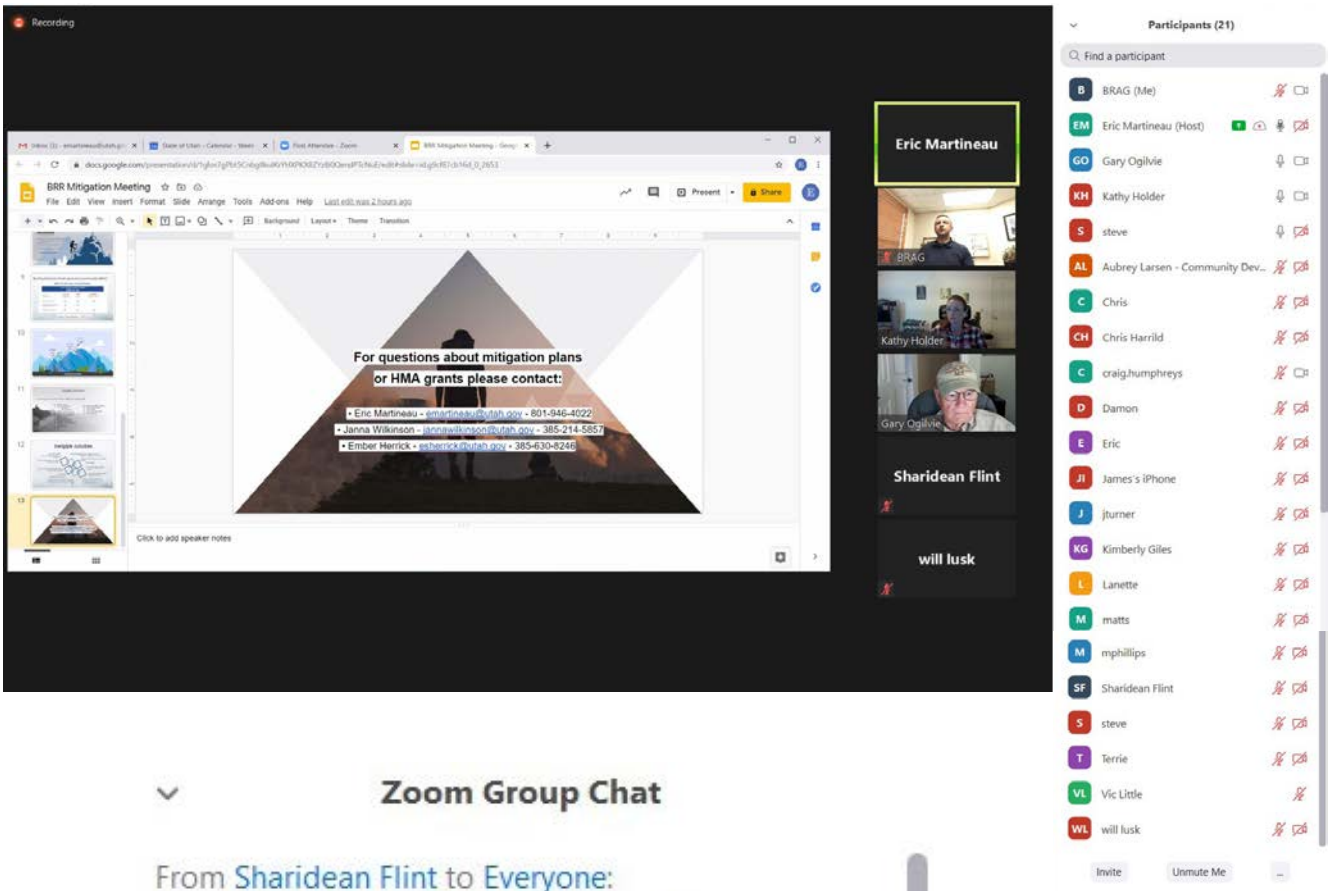
REGIONAL DRAFT PDM PLAN AND PLAN ADOPTION MEETING

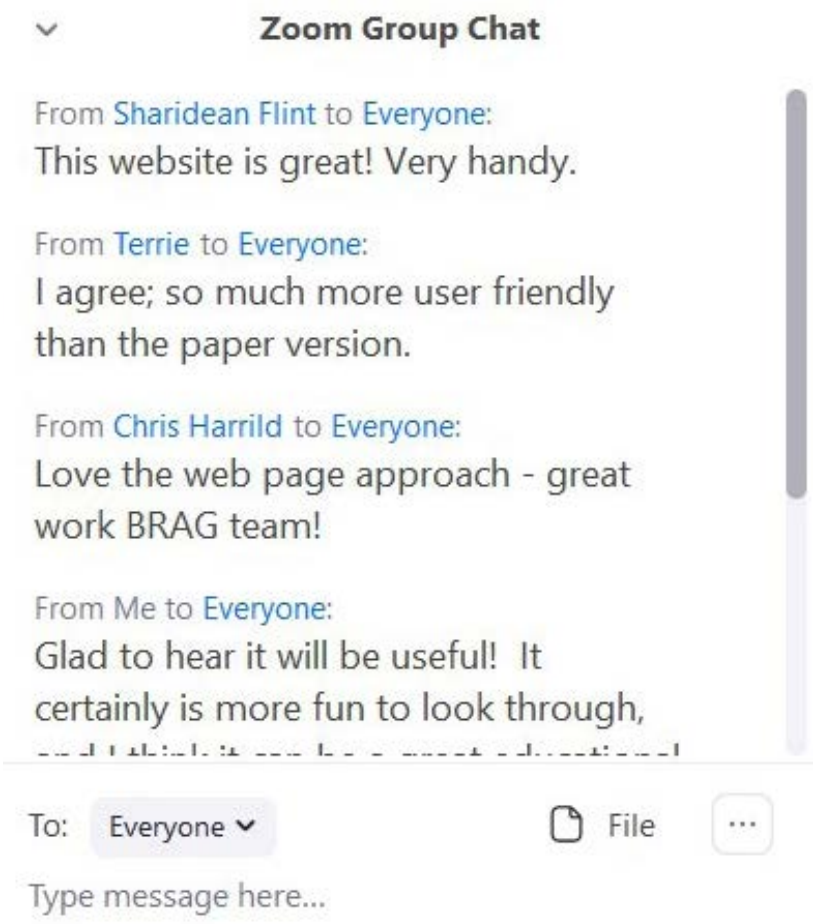
2020 Pre-Disaster Mitigation Plan Update

Wednesday, October 14th, 2020 – from 5:00 to 7:00 PM

Zoom Meeting – See Accompanying E-mail for Details or E-mail zacc@brag.utah.gov

5:00 P.M.	**DRAFT Plan Presentation and Plan Adoption**	**ZAC COVINGTON – *Bear River Association of Governments***
5:40 P.M.	**Plan Implementation and Funding**	**ERIC MARTINEAU – *Utah Department of Public Safety***
6:00 P.M.	**Geologic Hazards Model Ordinance**	**STEVE BOWMAN – *Utah Geological Survey***
6:20 P.M.	**Floodplain Protection Model Ordinance**	**KATHY HOLDER *Utah Department of Public Safety***
6:40 P.M.	**Q and A**	**ALL**
7:00 P.M.	**Adjourn**	


Recording
BRR Mitigation Meeting
For questions about mitigation plans
or HMA grants please contact:
• Eric Martineau - emartineau@utah.gov - 801-946-4022
• Janna Wilkinson - jannawilkinson@utah.gov - 385-214-5857
• Ember Herrick - estherrick@utah.gov - 385-630-8246
Click to add speaker notes
Eric Martineau
BRAG
Kathy Holder
Gary Ogilvie
Sharidean Flint
will lusk
Participants (21)
Find a participant
BRAG (Me)
Eric Martineau (Host)
Gary Ogilvie
Kathy Holder
steve
Aubrey Larsen - Community Dev...
Chris
Chris Harrild
craig.humphreys
Damon
Eric
James's iPhone
jturner
Kimberly Giles
Lanette
matts
mphillips
Sharidean Flint
steve
Terrie
Vic Little
will lusk
Invite
Unmute Me


Zoom Group Chat
From Sharidean Flint to Everyone:
This website is great! Very handy.
From Terrie to Everyone:
I agree; so much more user friendly than the paper version.
From Chris Harrild to Everyone:
Love the web page approach - great work BRAG team!
From Me to Everyone:
Glad to hear it will be useful! It certainly is more fun to look through,
To: Everyone
File
Type message here...

BEAR RIVER ASSOCIATION OF GOVERNMENTS
170 N. Main, Logan, Utah 84321 ◆ (435) 752-7242 ◆ Fax (435) 752-6962 ◆ www.brag.utah.gov

Bear River Association of Governments

Box Elder
Cache
Rich

GOVERNING BOARD MEETING

Wednesday, March 25, 2020 – 12 Noon
Utah State University Brigham City
989 South Main Street in Brigham City
Second Floor, Room A 201

AGENDA

12:00 **Welcome, Introductions and Minutes**
Mayor Mike Leonhardt, Chair

12:05 **Welcome to USU Brigham City**
Dr. Dan Black, Assistant Vice President

12:15 **Rural Economic Development and New Legislation**
Rebecca Dilg, Rural Community Outreach, GOED

12:25 **Planning Data for Rural Utah/PILT Fair Value**
Ken Ivory, AEON AI, Senior Vice President

12:45 **Community Development Block Grant (CDBG)**
Brian Carver, BRAG Community and Economic Development Director
Second Public Hearing to Gather Input on Projects to Be Sponsored by BRAG
Rating and Ranking of Applicant Projects

12:55 **Progress on Natural Hazard Mitigation Plans**
Brian Carver

1:00 **BRAG Housing Authority Five Year Plan**
Tricia Fuller, Housing Authority Director
Public Hearing on Five Year Public Housing Authority Plan

1:10 **Status of BRAG Owned Housing and Housing Rehabilitation**
Jeff Kearl, Housing Rehabilitation and Development Director

1:20 **Other Business**

1:30 **Adjourn**

Auxiliary aids and services are available upon request to individuals with disabilities by calling Karen Merkley at the BRAG office, (435) 752-7242 or (877) 772-7242 at least three working days prior to the meeting. Individuals with speech and/or hearing impairments may call Relay Utah by dialing 7-1-1 to use Hamilton Relay or call toll free TTY# 1 (800) 346-4128. Spanish Relay Utah: 1-888-346-3162.

Serving Northern Utah Since 1971
Aging Services ◆ Community Development & Planning ◆ Economic Development ◆ Housing & Human Services

GOVERNING BOARD MEETING

Wednesday, March 25, 2020 – 12 Noon
Teleconference Meeting
Call 1-408-533-8466 to Join
Meeting ID: 857185063#

M I N U T E S

PRESENT ON THE CALL

Council Member Paul Borup
County Executive Craig Buttars
Commissioner Bill Cox
Mayor Holly Daines
Mayor Roger Fridal
Mayor Mike Leonhardt
Commissioner Jeff Scott
Commissioner Stan Summers
Commissioner Sim Weston
Commissioner Norm Weston
Council Member Karl Ward
Mayor Tyler Vincent

EXCUSED

Commissioner Jeff Hadfield

BRAG STAFF ON THE CALL

Roger Jones
Brian Carver
Karen Merkley
Paul Davis
Tricia Fuller
Zac Covington
Jeff Kearl

OTHERS ON THE CALL

Lloyd Bertentzen	Bear River Health Department
Rebecca Dilg	Rural Community Outreach, GOED
Ken Ivory	AEON AI
Nathan Jackson	Senator Mike Lee's Office
Matt Anderson	Senator Mitt Romney's Office
Representative Dan Johnson	District 4
Chris Chestnut	Utah Department of Transportation Region 1
Tami Leonhardt	Director of Tourism, Bear Lake
Several Unknown Callers	

WELCOME, INTRODUCTIONS, AND MINUTES

Mayor Mike Leondardt, Chair, opened the meeting. He welcomed everyone to the first ever BRAG Governing Board Teleconference Meeting. A Roll Call was taken to identify board members in attendance via phone or computer. Other guests stated their names as also participating in the meeting.

Leondardt asked if there were any changes or additions to the minutes of the January 15, 2020 Governing Board meeting. The minutes were **APPROVED** unanimously with a **MOTION** by Mayor Tyler Vincent and **SECOND** by Mayor Holly Daines.

GOVERNING BOARD MEETING

Thursday, August 13, 2020 – 12 noon
Garden City Town Hall – Bldg A, 2nd Floor Mt. View Room
69 North Paradise Parkway in Garden City

A G E N D A

12:00 **Welcome, Introductions and Minutes**
Mayor Mike Leonhardt, Chair

12:05 **Rich County Tourism Update**
Tami Leonhardt, Executive Director, Bear Lake Valley Conference & Tourism Bureau

12:20 **Garden City Growth & Infrastructure Projects**
Mayor Mike Leonhardt

12:30 **County-Wide Issues**
Commissioner William Cox, Rich County Commission Chair

12:40 **Progress on Natural Hazard Mitigation Plans**
Zac Covington, BRAG Regional Planner

12:50 **Pandemic Services Reports**
Lucas Martin, BRAG's Human Services Director
Brian Carver, BRAG's Community & Economic Development Director

1:10 **Discussion on Pandemic Related Needs and Funding Available to Meet the Needs**

1:30 **Other Business**

1:40 **Meeting Schedule for Remainder of 2020**

1:45 **Adjourn**

Auxiliary aids and services are available upon request to individuals with disabilities by calling Karen Merkley at the BRAG office, 435-752-7242 or 1-877-772-7242 at least three working days prior to the meeting. Individuals with speech and/or hearing impairments may call Relay Utah by dialing 7-1-1 to use Hamilton Relay or call toll free TTY# 1-800- 346-4128.
Spanish Relay Utah: 1-888-346-3162

GOVERNING BOARD MEETING

Thursday, August 13, 2020 – 12 noon
Garden City Town Hall – Bldg A, 2nd Floor Mt. View Room
69 North Paradise Parkway in Garden City

M I N U T E S

PRESENT

Council Member Paul Borup
County Executive Craig Buttars
Commissioner Bill Cox
Mayor Holly Daines – via Zoom
Mayor Roger Fridal
Commissioner Jeff Hadfield
Mayor Mike Leonhardt
Commissioner Jeff Scott
Commissioner Stan Summers
Mayor Tyler Vincent
Council Member Karl Ward
Commissioner Sim Weston
Commissioner Norm Weston
Brigham City Council Member DJ Bott

EXCUSED

Mayor Scott Sabey
Mayor Jeff Young

BRAG STAFF PRESENT

Roger Jones
Brian Carver
Karen Merkley
Zac Covington
Lucas Martin
Adam Chandler

OTHERS PRESENT

Matt Anderson - Senator Mitt Romney's Office – via Zoom
Tami Leonhardt - Executive Director, Bear Lake Valley Conference & Tourism Bureau
Mitch Poulsen – Bear Lake Regional Commission
Monica Holdaway - Box Elder Chamber of Commerce
Christopher Chesnut - Planning Manager, Utah Department of Transportation

WELCOME, INTRODUCTIONS AND MINUTES

Mayor Mike Leonhardt, Chairman, opened the governing board meeting, welcomed everyone and introductions were made.
Mayor Leonhardt asked if there are any changes or additions to the minutes of June 24, 2020 board meeting. The minutes were **APPROVED** unanimously with a **MOTION** by Council Member Karl Ward and **SECOND** by County Executive Craig Buttars.

RICH COUNTY TOURISM UPDATE

Tami Leonhardt, Executive Director of the Bear Lake Valley Conference & Tourism Bureau, reported on the booming tourism the Bear Lake Area has had this spring and summer. The conditions of the coronavirus pandemic such as people working remotely, students participating in online classes and restrictions to many other travel destinations, has made Bear Lake a choice for many tourists and second home owners. Tami noted the tourist season started about three

BRAG 2019 PRE-DISASTER MITIGATION PLAN UPDATE
GIS PLANNING MEETING/WORKING LUNCH

Thursday, January 3, 2019
12:00 Noon – 2:00 PM
Los Primos, 880 S. Main Street, Logan

AGENDA

- **GIS tools and methodologies for natural hazards overlay analysis**
  - 2009 BRAG PDMP Methodology
    - Basic overlay/Spatial Analyst
  - 2015 BRAG PDMP Methodology
    - Model Builder and Python (Good and bad)
  - HAZUS
  - Others

- **Plan delivery/display platforms – Pro's and Con's**
  - ArcGIS Story Maps
  - Other Web based Options
  - Online Maps
    - Data overload issues
    - Organization of the data
    - How can we make it user friendly?
    - Other issues

ATTENDEES

- Chris McGinty - Assist. Dir., USU RSGIS Lab
- Cary Jenkins – Manager, Cache County GIS
- Scott McComb, BRAG
- Brian Carver, BRAG
- Zac Covington, BRAG

1/9/20 Meeting with UGS and Utah FFSL Staff

PDMP Risk Assessment/Hazards Data Meetings
Utah Dept. of Natural Resources
1594 N. Temple, SLC, UT 84114
1/9/19 from 1:30 PM to 3:30 PM

UGS Meeting Notes:

- Reference data from UGS on ArcGIS - if data is updated it will change
- Start using ArcGIS Pro
- Gordon recommended using geodatabases from now on
- USGS debri flow model – Rich G. can do pre-wildfire modeling to see where potential high risk areas are for debri flows
- Ask Jennifer about RiskMAP project updates
- Potential avalanche modeling
    - MSU Avalanche modeling – 25 deg slope, over 5,600 feet, and other criteria
    - Other study areas
        - Ketchum, ID
        - Vail, CO
        - Juno, AK
        - Missoula, MT
        - S.L. County ordinance
- Geologic fault special study area buffers have changed a little. For well defined/constrained faults(?):
    - Upthrown of fault – 250 feet
    - Downthrown – 500 feet
    - If fault segment is less than 1000 feet long, buffer on both sides should be 1000 ft
    - At the end of fault line, radius should be 1000 ft
    - If two fault special study areas have a gap in between them less than the larger buffer area, the gap should be filled and considered a special study area also (see scan of sheet that Adam H. gave us at the meeting in P drive)

ATTENDEES:

- Gordon Douglass, UGS
- Jay Hill, UGS
- Richard Giraud, UGS
- Adam Hiscock, UGS
- Scott McComb, BRAG
- Zac Covington, BRAG

FFSL Meeting Notes:

- Get historical wildfire data from FFSL
- FFSL home – Fire – Utah WFRA Support (model from work)
- Could create an assessment for each municipality (Focus Area). Can do it with a special login
- New legislative requirements for funding are based on “Risk”
- Roads may be more risk for traffic issues, not necessarily structures
- Get “High” classification from Buck
- Create UWRAP account (Zac) – Professional
- FFSL to present
- FFSL to present on assistance and programs at RA or MS meetings

ATTENDEES:

- Buck Ehler, FFSL
- Michelle Baragona, FFSL
- Scott McComb, BRAG
- Zac Covington, BRAG

PRE-DISASTER MITIGATION PLAN UPDATE – UTAH DEM MTG
State Capitol – Utah DEM Office (State Office Bldg.)
Salt Lake City, UT
4/29/19 from 10:30 AM - 11:45 AM

AGENDA ITEMS:

- Utah DEM GIS Data/HAZUS Data – load to BRAG's external hard drive
- Discussion on interactive webmap – what is needed to get it going? Who hosts? Who updates? Who is it for? What data do we use?
- Discussion on online web-based plan vs hard copy plan – what does FEMA need and what is most effective and useful for local governments?

ATTENDEES:

- Brad Bartholomew, Utah DEM
- Eric Martineau, Utah DEM
- Ember Herrick, Utah DEM
- Zac Covington, BRAG

Notes from meeting with Shelby Hines (ESRI)
PDMP Website Resources and Analysis Tools

May 2020 Phone Call

- Shelby worked for FEMA Region 8 and also has private sector experience with PDM Plans and ESRI software
- Analysis tools
  - Proportional Division
  - Zonal Statistics
  - Zone Lookup
  - Spatial Join
  - Operations Dashboard
  - Preparedness Solutions – in EM ArcGIS
  - Community Resilience Dashboard
- Can submit PDM Plan to FEMA as online plan
- ArcGIS HUB may be the best option
  - Multiple pages, maps, apps, lists, embedded content, etc.
  - Examples of good ArcGIS HUB plans
    - Tulsa
    - South Dakota
    - Seattle
    - Tampa
    - Tucson
    - Skitown
    - ESRI Denver
  - HUB available with ArcGIS credits online
- Can ask Joe or Shelby or Karen if there are any questions

Meeting with Northwest Band of Shoshone Reps
4/15/19 @ 10:00 AM
Tribal Office
707 N. Main, Brigham City

ATTENDEES:

- Hunter Timbimboo, EM, NWB of Shoshone
- Cale Worley, Tribal Council Member, NWB of Shoshone
- Mark Millett, BEC EM
- Kimberly Giles, Utah DEM
- Anna Boynton, Utah DEM Tribal Liaison
- Zac Covington, BRAG

NOTES:

- Put tribal section in PDM Plan – can be short but describe how tribe interfaces with communities and EM in general
- 2 Critical facilities – Air Quality Control Center, Washake Land; and Tribal office in Brigham
- Add NWB of Shoshone to BEC transit study

Meeting with Steve Bowman on 3/5/19
Geologic Hazards Datasets and Uses – UGS

- Gordon could give BRAG preliminary data for mapping and analysis for the Wasatch Fault Zone
- Quaternary fault data could be draft level by summer (east and west Cache, and east and west Bear Lake) 1:10,000 scale data?
- Epicenter data (AGRC)
- 2008 landslide susceptibility is best for landslide
- Slope: use LiDar where available
- Soils data samples only went 5’ deep back in the day – very broad-brush dataset
- Use many disclaimers and caveats for data
- Jessica should have UGS flood maps by April/May (shallow groundwater – under 50’; and sandy soils)
- Use liquefaction where available – best available data

Amber Droesbeke
Clerk
Town of Laketown

Laketown Town Office
PO Box 118
10 North 200 East
Laketown, UT 84038
435.946.9000

From: support@utah.gov <support@utah.gov>
Sent: Monday, August 24, 2020 11:27 AM
To: Amber Droesbeke <clerk@laketownutah.com>
Subject: Public Notice for Town Council

Utah Public Notice

Town Council

Laketown Town Council Work Meeting Pre-Disaster Mitigation Strategy Planning

Notice Date & Time: 8/25/20 7:00 PM

Description/Agenda:

Laketown Town Council Agenda
August 25, 2020
Notice is hereby given that the Town of Laketown Town Council will hold a work meeting at 7:00 p.m. on Tuesday August 25, 2020 in the Laketown Town Office
located at 10 North 200 East Laketown, Utah.

In our effort to listen and follow the directions of our STATE AND LOCAL AUTHORITIES to avoid social gatherings in groups of more than 50 people and for local governments to remain open and still provide services, the public is invited to ***PLEASE WEAR A MASK IF YOU ATTEND THIS MEETING*** Our council chamber room capacity is 16 when social distancing.

7:00 p.m. REGULAR MEETING AGENDA
1. Call to Order - Mayor Burdette Weston
2. Opening Ceremony - TBD
3. Roll Call
4. Approval of Agenda; Approval of Prior Meeting Minutes

5. QUESTIONS AND COMMENTS FOR MAYOR AND COUNCIL: Any person wishing to comment on any item not otherwise on the Agenda may address the Town Council at this point by addressing the Mayor and Town Council and giving his or her name and address for the record. Comments should be

limited to not more than three (3) minutes, unless additional time is authorized by the Mayor. Citizen groups will be asked to appoint a spokesperson. This is the time and place for any person who wishes to comment on non-agenda items. Some items brought forward to the attention of the Town Council will be turned over to the clerk to provide a response outside of the Town Council meeting.

6. OTHER ITEMS OF BUSINESS:
A. Pre-disaster Mitigation Planning with Zac Covington, Brag

7. ADJOURN

On Monday, August 24, 2020 at 11:30 a.m. a copy of the foregoing notice was posted on the Utah Public Notice website at http://pmn.utah.gov and on the Laketown website at www.laketownutah.com. A copy was also posted in conspicuous view in the Laketown Town Office in Laketown, Utah and on the front door, and inside and outside of the Laketown post office and at Dee's Service Station.

DATED THIS 24th day of AUGUST, 2020

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this public hearing should notify the Laketown Town Office at (435) 946-9000, 10 North 200 East, Laketown, Utah, on Monday through Wednesday at least three working days prior to the public hearing. The office hours are 9:00 a.m. to 12:00 p.m. Individuals with speech and/or hearing impairments may call the Relay Utah by dialing 711. Spanish Relay Utah 1-888-346-3162.

Amber Droesbeke, Clerk

Notice of Special Accommodations:

NOTICE OF SPECIAL ACCOMMODATION DURING PUBLIC MEETINGS In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this meeting should notify the town clerk three days before the meeting, so arrangements can be made.

Notice of Electronic or telephone participation:

NA

Other information:

Location:

10 North 200 East, Laketown, 84038

Contact information:

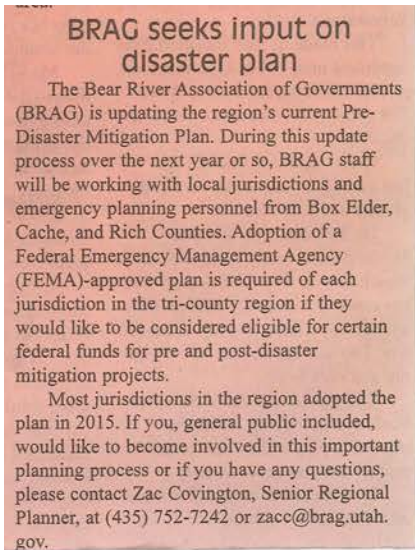
Amber Droesbeke , clerk@laketownutah.com, (435)946-9000

APPENDIX C - Newspaper PSA's, Flyers, and Other Communications

Public Service Announcement

2/25/19

The Bear River Association of Governments (BRAG) is updating the region's current Pre-Disaster Mitigation Plan. During this update process over the next year or so, BRAG staff will be working with local jurisdictions and emergency planning personnel from Box Elder, Cache, and Rich Counties. Adoption of a Federal Emergency Management Agency (FEMA)-approved plan is required of each jurisdiction in the tri-county region if they would like to be considered eligible for certain federal funds for pre and post-disaster mitigation projects. Most jurisdictions in the region adopted the plan in 2015. If you, general public included, would like to become involved in this important planning process or if you have any questions, please contact Zac Covington, Senior Regional Planner, at (435) 752-7242 or zacc@brag.utah.gov.



BRAG seeks input on disaster plan

The Bear River Association of Governments (BRAG) is updating the region's current Pre-Disaster Mitigation Plan. During this update process over the next year or so, BRAG staff will be working with local jurisdictions and emergency planning personnel from Box Elder, Cache, and Rich Counties. Adoption of a Federal Emergency Management Agency (FEMA)-approved plan is required of each jurisdiction in the tri-county region if they would like to be considered eligible for certain federal funds for pre and post-disaster mitigation projects.

Most jurisdictions in the region adopted the plan in 2015. If you, general public included, would like to become involved in this important planning process or if you have any questions, please contact Zac Covington, Senior Regional Planner, at (435) 752-7242 or zacc@brag.utah.gov.

Tremonton Leader
Garland Times
3/6/19 PSA

BOX ELDER NEWS JOURNAL
PROOF OF PUBLICATION

State of Utah
Box Elder County

BRAG PRE-DISASTER MITIGATION PLAN

The Bear River Association of Governments (BRAG) is updating the region's current Pre-Disaster Mitigation Plan. During this update process over the next year or so, BRAG staff will be working with local jurisdictions and emergency planning personnel from Box Elder, Cache, and Rich Counties. Adoption of a Federal Emergency Management Agency (FEMA)-approved plan is required of each jurisdiction in the tri-county region if they would like to be considered eligible for certain federal funds for pre and post-disaster mitigation projects. Most jurisdictions in the region adopted the plan in 2015. If you, general public included, would like to become involved in this important planning process or if you have any questions, please contact Zac Covington, Senior Regional Planner, at (435) 752-7242 or zacc@brag.utah.gov.

March-6

I, Casey Claybaugh, being first duly sworn depose and say that I am the Publisher of the Box Elder News Journal, a newspaper of general circulation, published every Wednesday in Brigham City, Utah, County of Box Elder; that the notice BRAG PRE-DISASTER MITIGATION PLAN of which a copy is hereto attached, was published in said newspaper, the first publication having been made on the 6th day of March 2019, and the last on the 6th day of March 2019; that said notice was published in the regular and entire issue of every number of the paper during the period and times of publication, and the same was published in the newspaper proper and not in the supplement.

Same was also published online at utahlegals.com, according to Section 45-1-101, Utah Code Annotated beginning on the first date of publication and for 30 days thereafter.

Casey Claybaugh, Publisher

Subscribed and sworn before me this 6th day of March 2019.

Sean Michael Hales, Notary Public
Residence: Brigham City, Utah
My commission expires August 29, 2022

SEAN M HALES
NOTARY PUBLIC • STATE OF UTAH
COMMISSION NO. 702063
COMM. EXP. 08/29/2022

BRAG
Bear River Association of Governments
Box Elder
Cache
Rich

BEAR RIVER ASSOCIATION OF GOVERNMENTS

170 N. Main, Logan, Utah 84321 ♦ (435) 752-7242 ♦ Fax (435) 752-6962 ♦ www.brag.utah.gov

April 1, 2019

To Whom It May Concern:

This letter is being sent to inform you of hazard mitigation planning activities in Box Elder, Cache, and Rich Counties in northern Utah, otherwise known as the Bear River Region. As a state or county entity that borders the project boundary, we welcome any input you may have on this important project.

Over the next year or so, Bear River Association of Governments (BRAG) will be updating the regional Pre-Disaster Mitigation Plan for local jurisdictions in the Bear River Region. This plan documents potential risks to residents and property from natural disasters and helps communities strategize on how to mitigate those risks. The current version of the plan is available to download at http://brag.utah.gov/wp-content/uploads/ 2015/08/BRAG_PDM_Plan_FINAL_8-17-15.pdf, or at the BRAG office at 170 N. Main in Logan, Utah.

In order to create an effective plan for local jurisdictions and interested special service districts, we are holding a series of meetings to gather input from various levels of government, land managers, local citizens, and other interested parties. At the end of this planning process, local governments will have the opportunity to adopt the plan, which they will need to do in order to be eligible for certain federal pre- and post-disaster grants in the future.

If you are interested in being involved in this planning process and would like to be added to our contact lists, please call me at (435) 713-1423, or e-mail at zacc@brag.utah.gov.

Sincerely,

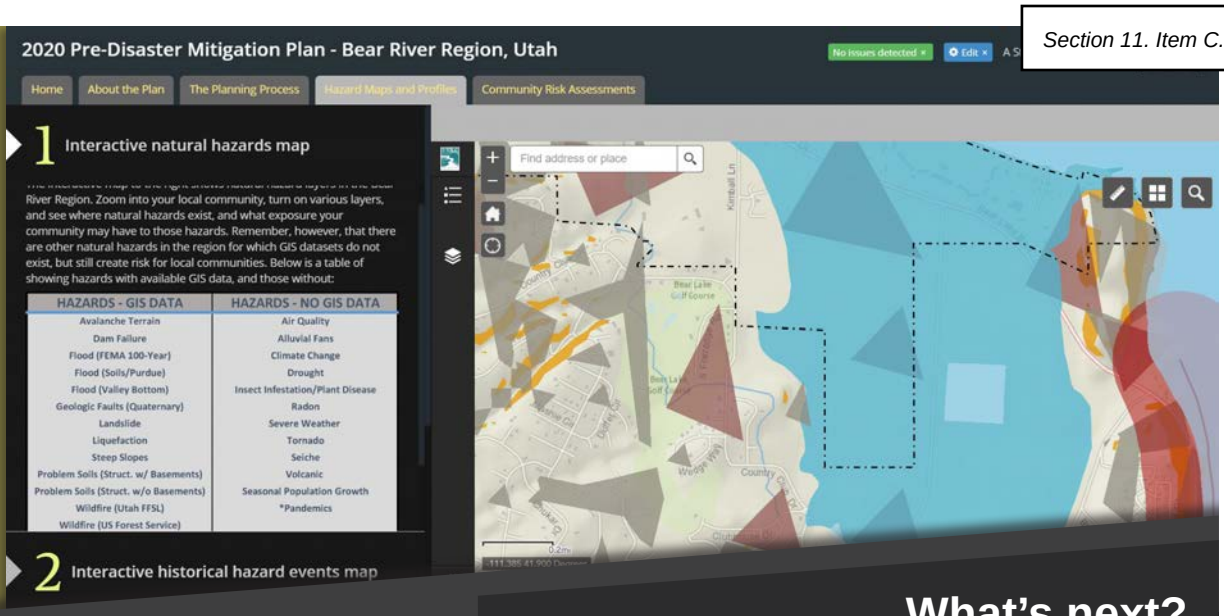
Zac Covington
Sr. Regional Planner

Letter sent via e-mail on 4-1-19 to the following surrounding states and counties: Idaho, Nevada, Wyoming, Elko County, Cassia County, Uinta County, Oneida County, Franklin County, Bear Lake County, Lincoln County

Serving Northern Utah Since 1971
Aging Services ♦ Community Development & Planning ♦ Economic Development ♦ Housing & Human Services

PLAN GOALS

- Reduce potential losses from natural hazards (lives, property, infrastructure, critical facilities, etc.)
- Help communities comply with the Hazard Mitigation Act of 2000
- Participating communities are eligible to apply for hazard mitigation funds (75/25 federal/local)



Progress at a glance

1. Online interactive plan almost complete (see graphic above).
2. Currently collecting mitigation strategies from all communities.
3. Draft plan will be ready for public and state review in late August/early September.

What's next?

- ***REVIEW DRAFT PLAN*** *(plan will be sent out for review in late August or early September of this year)*
- **FINAL WORKING GROUP MEETING(s)** *(same time as draft plan is sent out for public review - likely video/online meeting)*
- **ADOPT FINAL PLAN** *(communities adopt the plan in public meeting following FEMA approval)*
- **IMPLEMENTATION** *(communities apply for grants to pay for mitigation projects, adopt/modify natural hazard ordinances, implement risk reduction in other local planning processes and projects, etc.)*

PROJECT CONTACT INFO: Zac Covington, BRAG Sr. Regional Planner - 435.713.1423 - zacc@brag.utah.gov

DRAFT Plan Announcment PSA Language

DRAFT plan language was sent to the Herald Journal, Box Elder News Journal, and the Tremonton Leader. Only the Herald Journal published to our knowledge.

DRAFT 2020 PRE-DISASTER MITIGATION PLAN FOR THE BEAR RIVER REGION

In accordance with the Disaster Mitigation Act of 2000, the regional Pre-Disaster Mitigation Plan for the Bear River Region has been updated. The plan is now available for a 30-day public comment period ending on October 30, 2020 at 5:00 PM. The plan identifies potential natural hazards, estimates vulnerability to those hazards, and documents mitigation strategies for all participating jurisdictions located within Box Elder, Cache, and Rich Counties in northern Utah. To view the plan, click the link at the bottom of the home page of the BRAG website at www.brag.utah.gov. If you would like a hard copy of the plan, or have any comments or questions, contact Zac Covington, BRAG Sr. Regional Planner, at zacc@brag.utah.gov or call at 435.752.7242.

DRAFT Plan Announcment PSA Clippings

https://www.hjnews.com/news/government/public-comment-sought-on-disaster-mitigation-plan/article_b7d1bad0-1055-5d6d-bc4f-b2e669ac724f.html

Public comment sought on disaster mitigation plan

Sep 30, 2020

The Bear River Association of Governments is seeking public input on an official disaster mitigation plan in the region.

In accordance with the Disaster Mitigation Act of 2000, the regional Pre-Disaster Mitigation Plan for the region has been updated. The plan is now available for a 30-day public comment period ending at 5 p.m. Oct. 30.

The plan identifies potential natural hazards, estimates vulnerability to those hazards, and documents mitigation strategies for all participating jurisdictions located within Box Elder, Cache, and Rich counties in northern Utah. To view the plan, click the link at the bottom of the home page of the BRAG website at www.brag.utah.gov. If you would like a hard copy of the plan or have any comments or questions, contact Zac Covington, BRAG Sr. Regional Planner, at zacc@brag.utah.gov or call at (435)752.7242.

APPENDIX D – Detailed Risk Assessment Methodology

2020 PDMP Update GIS Risk Assessment Methodology

(See "GIS Data Citations" table for layer-specific information)

SOFTWARE

- ArcGIS Pro

Note: All feature layers were projected in UTM NAD 83 Zone 12. Some feature layers were originally Point/Line/PolygonZ or Point/Line/PolygonZM types in the Shape field. Those feature layers had to be exported as new feature layers, and in the environments tab, M and Z values had to be disabled. If not, problems occurred at various steps in in the analysis.

DATA PREPARATION

- NATURAL HAZARDS LAYERS
    - Converted all natural hazards layers to geodatabase features within one regional geodatabase
    - Merged all polygons in each feature layer in "Editor" which created one huge polygon per hazard layer.
    - Deleted all unnecessary fields for each feature layer

- CRITICAL FACILTIES
    - Points
        - Residential/Commercial
            - Extracted residential and commercial points from AGRC Address Points layer
            - Joined (tabular) residential and commercial point layer to current county assessors data for each county via Parcel ID Number
            - Added the following fields (all Text except for CMV which was Double): Name, Type, Category, CMV, and Notes
            - Populated CMV with Current Market Value data (structure and property values combined)
            - Populated all other necessary fields
            - Converted into one geodatabase
        - Critical Facilities (CF)
            - For each individual CF feature layer, added the following fields (all Text): Name, Type, Category, and Notes
            - Populated all necessary fields
            - Deleted all unnecessary fields
            - Merged all CF feature layers and converted into geodatabase
    - Lines
        - Merged each type of CF line feature into regional feature (i.e., all sewer in one, all roads in one, all natural gas lines in one, etc.)

        - For each individual regional CF line feature layer, added the following fields: Name, Type, Category, Notes, and Miles (Miles as Double – all others Text)
        - Populated all necessary fields
        - Deleted all unnecessary fields
        - Left Miles field empty – populated later
        - Converted each CF line feature layer into geodatabase
        - Created new geodatabase line feature
        - Copied and pasted each regional CF line feature into new geodatabase to retain original line shapes
    - Polygons
        - Merged each type of CF polygon feature into regional feature (i.e., all lakes in one, all groundwater recharge in one, etc.)
        - For each individual regional CF polygon feature layer, added the following fields: Name, Type, Category, Notes, and Acres (Acres as Double, all others Text)
        - Populated all necessary fields
        - Deleted all unnecessary fields
        - Left Acres field empty – populated later
        - Converted each CF polygon feature layer into geodatabase
        - Created new geodatabase polygon feature with same five fields as individual feature layers
        - Copied and pasted each regional CF polygon feature into new geodatabase to retain original polygon shapes

***Risk assessment methodology note**: Early in the process, the first methodology was used for Rich and Box Elder County analyses, then modified for the Cache County analysis to be more efficient and to make recording data faster and easier. However, the same overall process was used and the same type of data extracted. Results from both methodologies were compared early on in the Cache County analysis to ensure data consistency and uniformity.

<u>RISK ASSESSMENT METHODOLOGY #1 (for Rich and Box Elder Counties)</u>

- Batch clipped each hazard feature layer by jurisdiction (gave an individual hazard layer per jurisdiction)
- Selected residential and commercial point layer by location by each hazard layer per jurisdiction
- Exported table of selected points to .dbf and used MS Excel to tabulate number and value for residential and commercial points, respectively
- Selected CF point layer by location by each hazard layer per jurisdiction
- Exported summary table (summary statistics) of selection only by type (field) and count (statistic type) – set case field as type – and tabularized data
- Batch clipped CF lines by jurisdiction by hazard layer
- Batch calculated miles in Miles field (python script: "!shape.length@miles!"

- Batch clipped CF Polygons by jurisdiction by hazard layer
- Batch calculated acres in Acres field (python script: "!shape.area@acres!"

RISK ASSESSMENT METHODOLOGY #2 (for Cache County)

- Added Hazard field (Text) to each regional hazard geodatabase feature layer
- Populated Hazard field with hazard name
- Created new geodatabase polygon feature and added Hazard field (Text)
- Copied and pasted regional hazards feature layers into new geodatabase feature layer
- Clipped regional hazards geodatabase feature layer by jurisdiction (or batch clip all at beginning)
- Spatial Join with residential and commercial points (Target Feature) and the hazard feature layer (Join Feature) for the respective jurisdiction (Join Operation – One to Many; Match Option – Completely Within)
- Selected by attributes on new join file for each hazard and each type (commercial or residential) respectively
- Ran statistics on CMV (current market value) field of selected points and recorded number and value
- Did Spatial Join with CF points (Target Feature) and the hazard feature layer (Join Feature) for the respective jurisdiction (Join Operation – One to Many; Match Option – Completely Within)
- Did Summary Statistics by Type (Field) and Count (Statistic Type) and Hazard and Type as Case Fields and exported as .dbf
- Extracted values from MS Excel
- Batch Clipped (by Input Feature) each Hazard Feature Layer (not the regional feature layer created earlier, but the original individual hazard feature layers) by each jurisdiction
- Batch Clipped (by Clip Feature) CF line and CF polygon feature layers, respectively, by each jurisdictional hazard feature layer
- Batch Calculated Miles and Acres for each CF line and CF Polygon feature layer, respectively.
- Extracted miles and acreage from attribute table

APPENDIX E - GIS Data Sources

2020 Bear River Region Pre-Disaster Mitigation Plan Update - GIS Data Sources

	GIS Dataset	Source	Criteria	Other Notes
Critical Facility, Building, Infrastructure, and Other Asset Datasets	Farmland	NRCS SSURGO	Farmland of prime, local, unique and statewide importance.	
	Grazing Allotments	AGRC	Public land grazing allotments.	
	Home	Utah AGRC/Counties	AGRC address points joined with county assessors data. Unknown data points or points with incomplete value data were deleted.	
	Cemetery	Utah AGRC		
	Commercial Business	Utah AGRC/Counties	AGRC address points joined with county assessors data. Unknown data points or points with incomplete value data were deleted.	
	Library	Utah AGRC		
	Place of Worship	Utah AGRC		
	University/College	BRAG	Digitized	
	School	Utah AGRC		
	Correctional Facility	Utah AGRC		
	Military Facility	US Department of Defense	Military Installations, Ranges, and Training Areas (MIRTA)	
	Post Office	Utah AGRC		
	Town Hall	BRAG	Digitized	
	Campground/Recreation Facility	US Forest Service	Campgrounds, picnic areas, trailheads	
	Golf Course	Utah AGRC/BRAG	Polygon to point	
	Public Areas	BRAG	Digitized - Public gathering areas, indoor and outdoor	
	Historic Site	US Department of Interior, NRHP	Objects, sites, and structures.	
	Museum	BRAG	Digitized	
	State Park	Utah AGRC		
	Park	Utah AGRC/BRAG	Polygon to point	
	Trail	Utah AGRC/BRAG/Counties	All existing	
	Emergency Medical Service	Utah AGRC		
	Emergency Operations Center/PSAP	BRAG	County EOC's only - others included in Town Halls and Fire/Police Stations	
	Fire Station	AGRC		
	Hospital/Health Care Facility	Utah AGRC	Hospital, nursing home, assisted living, home health, outpatient, therapy, hospice, urgent care, clinic, and other facilities	
	National System Shelter Facility	Homeland Infra. Foundation-Level Data (HIFLD)		
	Law Enforcement Station	AGRC		
	Substation/Regulator	Homeland Infra. Foundation-Level Data (HIFLD)		
	Natural Gas Pipeline	Utah Geological Survey		
	Crude Oil Pipeline	Utah Geological Survey		
	Oil and Gas Well	AGRC		
	Petroleum Pipeline	Utah Geological Survey		
	Hydrogen Sulfide Pipeline	Utah Geological Survey		
	Power Generation Facility	US Energy Information Administration (EIA)		
	Transmission Line	Homeland Infra. Foundation-Level Data (HIFLD)		
	Lake/Pond	USGS, NHD Plus		
	Reservoir	USGS, NHD Plus		
	Playa	USGS, NHD Plus		
	Riparian Area	Utah AGRC, WRLU		
	Spring/Seep	USGS, NHD Plus		
	Stream/River	USGS, NHD Plus	Perennial, intermittent, and artificial paths (large rivers and some lake flows). May affect flood losses - increase unrealistically.	
	Wetland	US Fish and Wildlife Service, NWI	Freshwater emergent and forested/shrub	
	Communication Towers	Homeland Infra. Foundation-Level Data (HIFLD)	Mobile, land, microwave, paging, FM, antenna, TV,	
	Microwave Service Towers	Homeland Infra. Foundation-Level Data (HIFLD)		
	Gas Station	BRAG	Digitized	
	Sewer Pipeline	Brigham City, Hyde Park, Hyrum, Nibley, North Logan, Logan, Perry, Smithfield, Richmond, and USU Logan Campus	Main lines only	Data was only used by permission and if it was sent by local communities to BRAG staff.

	Wastewater Facility	Utah AGRC/BRAG	WRLU to point	
	Contaminated Land	Utah DEQ/DERR	Brownfield	
	Hazmat Material Storage	Cache County	Box Elder and Cache County data only	
	Mines	USGS	Mines, mine plants, prospector pits, gravel pits	
	Broadband Anchors	AGRC		
	Solid Waste Facility	Utah DEQ/Utah DWMRC		
	Airport/Heliport	FAA/AGRC/BRAG		
	Bridge/Culvert/Underpass	National Bridge Inventory (HIFLD)/Railroad Bridges (HIFLD)/UDOT/Box Elder County/Cache County		
	Railroad	AGRC		
	Emergency Outlet Roads	BRAG/UDOT	Paved, regional/inter-county connections	
	Road	UDOT	All roads	
	Canal	Utah DWR	Open and piped	
	Culinary Water Pipeline	Local Communities/Counties	Main lines only. Some community data provided	Same as sewer lines.
	Culinary Water Source	Utah DEQ	Wells and springs	
	Water Tank	Cache County	Cache County data only	
Natural Hazard Datasets	Avalanche Terrain	10 Meter DEMs, NLCD (Land Cover) 2016 - BRAG	Slopes from 30 to 45 degrees (58 to 100%), elevation over 5,500 feet, and land cover types; barren Land, dwarf shrub, shrub/shrub, grassland/ herbaceuous, lichens, and moss.	Not an avalanche risk map. Only shows common terrain characteristics.
	Dam Failure	Dam Inundation	PMF, Estimated, and Sunny all merged.	No data for Neponset Reservoir in Rich County, but there is likely increased risk to local communities downstream.
	Flood - FEMA	FEMA 100-year/ methodology from / data	A/AE/A FEMA floodplain layers.	No Rich County data except for Woodruff Town. No eastern Box Elder County data.
	Flood - Soils	SSURGO soils methodology - Purdue University study	Water bodies, fluvial soils/ geomorphology, and flood frequency >100 years.	Based on the methodology included in the Purdue University thesis by Nikhil Sangwan, titled, "Floodplain Mapping Using Soil Survey Geographic (SSURGO) Database (2013).
	Flood - USU	USU valley bottom delineation dataset	USU methodology	Jordan T. Gilbert, William W. Macfarlane, Joseph M. Wheaton, The Valley Bottom Extraction Tool (V-BET): A GIS tool for delineating valley bottoms across entire drainage networks, Computers & Geosciences, Volume 97, December 2016, Pages 1-14, ISSN 0098-3004, http://dx.doi.org/10.1016/j.cageo.2016.07.014.
	Geologic - Faults	Quaternary Faults - 1,000 ft buffer, both sides.	1,000 foot buffer on all quaternary faults, including 2019 Wasatch Fault data from UGS in eastern Box Elder County.	
	Geologic - Landslide/debris flow	UGS Landslide susceptibilty data (2007)	Moderate and high.	
	Geologic - Steep Slopes	10 Meter DEM	30%+ Slope.	
	Geologic - Liquefaction	UGS dataset	Moderate/moderate high/high.	No data for eastern Box Elder or Rich County.
	Problem Soils - Structures with basements	SSURGO soils database	Engineering dominant condition - somewhat and very limited.	
	Problem Soils - Structures without basements	SSURGO soils database	Engineering dominant condition - somewhat and very limited.	
	Wildfire - Utah FFSL	Wildfire threat - UWRAP dataset.	Moderate/high.	Shows no Rich County risk.
	Wildfire - US Forest Service	"Wildfire Hazard Potential" dataset, 2017	Moderate/high/very high.	Shows more risk areas.

All data collected in 2019 and 2020 unless otherwise noted. Reference specific data sources for more information.

APPENDIX F - Historical Hazard Events Database

Due to size constraints, please view in the Appendix of the online plan at:
http://brag.utah.gov/wp-content/uploads/1847-2020_BRR_Historical_Hazards_Event_Data_2020PDMP.pdf

For more information, or for a copy of the original spreadsheet, contact Zac Covington at 435-713-1423, or zacc@brag.utah.gov

APPENDIX G - Regional BCEGS Scores 2008

Building Code Effectiveness Grading Report (BCEGS) Scores for the Bear River Region (2008)		
Jurisdiction Name	**Score**	**Date**
Box Elder County	RES 04 COM 04	2001
Brigham City	RES 03 COM 03	2001
Tremonton	RES 05 COM 05	2000
Willard	RES 05 COM 05	1998
Cache County	RES 03 COM 03	2001
Hyde Park	RES 03 COM 03	2001
Logan City	RES 03 COM 03	1999
North Logan	RES 03 COM 03	1999
Smithfield	RES 04 COM 04	2000
Garden City	RES 99 COM 07	1998

Source: ISO (Insurance Services Office), 2008.

99 is used for jurisdictions which are either unclassified or do not meet the minimum criteria of the BCEGS program. This would include departments which do not do plan review, inspections, have legally adopted codes or have declined to participate in the ISO program.

Federal Emergency Management Agency
Repetitive Losses / BCX Claims
UTAH

CID	Community Name	County	No Of Variances	No Of Rep Losses	CAC Date	CAV Date	No Of BCX Claims	Total Area Population	LOMCS	No Of Policies	FIRM Date	CRS
490001	BEAVER COUNTY*	BEAVER COUNTY	0	0		11/04/2015	0	1,450	1	0	09/18/1987	
490002	BEAVER, CITY OF	BEAVER COUNTY	0	0	11/04/2015		0	1,453	2	0	04/01/1977	
490003	MILFORD, CITY OF	BEAVER COUNTY	0	0	09/26/2019	09/22/2008	0	1,451	0	0		
490239	MINERSVILLE, TOWN OF	BEAVER COUNTY	0	0			0	448	0	0		
490194	BEAR RIVER, CITY OF	BOX ELDER COUNTY	0	0	10/01/2019		0	900	0	1	09/29/2010	
490005	BOX ELDER COUNTY*	BOX ELDER COUNTY	0	0	07/19/2017	03/23/2016	0	9,119	37	6	09/29/2010	
490006	BRIGHAM CITY, CITY OF	BOX ELDER COUNTY	0	0	09/26/2019	03/24/2016	0	18,500	5	20	09/29/2010	
490197	CORINNE, CITY OF	BOX ELDER COUNTY	0	0		07/29/2010	0	800	7	2	09/29/2010	
490236	DEWEYVILLE, CITY OF	BOX ELDER COUNTY	0	0			0	248	0	0	09/29/2010	
490007	ELWOOD, CITY OF	BOX ELDER COUNTY	0	0			0	294	2	0	09/29/2010	
490198	FIELDING, TOWN OF	BOX ELDER COUNTY	0	0			0	254	0	0	09/29/2010	
490008	HONEYVILLE, CITY OF	BOX ELDER COUNTY	0	0		07/20/2010	0	1,220	1	0	09/29/2010	
490009	MANTUA, TOWN OF	BOX ELDER COUNTY	0	0			0	1,100	0	0	09/29/2010	
490010	PERRY CITY, CITY OF	BOX ELDER COUNTY	0	0		07/01/2010	0	4,380	2	0	09/29/2010	
490203	PLYMOUTH, TOWN OF	BOX ELDER COUNTY	0	0	09/25/2019		0	203	0	0	09/29/2010	
490220	TREMONTON, CITY OF	BOX ELDER COUNTY	0	0	10/28/2019	10/19/2010	0	7,002	4	3	09/29/2010	
490011	WILLARD,CITY OF	BOX ELDER COUNTY	0	0	09/30/2019	11/16/2012	0	1,800	2	3	09/29/2010	
490195	YOST, TOWN OF	BOX ELDER COUNTY	0	0			0	51	0	0		
490013	AMALGA, TOWN OF	CACHE COUNTY	0	0	01/09/2016		0	207	0	0	05/24/2011	
490012	CACHE COUNTY*	CACHE COUNTY	0	8	10/31/2019	10/11/2018	6	6,929	119	25	05/24/2011	
490014	CLARKSTON, TOWN OF	CACHE COUNTY	0	0			0	582	13	0	05/24/2011	
490015	CORNISH, TOWN OF	CACHE COUNTY	0	0			0	173	0	0	05/24/2011	
490016	HYDE PARK, TOWN OF	CACHE COUNTY	0	0	02/11/2008	04/05/2010	0	2,532	3	5	05/24/2011	
490017	HYRUM, CITY OF	CACHE COUNTY	0	0			0	7,400	17	2	05/24/2011	
490018	LEWISTON, CITY OF	CACHE COUNTY	0	0	10/29/2019		0	1,736	0	1	05/24/2011	
490019	LOGAN, CITY OF	CACHE COUNTY	0	2	09/26/2019	06/26/2016	0	45,517	39	36	05/24/2011	YES
490020	MENDON, CITY OF	CACHE COUNTY	0	0	07/16/1993	06/26/2016	0	925	33	8	05/24/2011	
490021	MILLVILLE, TOWN OF	CACHE COUNTY	0	0	01/28/2016		0	1,750	6	0	05/24/2011	
490022	NEWTON, TOWN OF	CACHE COUNTY	0	0		04/05/2010	0	750	1	0	05/24/2011	
490023	NIBLEY, TOWN OF	CACHE COUNTY	0	0	11/17/2016	06/07/2016	0	1,050	40	6	05/24/2011	
490024	NORTH LOGAN, CITY OF	CACHE COUNTY	0	0		07/05/2016	0	7,558	2	3	05/24/2011	
490025	PARADISE, TOWN OF	CACHE COUNTY	0	0		06/27/2016	0	950	11	0	05/24/2011	
490226	PROVIDENCE, CITY OF	CACHE COUNTY	0	0	07/02/2018		0	4,845	33	6	05/24/2011	
490027	RICHMOND, CITY OF	CACHE COUNTY	0	0	03/23/2016		0	2,150	14	1	05/24/2011	
490240	RIVER HEIGHTS, CITY OF	CACHE COUNTY	0	0	08/26/2008		0	1,650	4	0	05/24/2011	
490029	SMITHFIELD, CITY OF	CACHE COUNTY	0	0	03/23/2016	06/12/2010	0	9,587	61	14	05/24/2011	
490030	TRENTON, TOWN OF	CACHE COUNTY	0	0			0	390	0	0	05/24/2011	

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490031	WELLSVILLE, CITY OF	CACHE COUNTY	0	0	10/29/2019	06/27/2016	0	3,000	60	7	05/24/2011	
490032	CARBON COUNTY *	CARBON COUNTY	0	0	09/25/2019	12/06/2017	0	22,000	7	14	05/02/2012	
490225	EAST CARBON, CITY OF	CARBON COUNTY	0	0	09/04/2018		0	1,400	2	0	05/02/2012	
490034	HELPER, CITY OF	CARBON COUNTY	0	0	08/26/2014		0	2,025	7	15	05/02/2012	
490036	PRICE, CITY OF	CARBON COUNTY	0	0	09/25/2019	02/29/2008	0	8,504	9	6	05/02/2012	
490205	SUNNYSIDE, CITY OF	CARBON COUNTY	0	0			0	400	1	0	05/02/2012	
490037	WELLINGTON,CITY OF	CARBON COUNTY	0	0			0	1,800	1	1	05/02/2012	
490230	DAGGETT COUNTY *	DAGGETT COUNTY	0	0		07/28/2016	0	921	0	1		
490039	BOUNTIFUL, CITY OF	DAVIS COUNTY	0	0	05/19/2020	08/07/2018	0	43,000	76	73	06/18/2007	YES
490040	CENTERVILLE, CITY OF	DAVIS COUNTY	1	0	10/17/2019	09/04/2015	0	16,475	38	31	06/18/2007	YES
490041	CLEARFIELD, CITY OF	DAVIS COUNTY	0	0	09/02/2014	05/31/2016	0	28,665	3	13	06/18/2007	
490042	CLINTON, CITY OF	DAVIS COUNTY	0	0		06/30/2016	0	21,750	0	8	06/18/2007	
490038	DAVIS COUNTY *	DAVIS COUNTY	0	5	09/21/2016	03/25/2014	0	2,508	43	13	06/18/2007	
490043	EAST LAYTON, CITY OF	DAVIS COUNTY	0	0			0	763	1	0		
490044	FARMINGTON, CITY OF	DAVIS COUNTY	0	0	01/30/2018	04/25/2017	0	17,000	126	60	06/18/2007	
490045	FRUIT HEIGHTS CITY, CITY OF	DAVIS COUNTY	0	0		03/27/2014	0	4,950	16	10	06/18/2007	
490046	KAYSVILLE, CITY OF	DAVIS COUNTY	0	0	10/29/2019	06/19/2014	0	22,000	70	34	06/18/2007	
490047	LAYTON, CITY OF	DAVIS COUNTY	0	0	05/11/2020	11/28/2017	0	69,529	25	61	06/18/2007	
490048	NORTH SALT LAKE, CITY OF	DAVIS COUNTY	0	0	10/08/2019	11/27/2018	0	8,500	25	29	06/18/2007	
490049	SOUTH WEBER, CITY OF	DAVIS COUNTY	0	0		06/15/2016	0	6,300	1	11	06/18/2007	
490050	SUNSET, CITY OF	DAVIS COUNTY	0	0	09/25/2019	09/04/2008	0	5,204	2	1	06/18/2007	
490051	SYRACUSE, CITY OF	DAVIS COUNTY	0	0	09/30/2019	06/30/2016	0	23,000	0	14	06/18/2007	
490052	WEST BOUNTIFUL, CITY OF	DAVIS COUNTY	0	0	12/20/2016	06/01/2016	0	5,047	20	11	06/18/2007	YES
490053	WEST POINT, CITY OF	DAVIS COUNTY	0	0		06/01/2016	0	11,000	0	4	06/18/2007	
490054	WOODS CROSS, CITY OF	DAVIS COUNTY	0	2	10/15/2019	08/31/2015	2	8,500	3	4	06/18/2007	
490055	DUCHESNE, CITY OF	DUCHESNE COUNTY	0	0		07/26/2016	0	1,450	0	0	02/04/1988	
490056	MYTON, CITY OF	DUCHESNE COUNTY	0	0		07/26/2016	0	539	4	4	02/04/1988	
490057	TABIONA, TOWN OF	DUCHESNE COUNTY	0	0			0	125	0	0		
490059	CASTLE DALE, CITY OF	EMERY COUNTY	0	0			0	1,710	0	0	05/01/1980	
490196	CLEVELAND, TOWN OF	EMERY COUNTY	0	0			0	525	2	1	07/12/1977	
490058	EMERY COUNTY*	EMERY COUNTY	0	0	06/24/2020		0	10,610	0	2		
490060	EMERY, TOWN OF	EMERY COUNTY	0	0			0	333	0	0		
490061	FERRON, CITY OF	EMERY COUNTY	0	0	10/03/2019		0	1,650	0	1		
490062	GREEN RIVER, CITY OF	EMERY COUNTY	0	0	04/01/2010	04/08/2010	0	970	0	0	03/18/1986	
490063	HUNTINGTON, CITY OF	EMERY COUNTY	0	0	10/10/2012		0	2,000	0	0		
490064	ORANGEVILLE, CITY OF	EMERY COUNTY	0	0			0	1,400	1	5	03/01/1979	
490066	ANTIMONY, TOWN OF	GARFIELD COUNTY	0	0			0	113	0	0	04/02/1976	

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490067	ESCALANTE, TOWN OF	GARFIELD COUNTY	0	0			0	950	0	0	08/28/1979	
490065	GARFIELD COUNTY *	GARFIELD COUNTY	0	0	09/25/2019	08/20/2019	0	738	58	9	08/05/1986	
490068	HATCH, TOWN OF	GARFIELD COUNTY	0	0	10/02/2019		0	128	1	1	07/24/1979	
490069	HENRIEVILLE, TOWN OF	GARFIELD COUNTY	0	0			0	177	0	0	09/28/1979	
490070	PANGUITCH, CITY OF	GARFIELD COUNTY	0	0	08/19/2019		0	1,450	23	1	08/28/1979	
490071	TROPIC, TOWN OF	GARFIELD COUNTY	0	0	10/29/2019	06/30/1993	0	568	0	1	12/04/1979	
490232	GRAND COUNTY *	GRAND COUNTY	0	0	09/26/2019	08/01/2019	0	9,225	24	14	04/03/2020	
490072	MOAB, CITY OF	GRAND COUNTY	0	0	08/01/2019	07/31/2019	0	4,779	21	82	04/03/2020	YES
490074	CEDAR CITY, CITY OF	IRON COUNTY	0	0	09/25/2019	08/02/2016	0	27,786	38	31	10/16/1984	YES
490073	IRON COUNTY *	IRON COUNTY	0	2	01/12/2017	08/02/2016	2	6,985	18	53	07/17/1986	
490077	KANARRAVILLE, TOWN OF	IRON COUNTY	0	0			0	350	1	0		
490075	PARAGONAH, TOWN OF	IRON COUNTY	0	0			0	530	2	1	06/02/2005	
490076	PAROWAN, CITY OF	IRON COUNTY	0	0	10/29/2019		0	3,000	2	6	03/18/1986	
490079	EUREKA, CITY OF	JUAB COUNTY	0	0	09/26/2019	03/26/2007	0	800	8	1	12/04/2007	
490078	JUAB COUNTY*	JUAB COUNTY	0	0			0	437	3	0		
490080	LEVAN, TOWN OF	JUAB COUNTY	0	0		09/22/2008	0	750	0	2		
490081	MONA, TOWN OF	JUAB COUNTY	0	0			0	309	1	0		
490229	NEPHI, CITY OF	JUAB COUNTY	0	0		08/28/2007	0	5,139	0	0	12/04/2007	
490243	ALTON, TOWN OF	KANE COUNTY	0	0	01/29/2019	03/04/2005	0	148	0	0		
490084	GLENDALE, TOWN OF	KANE COUNTY	0	0	08/15/2018	03/04/2005	0	348	3	3	05/01/1986	
490085	KANAB, CITY OF	KANE COUNTY	0	0	08/15/2018	02/23/2005	0	5,000	13	13	08/19/1985	
490083	KANE COUNTY *	KANE COUNTY	0	0	10/29/2019	05/08/2008	0	6,523	7	26	07/01/1986	
490086	ORDERVILLE, TOWN OF	KANE COUNTY	0	0	08/15/2018	03/04/2005	0	499	0	1		
490206	DELTA, CITY OF	MILLARD COUNTY	0	0			0	3,250	0	0		
490087	FILLMORE, CITY OF	MILLARD COUNTY	0	0			0	2,260	0	0		
490200	HINCKLEY, TOWN OF	MILLARD COUNTY	0	0			0	712	0	0		
490201	HOLDEN, TOWN OF	MILLARD COUNTY	0	0	10/30/2019		0	371	2	1	03/01/1986	
490088	KANOSH, CITY OF	MILLARD COUNTY	0	0			0	480	0	0		
490246	LEAMINGTON, TOWN OF	MILLARD COUNTY	0	0			0	217	0	0	09/04/1987	
490089	MEADOW, TOWN OF	MILLARD COUNTY	0	0			0	238	0	0	07/02/1976	
490233	MILLARD COUNTY*	MILLARD COUNTY	0	0	06/24/2020		0	13,800	0	0	09/04/1987	
490090	OAK CITY, TOWN OF	MILLARD COUNTY	0	0			0	650	0	2		
490091	SCIPIO, TOWN OF	MILLARD COUNTY	0	0			0	298	0	0		
490093	MORGAN CITY,CITY OF	MORGAN COUNTY	0	0	09/25/2019	06/22/2017	0	3,160	36	19	12/07/2017	
490092	MORGAN COUNTY *	MORGAN COUNTY	0	2	03/22/2018	09/15/2015	2	6,000	48	32	12/07/2017	
490095	CIRCLEVILLE, TOWN OF	PIUTE COUNTY	0	0	10/01/2019		0	505	0	1		
490096	JUNCTION, TOWN OF	PIUTE COUNTY	0	0	09/26/2019		0	135	0	1	01/16/1987	

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490097	KINGSTON, TOWN OF	PIUTE COUNTY	0	0			0	114	1	0	02/04/1977	
490098	MARYSVALE, CITY OF	PIUTE COUNTY	0	0			0	400	0	2	02/05/1986	
490094	PIUTE COUNTY *	PIUTE COUNTY	0	0			0	183	1	1	03/18/1986	
490099	LAKETOWN, TOWN OF	RICH COUNTY	0	0	12/04/2019		0	234	0	0		
490100	RANDOLPH, TOWN OF	RICH COUNTY	0	0	09/26/2019		0	500	0	0		
490234	RICH COUNTY *	RICH COUNTY	0	0			0	494	0	1		
490101	WOODRUFF, TOWN OF	RICH COUNTY	0	0			0	173	0	3	07/22/1980	
490252	HERRIMAN, CITY OF	SALT LAKE COUNTY	0	0	10/28/2019	02/26/2008	0	19,516	36	11	09/25/2009	
490253	HOLLADAY CITY, CITY OF	SALT LAKE COUNTY	0	0	10/31/2019	05/21/2013	0	25,900	14	32	09/25/2009	
490211	MIDVALE, CITY OF	SALT LAKE COUNTY	0	0		03/13/2017	0	28,100	7	6	09/25/2009	
490103	MURRAY, CITY OF	SALT LAKE COUNTY	0	0	10/30/2019	03/14/2017	0	45,732	44	143	09/25/2009	
490104	RIVERTON, CITY OF	SALT LAKE COUNTY	0	0	04/01/2020	01/17/2017	0	39,000	56	23	09/25/2009	
490105	SALT LAKE CITY, CITY OF	SALT LAKE COUNTY	0	6	11/19/2019	12/13/2017	0	172,800	89	163	08/02/2012	
490102	SALT LAKE COUNTY *	SALT LAKE COUNTY	0	2	06/15/2020	02/20/2013	0	38,000	187	323	09/25/2009	
490106	SANDY CITY, CITY OF	SALT LAKE COUNTY	1	0	05/11/2020	07/14/2016	0	95,720	62	38	09/25/2009	
490107	SOUTH JORDAN, CITY OF	SALT LAKE COUNTY	0	0	10/29/2019	03/25/2016	0	48,340	70	39	09/25/2009	
490219	SOUTH SALT LAKE, CITY OF	SALT LAKE COUNTY	1	0	09/26/2019	09/05/2017	0	23,000	14	19	08/02/2012	
490248	TAYLORSVILLE, CITY OF	SALT LAKE COUNTY	0	0		01/24/2017	0	60,000	14	13	09/25/2009	
490108	WEST JORDAN, CITY OF	SALT LAKE COUNTY	0	2	09/03/2015	06/18/2015	1	94,300	61	27	09/25/2009	
490245	WEST VALLEY CITY, CITY OF	SALT LAKE COUNTY	0	0	09/25/2019	01/24/2017	0	122,900	14	104	09/25/2009	
490238	BLANDING, CITY OF	SAN JUAN COUNTY	0	0	10/29/2019		0	2,250	0	0		
490212	MONTICELLO, CITY OF	SAN JUAN COUNTY	0	0	09/25/2019		0	1,958	2	0	12/24/1976	
490109	SAN JUAN COUNTY*	SAN JUAN COUNTY	0	0			0	13,600	1	1		
490242	CENTERFIELD, CITY OF	SANPETE COUNTY	0	0			0	419	0	0	05/02/2012	
490112	EPHRAIM,CITY OF	SANPETE COUNTY	0	0	07/31/2018	06/17/2013	0	5,284	18	4	05/02/2012	
490113	FAIRVIEW, CITY OF	SANPETE COUNTY	0	0	10/31/2019		0	1,332	4	4	05/02/2012	
490114	FOUNTAIN GREEN, CITY OF	SANPETE COUNTY	0	0		03/04/2014	0	955	11	1	05/02/2012	
490115	GUNNISON, CITY OF	SANPETE COUNTY	0	0	04/16/2014	05/01/2012	0	2,950	0	2	05/02/2012	
490116	MANTI,CITY OF	SANPETE COUNTY	0	0	07/31/2018	11/14/2006	0	3,300	0	1	05/02/2012	
490117	MAYFIELD, TOWN OF	SANPETE COUNTY	0	0	03/23/2010		0	530	2	1	05/02/2012	
490118	MORONI, CITY OF	SANPETE COUNTY	0	0			0	1,180	1	0	05/02/2012	
490213	MOUNT PLEASANT, CITY OF	SANPETE COUNTY	0	0			0	2,744	5	1	05/02/2012	
490111	SANPETE COUNTY*	SANPETE COUNTY	0	0	10/28/2019	08/01/2018	0	1,195	26	5	05/02/2012	
490119	SPRING CITY, CITY OF	SANPETE COUNTY	0	0			0	850	0	2	05/02/2012	
490120	WALES, TOWN OF	SANPETE COUNTY	0	0	01/29/2019	11/14/2006	0	300	1	1	05/02/2012	
490122	ANNABELLA, TOWN OF	SEVIER COUNTY	0	0	08/08/2018		0	800	3	0	12/18/2012	
490123	AURORA, CITY OF	SEVIER COUNTY	0	0	08/08/2018		0	990	10	1	01/12/1982	

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490125	ELSINORE, TOWN OF	SEVIER COUNTY	0	0	10/29/2019	02/27/2008	0	750	0	0	12/18/2012	
490126	GLENWOOD, TOWN OF	SEVIER COUNTY	0	0	08/08/2018		0	421	1	0	07/01/1986	
490127	JOSEPH, TOWN OF	SEVIER COUNTY	0	0		04/18/2011	0	212	9	0	12/18/2012	
490128	KOOSHAREM, TOWN OF	SEVIER COUNTY	0	0		04/19/2011	0	391	0	1	12/18/2012	
490129	MONROE CITY, CITY OF	SEVIER COUNTY	0	0	03/31/2020	04/19/2011	0	1,875	6	2	12/18/2012	
490130	REDMOND, TOWN OF	SEVIER COUNTY	0	0			0	800	0	0		
490131	RICHFIELD, CITY OF	SEVIER COUNTY	0	0	10/29/2019	02/26/2008	0	5,800	15	5	12/18/2012	
490132	SALINA, CITY OF	SEVIER COUNTY	0	0			0	2,400	2	2	09/29/1986	
490121	SEVIER COUNTY *	SEVIER COUNTY	0	0	06/03/2020	02/26/2008	0	20,000	13	4	12/18/2012	
490133	SIGURD, CITY OF	SEVIER COUNTY	0	0			0	450	0	0	01/01/1986	
490135	COALVILLE, CITY OF	SUMMIT COUNTY	0	0			0	1,567	12	9	03/16/2006	
490199	FRANCIS, TOWN OF	SUMMIT COUNTY	0	0			0	268	4	1	03/16/2006	
490136	HENEFER, TOWN OF	SUMMIT COUNTY	0	0	01/25/1993		0	625	6	3	03/16/2006	
490137	KAMAS, CITY OF	SUMMIT COUNTY	0	0	04/20/2020		0	1,500	12	1	03/16/2006	
490138	OAKLEY, CITY OF	SUMMIT COUNTY	0	0	04/23/2020		0	1,465	51	7	03/16/2006	
490134	SUMMIT COUNTY *	SUMMIT COUNTY	0	0	09/26/2019	06/13/2016	0	39,951	81	88	03/16/2006	
490141	GRANTSVILLE, CITY OF	TOOELE COUNTY	0	0	09/26/2019		0	8,000	0	0	11/18/2009	
490142	OPHIR, TOWN OF	TOOELE COUNTY	0	0			0	76	0	0	11/18/2009	
490215	RUSH VALLEY, TOWN OF	TOOELE COUNTY	0	0			0	541	2	0	11/18/2009	
490144	STOCKTON, TOWN OF	TOOELE COUNTY	0	0			0	600	1	1	11/18/2009	
490140	TOOELE COUNTY *	TOOELE COUNTY	0	0	09/30/2019	03/05/2019	0	55,626	1	21	11/18/2009	
490145	TOOELE, CITY OF	TOOELE COUNTY	0	0	10/29/2019	03/05/2019	0	25,000	19	8	11/18/2009	
490146	VERNON, TOWN OF	TOOELE COUNTY	0	0			0	200	0	0	11/18/2009	
490222	WENDOVER, TOWN OF	TOOELE COUNTY	3	0	10/30/2015	02/20/2013	0	781	3	5	11/18/2009	
490148	MAESER, CITY OF	UINTAH COUNTY	0	0			0	1,248	0	0		
490147	UINTAH COUNTY*	UINTAH COUNTY	0	0	09/30/2019	07/27/2016	0	35,000	54	37	10/06/2010	
490149	VERNAL, CITY OF	UINTAH COUNTY	0	0		07/27/2016	0	8,000	19	8	10/06/2010	
490228	ALPINE, CITY OF	UTAH COUNTY	0	3	06/25/2020	06/17/2014	3	9,500	45	13	06/19/2020	
490152	AMERICAN FORK, CITY OF	UTAH COUNTY	0	0	10/02/2019	04/10/2012	0	25,596	20	11	06/19/2020	
490153	CEDAR FORT, TOWN OF	UTAH COUNTY	0	0			0	380	0	1		
490154	GENOLA, TOWN OF	UTAH COUNTY	0	0	05/28/2020		0	1,250	0	0	06/19/2020	
490155	GOSHEN, TOWN OF	UTAH COUNTY	0	0			0	459	0	0	06/19/2020	
490254	HIGHLAND, CITY OF	UTAH COUNTY	0	0	05/13/2020	06/17/2014	0	12,277	9	6	06/19/2020	
490209	LEHI, CITY OF	UTAH COUNTY	0	0	07/22/2020	04/18/2017	0	30,000	36	56	06/19/2020	
490210	LINDON, CITY OF	UTAH COUNTY	0	0	05/28/2020		0	9,300	41	12	06/19/2020	
490156	MAPLETON, CITY OF	UTAH COUNTY	0	0	11/06/2019	01/27/2010	0	6,487	4	9	06/19/2020	
490216	OREM, CITY OF	UTAH COUNTY	0	0	06/05/2017	07/19/2016	0	93,233	5	31	06/19/2020	YES

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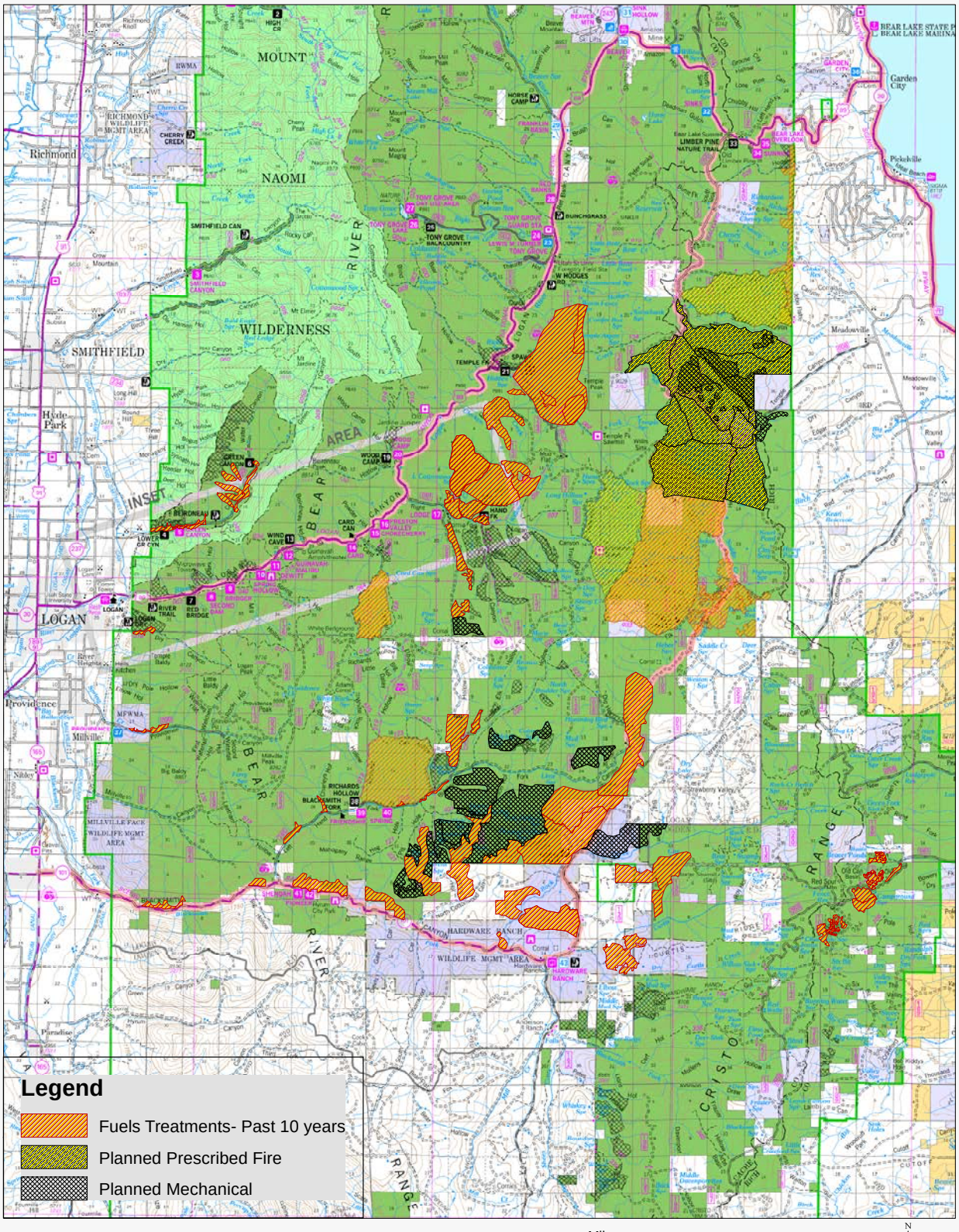
CID	Community Name	County	No Of Variances	No Of Rep Losses	CAC Date	CAV Date	No Of BCX Claims	Total Area Population	LOMCS	No Of Policies	FIRM Date	CRS
490157	PAYSON, CITY OF	UTAH COUNTY	0	0	09/25/2019	06/20/2017	0	17,088	14	26	06/19/2020	
490235	PLEASANT GROVE CITY, CITY OF	UTAH COUNTY	0	0	05/21/2020	10/11/2017	0	30,000	0	11	06/19/2020	
490159	PROVO, CITY OF	UTAH COUNTY	0	2	05/27/2020	04/01/2015	2	118,581	12	96	06/19/2020	YES
490160	SALEM, CITY OF	UTAH COUNTY	0	0	09/26/2019		0	4,500	5	0	06/19/2020	
490227	SANTAQUIN, CITY OF	UTAH COUNTY	0	0			0	8,326	0	0	06/19/2020	
490241	SPANISH FORK, CITY OF	UTAH COUNTY	0	0	05/21/2020	06/21/2017	0	32,000	6	3	06/19/2020	
490163	SPRINGVILLE, CITY OF	UTAH COUNTY	0	0	02/09/2018	04/19/2017	0	25,000	14	39	06/19/2020	
495517	UTAH COUNTY *	UTAH COUNTY	0	0	09/28/2018	03/21/2017	0	9,642	30	265	06/19/2020	
490247	BLUFFDALE, CITY OF	UTAH COUNTY,SALT LAKE COUNTY	0	0	09/25/2019	08/19/2014	0	9,000	6	10	06/19/2020	
490244	DRAPER, CITY OF	UTAH COUNTY,SALT LAKE COUNTY	0	0	06/23/2009	01/17/2017	0	38,000	57	52	06/19/2020	
490165	CHARLESTON, TOWN OF	WASATCH COUNTY	0	0	10/29/2019		0	420	2	9	03/15/2012	
490166	HEBER CITY,CITY OF	WASATCH COUNTY	0	0	09/25/2019	09/08/2011	0	10,500	20	11	03/15/2012	
490167	MIDWAY, CITY OF	WASATCH COUNTY	0	0	10/29/2019	01/23/2012	0	2,121	3	12	03/15/2012	
490168	WALLSBURG, TOWN OF	WASATCH COUNTY	0	0	03/23/2010		0	211	1	0	03/15/2012	
490164	WASATCH COUNTY *	WASATCH COUNTY	0	0	10/30/2019	07/26/2017	0	5,100	28	19	03/15/2012	
490139	PARK CITY, CITY OF	WASATCH COUNTY,SUMMIT	0	0	05/18/2016	06/18/2014	0	7,951	82	347	03/15/2012	
490169	ENTERPRISE, CITY OF	WASHINGTON COUNTY	0	0	07/15/2019	03/15/2011	0	1,600	10	4	04/02/2009	
490171	HILDALE, CITY OF	WASHINGTON COUNTY	0	0	07/15/2019	11/07/2015	0	2,921	2	9	04/02/2009	
490172	HURRICANE, CITY OF	WASHINGTON COUNTY	0	0	09/25/2019	03/07/2011	0	13,400	9	32	04/02/2009	
490173	IVINS, CITY OF	WASHINGTON COUNTY	0	0	07/15/2019	11/06/2015	0	8,200	11	44	04/02/2009	
490174	LAVERKIN, CITY OF	WASHINGTON COUNTY	0	0	10/31/2019	02/28/2009	0	5,100	5	1	04/02/2009	
490175	LEEDS, TOWN OF	WASHINGTON COUNTY	0	0		01/28/2009	0	864	2	5	04/02/2009	
490178	SANTA CLARA, CITY OF	WASHINGTON COUNTY	0	0	09/26/2019	07/17/2019	0	6,750	25	14	04/02/2009	YES
490179	SPRINGDALE, TOWN OF	WASHINGTON COUNTY	0	0	10/29/2019	11/06/2015	0	550	16	7	04/02/2009	
490177	ST. GEORGE, CITY OF	WASHINGTON COUNTY	0	0	07/23/2020	11/06/2015	0	83,745	114	197	04/02/2009	YES
490180	TOQUERVILLE, TOWN OF	WASHINGTON COUNTY	0	0	10/28/2019	03/08/2011	0	1,200	24	11	04/02/2009	
490181	VIRGIN, TOWN OF	WASHINGTON COUNTY	0	0	01/23/2019	02/22/2005	0	550	3	5	04/02/2009	
490224	WASHINGTON COUNTY *	WASHINGTON COUNTY	0	2	07/15/2019	07/18/2019	2	7,080	34	52	04/02/2009	
490182	WASHINGTON,CITY OF	WASHINGTON COUNTY	0	0	07/15/2019	08/03/2016	0	20,221	63	56	04/02/2009	
490184	BICKNELL, TOWN OF	WAYNE COUNTY	0	0			0	320	0	0		
490185	LOA, TOWN OF	WAYNE COUNTY	0	0			0	324	0	0	12/20/1974	
490186	TORREY, TOWN OF	WAYNE COUNTY	0	0			0	200	0	0		
490183	WAYNE COUNTY*	WAYNE COUNTY	0	0	10/02/2019		0	811	0	0		
490208	HARRISVILLE, CITY OF	WEBER COUNTY	0	0		08/28/2008	0	3,400	13	2	12/16/2005	
490188	HUNTSVILLE, TOWN OF	WEBER COUNTY	0	0	08/03/2016		0	553	3	0	06/02/2015	

Federal Emergency Management Agency
Repetitive Losses / BCX Claims
UTAH

CID	Community Name	County	No Of Variances	No Of Rep Losses	CAC Date	CAV Date	No Of BCX Claims	Total Area Population	LOMCS	No Of Policies	FIRM Date	CRS
490214	NORTH OGDEN, CITY OF	WEBER COUNTY	0	0	06/28/2018	12/27/2016	0	15,026	21	16	12/16/2005	YES
490189	OGDEN, CITY OF	WEBER COUNTY	0	2	12/14/2016	02/21/2017	0	79,171	73	64	06/02/2015	
490217	PLAIN CITY, CITY OF	WEBER COUNTY	0	0		08/26/2008	0	4,000	6	7	12/16/2005	
490218	PLEASANT VIEW, CITY OF	WEBER COUNTY	0	0			0	7,650	1	9	12/16/2005	
490190	RIVERDALE, CITY OF	WEBER COUNTY	0	0	10/02/2019	03/24/2016	0	8,000	23	31	06/02/2015	
490223	ROY, CITY OF	WEBER COUNTY	0	0	10/29/2019	02/27/2017	0	38,000	13	6	06/02/2015	
490191	SOUTH OGDEN, CITY OF	WEBER COUNTY	0	0		02/22/2017	0	15,000	5	9	06/02/2015	
490192	UINTAH, CITY OF	WEBER COUNTY	0	0	06/04/2020	04/05/2013	0	1,400	1	6	06/02/2015	
490221	WASHINGTON TERRACE, CITY OF	WEBER COUNTY	0	0			0	8,500	1	2	06/02/2015	
490187	WEBER COUNTY *	WEBER COUNTY	0	2	09/22/2016	02/28/2017	0	15,000	87	45	06/02/2015	YES

State Total : 230

APPENDIX I - USFS Wildfire Fuels Reduction Map



Previous and Current Fuels Treatments

Logan Ranger District

Uinta Wasatch Cache National Forest

Map Created January 8, 2020
by Milena Rockwood

APPENDIX J – 2019 Utah Hazard Mitigation Plan

Natural Hazard Definitions Used in the 2020 BRR PDMP

Please visit **hazards.utah.gov** for more information

APPENDIX K – Community Risk Assessment Survey

PRE-DISASTER MITIGATION - RISK ASSESSMENT SURVEY

Page 1

PLEASE COMPLETE AND RETURN TO BRAG BY

(Mail: 170 N. Main, Logan UT 84321, Email: zacc@brag.utah.gov, or FAX: (435) 752-6962 - Attention: Zac Covington)

Jurisdiction Name:_____ Completed by:_____
Address:_____ Phone:_____ Email:_____

1. Does your community participate in the National Flood Insurance Program (NFIP)?

   Yes_____ No_____ Don't Know_____

2. Have there been Natural Hazard events in your community since August of 2015? If so, please describe the event(s), the severity of the event(s) (damage or intensity), and the date, if known:

3. Do you have any maps, documents, or plans related to natural hazards for your community? Please describe:

4. Please list any "critical facilities" that exist in your city/town. These critical facilities could include hospitals, schools, fire stations, water treatment plants, or other facilities that help to protect citizens.

5. Please describe any other assets (parks, historic or other buildings, natural areas, etc.) in your community that you would like to protect from natural hazard events:

Page 2

6. Does your city/town currently have zoning, ordinances or other tools to address natural hazards and/or regulate construction in potentially hazardous areas?

   Yes_____ No_____ Don't Know_____

   If yes, please list:

7. Please circle all the hazards below that affect your community and/or you would like to have analysis completed on for this natural hazard planning process.

- **Air Quality**
- **Agricultural**
- **Avalanche**
- **Climate Change**
- **Dam Failure**
- **Drought**
- **Earthquake**
- **Erosion**
- **Flood**
- **Hail**
- **Landslide**
- **Problem Soils and Rock**
- **Radon**
- **Severe Weather**
- **Subsidence**
- **Tornado**
- **Seiche**
- **Volcanic**
- **Wildfire**
- **Others:**_____

_____

- Portage
- Providence
- Bear River City
- Millville
- Richmond
- Trenton
- Brigham City
- Logan
- North Logan
- Clarkston
- Newton
- Perry
- Tremonton
- Rich County
- Lewiston
- Box Elder County
- Garden City
- Howell Town

*For more information, see the summary data located in Appendix K on the online plan, or contact BRAG staff at 435-752-7242.

APPENDIX L - Community Technical Capabilities

LOCAL LEVEL HAZARD MITIGATION CAPABILITY - BEAR RIVER REGION		
Jurisdiction	Professional Staffing (e.g. Emergency Manager, City Manager, Engineer, Planner)	Technical Capacity (In House GIS)
BOX ELDER COUNTY	County Emergency Management Coordinator, County Planners, Public Works, Building Inspector	GIS capability and staffing
Bear River City	Volunteer\contracted consultant	None
Brigham City	Full time EM, CED Director, Planners, Public Works	GIS capability and staffing
Corinne City	Part-time City Manager	None
Deweyville Town	Volunteer\contracted consultant	None
Elwood Town	Volunteer\contracted consultant	None
Fielding Town	Volunteer\contracted consultant	None
Garland City	Part-time Emergency Manager	None
Honeyville City	Volunteer\contracted consultant	None
Howell Town	Volunteer\contracted consultant	None
Mantua Town	Volunteer\contracted consultant	None
Perry City	Full-time City Manager/Planner	None
Plymouth Town	Volunteer\contracted consultant	None
Portage Town	Volunteer\contracted consultant	None
Snowville Town	Volunteer\contracted consultant	None
Tremonton City	City Manager, City Engineer, part-time Emergency Preparedness Coordinator	CAD capability
Willard City	City Manager and Planner	None
CACHE COUNTY	County Emergency Manager, County CED Director, Planners, Public Works, Building Inspector	GIS capability and staffing
Amalga Town	Volunteer\contracted consultant	None
Clarkston Town	Volunteer\contracted consultant	None
Cornish Town	Volunteer\contracted consultant	None
Hyde Park City	Volunteer Emergency Manager, Public Works	Some GIS capability
Hyrum City	Zoning Administrator\City Manager, City Engineer, Emergency Manager	Some GIS capability
Lewiston City	Clerk/Planner, Volunteer\contracted consultant	None
Logan City	Emergency Manager, CED Director, Planners, City Engineers, & Public Works	GIS capability and staffing
Mendon City	Public Works, Volunteer\contracted consultant	None
Millville City	Public Works, Volunteer Development Coordinator	None
Newton Town	Volunteer\contracted consultant	None
Nibley City	City Manager, Planner, and Public Works	Some GIS capability
North Logan City	City Manager, Planner, Engineer, and Public Works	GIS capability and staffing
Paradise Town	Volunteer\contracted consultant	None
Providence City	City Administrator and Public Works	Some GIS capability
Richmond City	City Manager and Public Works	None
River Heights City	Public Works, Volunteer\contracted consultant	None
Smithfield City	City Manager, Zoning Admin., and Public Works	Some GIS capability
Trenton Town	Volunteer\contracted consultant	None
Wellsville City	City Manager, Volunteer/contracted consultant	None
RICH COUNTY	Countywide Planner (Bear Lake Regional Commission), Part-time Emergency Manager, Building Inspector	GIS capability
Garden City	Public Works, Building Official, Volunteer\contracted consultant	None
Laketown	Volunteer\contracted consultant	None
Randolph City	Volunteer\contracted consultant	None
Woodruff Town	Volunteer\contracted consultant	None

APPENDIX M – Signed Community Adoption Resolutions

Coming Soon!

HYRUM CITY
Power & Light
Impact Fee Analysis

November 2020

Prepared by: Active Power Engineering, LLC

Michael R. Anderson, P.E.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

General:

This report documents the study performed by Active Power Engineering, LLC, for Hyrum City Power & Light to update the Hyrum City Electric Power Impact Fee Analysis.

The Utah impact fee statute Title 11 Chapter 36a "Impact Fee Act" requires the city imposing impact fees to (1) prepare an Impact Fee Facilities Plan, (2) perform an Impact Fee Analysis, (3) calculate the Impact Fee(s), and (4) certify the Impact Fee Facilities Plan and Impact Fee Analysis.

This report includes an Impact Fee Facilities Plan, Impact Fee Analysis, calculated Impact Fees and certification of the Impact Fee Facilities Plan and Impact Fee Analysis.

This report provides the background, requirements, basis, projects and analysis for new customer impact fees that must be collected for new electric service to be connected. The impact fee applies to new services and upgraded services. The 10-year period 2021 to 2030 was used in this impact fee analysis.

Impact Fee Facilities Plan (IFFP):

According to the Statute, the "Impact Fee Facilities Plan ("IFFP") shall identify (a) demands placed upon existing public facilities by new development activity; and (b) the proposed means by which the political subdivision will meet those demands."

The projected demand placed upon the Hyrum City electric power system is directly tied to the forecasted population growth. Historic growth in population has averaged about 3.5%. Power demand growth rate has averaged about 5% and is projected continue to be between 3% to 4.6% per year going forward. Hyrum City power system load was 13.0 MVA in 2020 (21.6 MVA including JBS Meat Packing Plant). Hyrum City load is forecast to add 7.6 MVA of new development load between 2021 and 2030, totaling 20.6 MVA in 2030.

To serve the projected demand new power facilities are required. The IFFP includes a new substation (Dairy) with a 25 MVA transformer, an upgraded substation transformer adding 5 MVA capacity, an upgraded 46 kV transmission line to feed the new transformer capacity, and two new distribution feeders to utilize the new capacity. The total estimated cost of these projects is about $6,070,500. The projects add 30 MVA of system capacity.

Impact Fee Analysis (IFA):

The Impact Fee Analysis ("IFA") portion of the Statute states that (1) "each local political subdivision or private entity intending to impose an impact fee shall prepare a written analysis of each impact fee:" and (2) "shall also prepare a summary of the impact fee analysis designed to be understood by a lay person."

Electric impact fees in Hyrum City are calculated using incremental costs. This method determines what new developments pay for improvements or a portion of the improvements needed to serve them. This is a "capacity-based" fee structure. In this way existing customers are not burdened by the new growth.

The Impact Fee Analysis involves three basic steps or sub-analyses: (1) determining an Impact Fee rate that applies a cost per each kVA of new power demand from development ; (2) determining the kVA power demand for the typical customer types and service levels; and (3) calculating the proposed Impact Fee.

The Impact Fee rate was calculated by dividing the IFFP total project cost (adjusted for construction cost escalation, and interest earned on collected impact fees) by the added system capacity. The Impact Fee rate has been calculated to be $240.39/kVA.

The kVA power demand for residential customers was calculated from the typical kW demand experienced by Hyrum City on 200-amp and 400-amp services and the typical power factor. The kVA power demand for commercial customers was calculated using the service panel size, type (i.e., single phase or three phase), voltage, power factor and the panel utilization factor typical for commercial customers.

Several sample recommended Impact Fees calculated using the Impact Fee rate and power demand calculated above are shown below.

Residential Service Level	**Typical Power Demand (kW Impact)**	**Power Factor**	**Est. kVA Impact**	**Recommended Impact Fee**
200 Amp	5	95.0%	5.3	$1,265
400 Amp	10	95.0%	10.5	$2,530
Type of Commercial Service	**Typical Power Demand (kW Impact)**	**Power Factor**	**Est. kVA Impact**	**Recommended Impact Fee**
Single Phase 120/240 V 200 Amp Panel	17.3	90.0%	19.2	$4,615
Three Phase 120/208 V 200 Amp Panel	25.9	90.0%	28.8	$6,928
Three Phase 277/480 V 200 Amp Panel	59.9	90.0%	66.5	$15,989

Conclusions: The analysis documented in this report satisfies the Impact Fee Act requirements. The Electric Power Impact Fee can be implemented upon Hyrum city council approval and completion of the other appropriate steps outlined in the Impact Fee Act.

1 IMPACT FEE STUDY--GENERAL

1.1 INTRODUCTION

The purpose of this study is to update the Hyrum City Electric Power Impact Fee Analysis. This will help the city determine an impact fee for new electrical customers. This document provides the background, requirements, basis, projects and analysis for new customer impact fees that must be collected for new electric service to be connected. The impact fee applies to new services and upgraded services.

This analysis was performed using publicly available information, information supplied by Hyrum City, and spreadsheets developed for conducting this analysis. Certain assumptions about areas of development, growth rates, and needed projects were used in the analysis in arriving at the recommended impact fee. These assumptions are believed to be appropriate and reasonable for the impact fee analysis. The 10-year period 2021 to 2030 was considered in this impact fee analysis.

This analysis complies with all the requirements of the Utah "Impact Fees Act", Utah Statute U.C.A 11-36a.

The Electric Power Impact Fee can be implemented upon Hyrum city council approval and completing the other appropriate steps outlined in the Impact Fees Act .

1.2 IMPACT FEE STATUTE REQUIREMENTS

The Utah impact fee statute requires the city imposing impact fees to (1) prepare an Impact Fee Facilities Plan, (2) perform an Impact Fee Analysis, (3) calculate the Impact Fee(s), and (4) certify the Impact Fee Facilities Plan and Impact Fee Analysis. This report documents the completion of all four of these requirements.

According to the statute, the "Impact Fee Facilities Plan ("IFFP") shall identify (a) demands placed upon existing public facilities by new development activity; and (b) the proposed means by which the political subdivision will meet those demands."

The Impact Fee Analysis ("IFA") portion of the Statute states that (1) "each local political subdivision or private entity intending to impose an impact fee shall prepare a written analysis of each impact fee:" and (2) "shall also prepare a summary of the impact fee analysis designed to be understood by a lay person." The requirements of the IFA include identifying the estimated impacts on existing capacity and system improvements caused by the anticipated development activity. The political subdivision must also estimate the proportionate share of:

(i) the costs of existing capacity that will be recouped and (ii) the costs of the impacts on system improvements that are reasonably related to the new development activity.

The calculation of the Impact Fee may include the following:

(a) The construction contract price;

(b) The cost of acquiring land, improvements, materials, and fixtures;

(c) The cost for planning, surveying, and engineering fees for services provided for and directly related to the construction of the system improvements; and

(d) For a political subdivision, debt service charges, if the political subdivision might use impact fees as a revenue stream to pay the principal and interest on bonds, notes or other obligations issued to finance the costs of the system improvements.

Also, the calculation of the Impact Fee must be based on realistic estimates and the assumptions underlying such estimates must be disclosed in the impact fee analysis.

2 IMPACT FEE FACILITIES PLAN (IFFP) FOR HYRUM CITY POWER SYSTEM

2.1 GENERAL

Hyrum City Power & Light, is a municipal electric utility serving approximately 3,220 customers in Hyrum, Cache County, Utah. The system coincident peak demand including the demand of the JBS Meat Packing Plant was 21.6 megawatts (MW) in summer 2020. The utility's service area is about 6 square miles including all of Hyrum City limits and a small additional area of Cache County. Hyrum City owns and operates one hydroelectric generator that is rated 350 kilowatts (kW). The power system consists of one 46-kilovolt (kV) delivery substation and three 46/12.47 kV distribution substations: 800 East, Hammer, and Center Street substations. A map of the city and power system is shown in Figure 1.

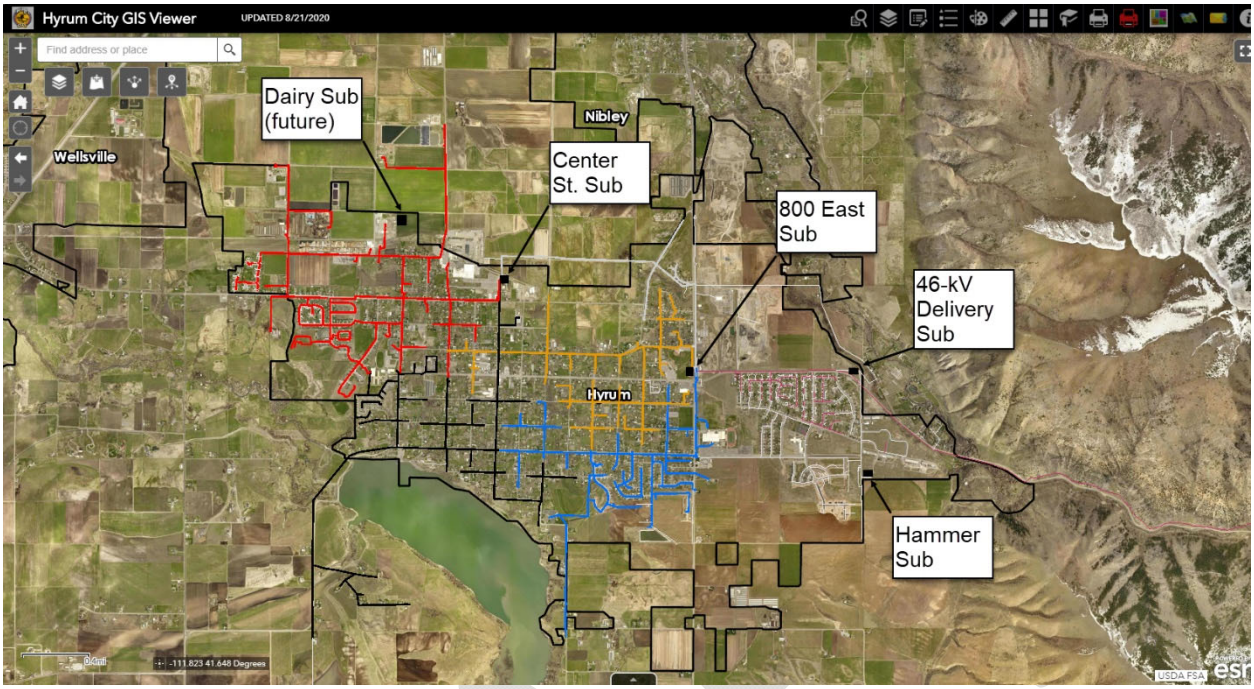


Figure 1-Hyrum City Power System Map

Hyrum City is a member of the Utah Associated Municipal Power Systems (UAMPS) organization. UAMPS is a member organization that provides wholesale electric-energy, transmission, and other energy services, on a nonprofit basis, to municipal-owned power systems. Hyrum City is able to participate along with other municipalities in projects including wind, natural gas, hydroelectric and coal-fired generation.

2.2 POPULATION AND GROWTH

The population of Hyrum City in 2019 was estimated by the Utah Governor's Office to be 8,619. The estimated population provided by Hyrum City for 2020 is 9,000. Population growth rate averaged over 2016-2020 is 2.5% to 3.5%, and the most recent year growth was about 4.5%.

2.2.1 POPULATION FORECAST

The population growth rate of 3.5% was applied over the 10-year period, 2021 to 2030, in this impact fee analysis. The estimated historic and projected future population of Hyrum City is shown in Figure 2.

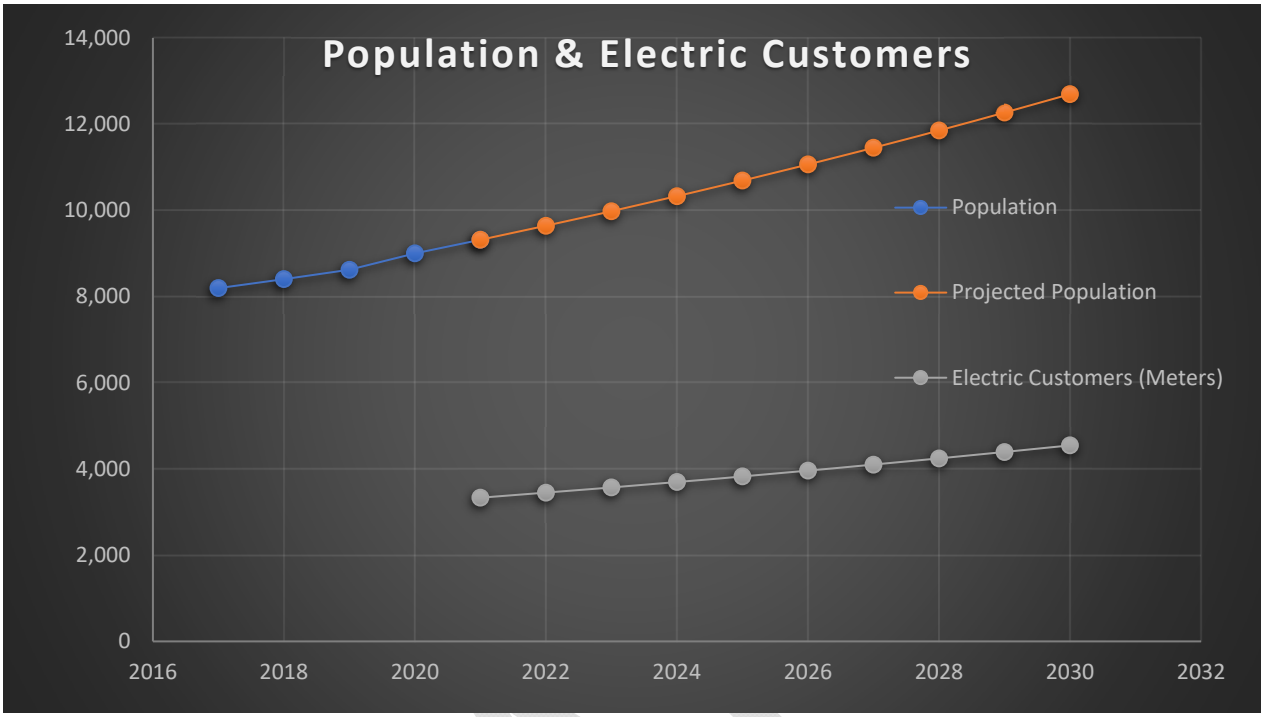


Figure 2 – Hyrum Population and Electric Customers

2.2.2 ELECTRIC CUSTOMERS

Hyrum City has about 3,220 electric meters installed as of 2020. Each meter is considered a customer, so the ratio of customers to population is 3,220:9,000 or 1 meter per 2.8 people. An estimated projection on the new of new meters or customers can be made from the population projection and the meters per population ratio. The projected number of total electric customers, or meters, is shown in Figure 2.

2.2.3 CUSTOMER FORECAST

The estimate for new meters is an average of 132 per year, some years might be less and some years might be more. Based on 2020 data, 94% of the meters are for residential customers, 4% of the meters are for commercial customers, and 2% of the meters are net meters or other type of meters. Going forward it is assumed that 94% of new meters will be for residential customers.

2.2.4 GROWTH AREAS

The areas of the city that are expected to see new growth are shown in Figure 3. The areas are identified as either residential or industrial based on the current zoning.

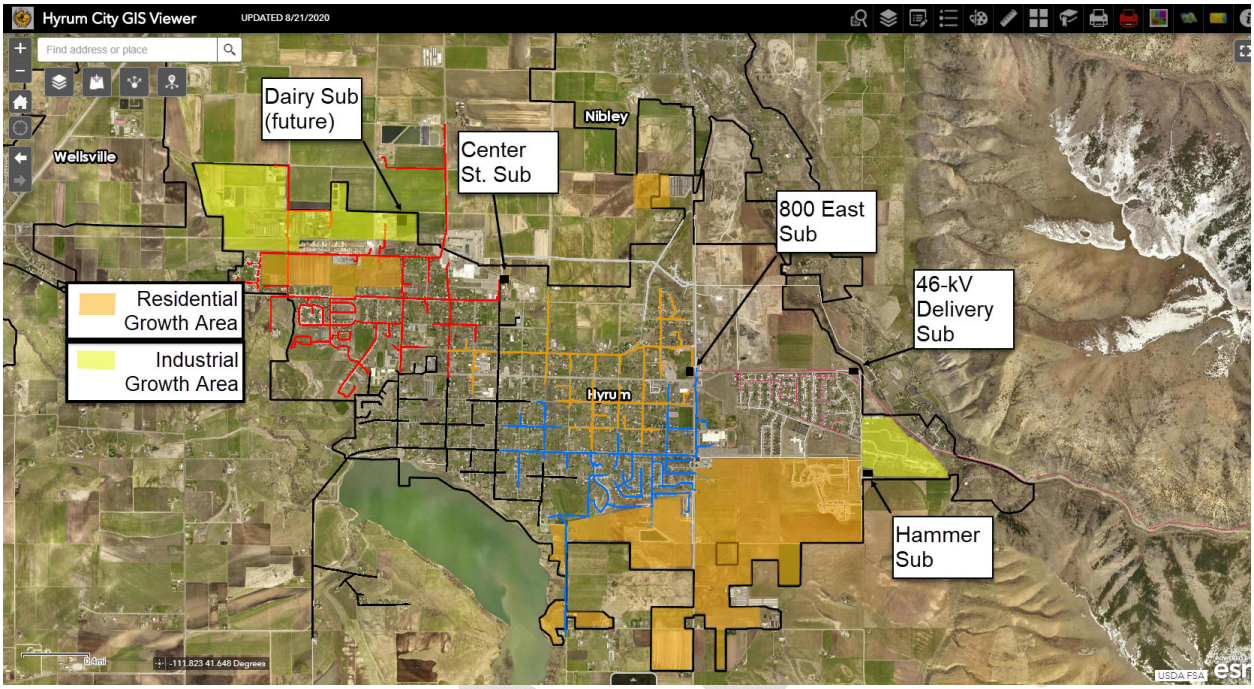


Figure 3-Growth Area Projection Map

2.3 EXISTING INFRASTRUCTURE CAPACITIES

2.3.1 TRANSMISSION SYSTEM AND SUBSTATIONS

Electric power is supplied to Hyrum City on a 46 kV transmission line owned and maintained by Rocky Mountain Power to one 46 kV breaker in the delivery substation. The city owns about 3.5 miles of 46 kV transmission line that feed four substations. An extension of the 46 kV transmission line will feed one future substation west of Center Street substation (the Dairy substation).

The 46 kV transmission system that is owned and operated by Hyrum City Power& Light has two branches. One branch goes to Hammer substation and another—the main branch—serves the substations at 800 East, Center Street, JBS[1] and will extend to feed the future Dairy substation. This main branch transmission line capacity is 23 MVA based on the 3/0 ACSR conductor rating (25 MVA short-term).

The substations and their associated transformers are listed in Table 1.

[1] JBS is a customer owned substation serving only the JBS plant. It is not counted as a Hyrum City Power distribution substation.

Table 1-Substation Transformers

Substation	Transformer Manufacturer	Transformer Rating (MVA)
800 East	Westinghouse	5
Center Street	Westinghouse	5
Hammer	ABB	10
Total Existing Transformer Rated Capacity		20
Dairy (Planned Future)	To be determined	10 (planned) 25 (ultimate)

2.3.2 DISTRIBUTION SYSTEM

From the three distribution substations there are nine 12.47/7.2 kV distribution feeders. These nine distribution feeders leaving the substations are generally constructed with 4/0 aluminum ACSR overhead conductor or 1100 MCM aluminum (Al) underground cable. The feeders built with 1100 MCM Al underground cable are classified as 600-amp circuits based on the limiting ratings of the other equipment in the system (e.g., reclosers, switchgear, elbows, bushings, connectors, etc.) The feeders built with 4/0 Al ACSR overhead conductor are rated at 340 amps and operated normally limited to 200 amps.

2.4 CURRENT LEVEL OF SERVICE

The current level of service is the system loading design criteria that Hyrum City Power & Light has historically used in designing, operating, and expanding the power system. The criteria followed is to limit loading to the base rating on substation transformers and to 80 percent of the rated capacity on main line feeder conductors. This ensures that there is sufficient reserve capacity built into the system to maintain service during the loss of a substation transformer or feeder while in the peak load season.

The system voltage design criteria of Hyrum City Power & Light are to maintain voltage within a range of +/- 5% nominal voltage in normal operation, and within a range of -10% to +5% during short-term emergency operation. Table 2 lists these loading and voltage design criteria.

Table 2-System Design Criteria

Element	Normal System	During Short-term Emergency ("N-1" Contingency)
Substation transformer loading	5 MVA on 800 East Sub 5 MVA on Center St. Sub 10 MVA on Hammer Sub	6.25 MVA on 800 East Sub 6.25 MVA on Center St. Sub 12.5 MVA on Hammer Sub (Transformer "Emergency" rating is 125% of its base rating)
Main line feeder loading	80% of conductor rating	100% of conductor rating
Main tie or main branch line loading	80% of conductor rating	100% of conductor rating
Voltage	+/- 5%	+ 5% to -10%

2.5 DEMANDS ON CURRENT SYSTEM

The peak load demand on the current system in 2020 was 21.66 MVA. This includes the load of the JBS plant. The Hyrum City distribution load not including the JBS plant was 12.34 MVA. See Table 3 for the details on the 2020 power demand.

Table 3 - Hyrum 2020 Peak Power Demand

July 2020 Peak Demand	MW	Power Factor	MVA	% of Total
Hyrum UAMPS Meter Total	19.912	0.9199	21.646	100%
JBS Meat Packing Plant UAMPS Meter	7.575	0.8778	8.630	39.9%
Hyrum City (without JBS)	12.337	0.9478	13.016	60.1%

Load on the main branch of the Hyrum owned and operated 46 kV transmission line in 2020 is estimated to have been 17.6 MVA (includes JBS load).

2.6 DEMANDS WITH GROWTH (LOAD GROWTH FORECAST)

Historic power demand growth rate has averaged about 5% from 2016 to 2020. Power demand growth correlates with and is tied to the population growth rate. The forecast peak load demand on the system from 2021-2030 is shown in Figure 4. The orange line Includes Hyrum City distribution load with the JBS plant load with a 3% growth rate per year applied. The blue line shows the Hyrum City distribution load only, with a 4.6% growth rate per year applied to it. The Hyrum City distribution peak load demand in 2030 is projected to be 20.6 MVA.

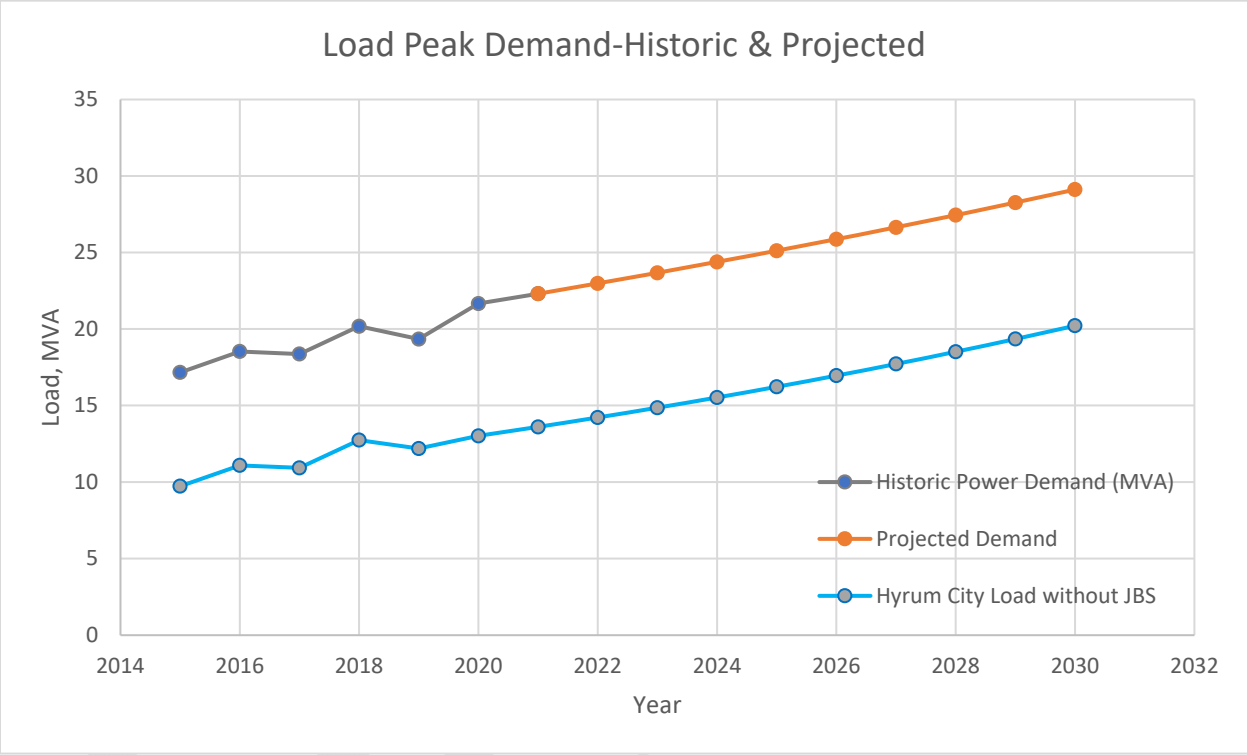


Figure 4- Power Demand

2.7 SPATIAL LOAD FORECAST

In order to plan the capital expansion of the Hyrum City power system, a spatial load forecast was performed. Spatial load forecast was performed using the growth areas provided in Figure 3 to obtain a prediction of future electric demand in those specific areas. The Figure 3 map of Hyrum City shows where and what types of future development is anticipated. From this information the 2021-2030 spatial load forecast was developed showing the projected power demand at build-out of these areas. The total Hyrum City power demand projected at build-out is approximately 20.6 MVA[2] as shown in Table 4.

[2] Does not include JBS substation/plant load

Table 4-Spatial Load Forecast

Hyrum City Zoning Category	Approx. Total Acres	Factor of Usable Acreage (Accounts for roads, parks, open space, etc.)	Number of Units per Acre	Demand per Customer (kW)	Spatial Forecast Demand (kW)
R-2 (Residential Multi Family)	725	0.4	4	5	5,800
M-2 (Manufacturing-Med. To Heavy)	250	0.625	0.36 (2.75 acres per unit)	25	1,400
Totals	975				7,200

Future Load (kW) (kVA @ 0.95 P.F.)	7,200 kW 7,579 kVA	From above Spatial Forecast
Hyrum City 2020 Peak Load (kVA)	13,016 kVA	(Without JBS)
Total (kVA)	20,595 kVA	Projected for 2030

2.8 PROJECTS FOR IFFP—REQUIRED CAPACITY ADDITIONS

The projects below are included in the IFFP to meet the demand of future growth. They are also listed with the project's probable costs in Table 5.

2.8.1 46 kV TRANSMISSION PROJECT

When the Dairy substation is built (10 MVA capacity initially) it will have about 5 MVA of new load on it. The Dairy substation and its load will be served by the main transmission branch. The year that the Dairy substation load is added the main branch transmission line is projected to be loaded over its normal rating.

Even if the Dairy substation load is not added, in the "N-1" contingency loss of Hammer substation the entire Hyrum load is on the transmission line. The projected load in 2022 that the main branch transmission line would carry in this "N-1" is 23.1 MVA which exceeds the 23 MVA normal rating.

When the new Dairy substation is built and loaded, but no later than 2022, the 46 kV transmission line to the substations at 800 East, Center Street, and JBS substations and the new Dairy substation needs to be rebuilt with conductor that adds at least 9 MVA additional capacity--such as 397.5 ACSR conductor (rated 44 MVA) or greater.

2.8.2 SUBSTATION TRANSFORMERS

Hyrum City substation transformer total existing base capacity is 20 MVA which is sufficient for 2021 projected load of about 13.6 MVA. However, the 2020 load on Center Street substation appears to be about 5.7 MVA which is over its base rating capacity of 5 MVA. Load transfer could be used to address this existing loading issue. This is an existing system issue the resolution of which is not included as an IFFP project.

Prior to building Dairy Sub the worst-case emergency ("N-1") contingency is the loss of the Hammer sub transformer (10 MVA capacity). In this "N-1" contingency there is emergency capacity of 12.5 MVA on the two remaining subs which is not enough capacity for the 13.6 MVA projected load in 2021. As development driven load continues to increase beyond this, another substation transformer or upgraded substation transformer is needed to serve the load. Either adding the Dairy substation or upgrading the Center St. substation transformer could fix this deficiency. The resolution of this issue is included in IFFP projects.

When the Dairy substation is built (10 MVA capacity initially) then the worst case emergency ("N-1") contingency would be the loss of the Dairy substation transformer (10 or 25 MVA)—there is emergency capacity of 25 MVA on the three remaining substations, which is enough capacity for the projected load until 2029. Another substation transformer or upgraded substation transformer is needed in 2029 to meet and serve the projected 2029 load under the worst-case emergency ("N-1") contingency. The resolution of this issue is included as an IFFP project.

2.8.3 DISTRIBUTION SYSTEM

In order to serve the projected new load one feeder with at least 360 amp capacity (477 ACSR overhead or 1100 MCM aluminum (Al) underground needs to be built, and another feeder of the same size is needed to back it up in the "N-1" contingency situation. Since the forecasted load is projected to be connected in two separate geographical areas, the southeast and northwest areas of the city, new feeders will be need in each area.

A total of two new feeders are considered necessary to maintain the level of service to Hyrum City Power & Light customers. One new feeder would be built into the northwest area and one new feeder would be built into the southeast area. This would likely satisfy the capacity requirements of new load in these areas. The new feeder built in the southeast area would likely be built from the Hammer substation into the areas that are being developed. The new Dairy substation or existing Center Street substation would be the source for the new feeder that would be built into the northwest area where it would be developed.

2.9 COST OF IFFP PROJECTS REQUIRED

The opinion of the probable costs of the capacity additions required and discussed in Section 2.8 are show in Table 5 and discussed in this section. Costs shown are 2020-dollar probable costs.

Table 5-IFFP Projects

Project	Added Capacity	Year	Opinion of Probable Cost
Build Dairy Substation	25 MVA (10 MVA initially, 25 MVA ultimate)	2021	$3,000,000
Center St. Substation Transformer Upgrade	5 MVA (10 MVA transformer replaces 5 MVA)	2021-2029	$800,000
Two New Feeders	15 MVA	2021-2026 (dependent on growth)	$575,000
46 kV Transmission Upgrade	21 MVA (44 MVA line replaces 23 MVA line)	2022 (or earlier when Dairy Sub is added)	$1,695,500
Capacity Added[3] (MVA)	**30 MVA**	**TOTAL Cost**	**$6,070,500**

2.9.1 SUBSTATION TRANSFORMER COST

The probable cost of the Dairy substation with a 25 MVA transformer is likely about $3,000.000. A transformer upgrade at Center St. substation to a 10 MVA transformer is an option in 2021, or required in 2029, and is likely about $800,000. These substation transformers are what are counted in the "Capacity Added" total in Table 5 since they represent the increase of the capacity of the system. The transmission upgrade and two new feeders are means to feed and utilize, respectively, the new transformer capacity.

2.9.2 FEEDER COST

Standard feeders are underground 1100 MCM aluminum (Al) feeders with a feeder breaker at the substation. The opinion of cost of a feeder is approximately $50,000 for the feeder breaker and $287,500 for an underground feeder that extends approximately one mile from the

[3] The 46 kV transmission upgrade is required for the capacity of the Dairy substation so it is not included in the total of the capacity added. Also, the two new feeders do not increase the system capacity but are needed to utilize it, so they are not included in the total of the capacity added.

substation. One feeder from Hammer substation and one feeder from the Dairy substation are included in Table 5.

2.9.3 46 KV TRANSMISSION COST

The cost of the 46 kV transmission upgrade is based on 46 kV transmission line costing about $500,000 per mile. The length of the 46 kV transmission line to be built--upgraded to higher capacity--is 3.39 miles. The opinion of probable cost on this project is $1,695,500.

2.10 CERTIFICATION OF THE IFFP

I certify that the attached Impact Fee Facilities Plan:

1. includes only the costs of public facilities that are:
    a. allowed under the Impact Fees Act; and
    b. actually incurred; or
    c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
    a. costs of operation and maintenance of public facilities;
    b. costs for qualifying public facilities that will raise the level of service for facilities, through impact fees, above the level of service that is supported by existing residents;
    c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement;
3. complies in each and every relevant respect with the Impact Fees Act.

CERTIFIED BY:

Signature: _____

Name: _____

Title: _____

Date: _____

3 IMPACT FEE ANALYSIS (IFA)

3.1 GENERAL

Impact fees are one-time charges imposed on new development activity as a condition of development approval to mitigate the costs associated with necessary capital improvements to the public infrastructure, in this case the electric system. Utah has put in place Title 11, Chapter 36a (the "Impact Fee Act"). The "Impact Fee Act" imposes requirements regulating impact fees which apply to municipally owned electric utilities.

To implement impact fees as defined by the Impact Fee Act, "local political subdivisions" must conduct an analysis with the following elements:

Identification of the impact on or consumption of any existing capacity of a public facility by the anticipated development activity;

Identification of the anticipated impact on system improvements required by the anticipated development activity to maintain the established level of service;

Demonstration of how those impacts on system improvements are reasonably related to the development activity;

Estimation of the proportionate share of the costs for existing capacity that will be recouped and the costs of impacts on system improvements; and

Explanation of how the impact fee was calculated.

Electric impact fees in Hyrum City are calculated using incremental costs, which is one of several methods for calculating impact fees. This method determines what new developments pay for improvements or a portion of the improvements needed to serve them. This is a "capacity-based" fee structure. In this way existing customers are not burdened by the new growth.

This Impact Fee Analysis involves three basic steps or sub-analyses: (1) determining an Impact Fee rate that applies a cost per each kVA of new power demand from development; (2) determining the kVA power demand for the typical customer types and service levels; and (3) calculating the proposed Impact Fee

3.1.1 IMPACT FEE RATE CALCULATION

As in shown Table 5 the total cost of new development-related projects in the IFFP is $6,070,500. The Impact Fee rate analysis is shown in Table 6.

As shown in Table 6 the estimated cost/kVA of new system capacity, including transmission and substation capacity, and distribution feeders, is $202.35/kVA at present day pricing and

$252.71/ kVA for projected 2029 pricing[4], assuming no interest is earned on the collected fees. However, if the current rate of 0.5% interest earnings[5] on invested funds can be maintained, the impact fee rate can be reduced to $240.39/kVA.

Table 6-Impact Fee Rate Calculation

Row Item	Value	Notes
(1) Total Cost of IFFP Projects	$6,070,500	2020-dollar costs of new development-related projects shown in Table 5
(2) Added kVA	30,000 kVA	25,000 kVA New Dairy Sub + 5,000 kVA transformer upgrade at Center St. Sub
(3) Cost per kVA	$202.35 per kVA	$(Row\ 1) \div (Row\ 2) = \frac{\$}{kVA}$
(4) 2029 Escalated Total Cost of Projects	$7,581,223	Assumed construction cost escalation rate of 2.5% per year. $(Row\ 1)x(1.025)^9$
(5) 2029 Escalated Cost per kVA	$252.71 per kVA	$(Row\ 4) \div (Row\ 2) = \frac{\$}{kVA}$
(6) Present Value of 2029 Escalated Total Cost of Projects	$7,211,707	Assumed interest earnings rate of 0.5% per year compounded quarterly, Impact fees collected evenly over 10 years
(7) Cost per kVA considering earned interest	$240.39	$(Row\ 6) \div (Row\ 2) = \frac{\$}{kVA}$
Impact Fee Rate	**$240.39**	

Hyrum City states that there is no cost of debt service since there are no bonds for electrical capital projects, and there are no offsets to project costs with grants or other alternate sources of payment. Therefore, the impact fees recommended for Hyrum City will be based on the rate of $240.39 per kVA of power demand added to the system.

[4] Calculated based on assumed construction cost escalation rate of 2.5%

[5] The 0.5% rate of return is the present rate of return available to the City for these funds.

3.1.2 POWER DEMAND AND IMPACT FEE CALCULATION

The methods used to determine the estimated power demand--kW impact--on the power system of residential customers and commercial customers are different as shown in the following sections. The power demand calculations shown in sections 3.1.2.1 and 3.1.2.3 are used in calculating the Impact Fee in sections 3.1.2.2 and 3.1.2.4. A summary of recommended Impact Fee charges for the Residential and Commercial customer classes is provided in Table 7 and in Table 8.

3.1.2.1 RESIDENTIAL POWER DEMAND

The estimated power demand--kW impact--of residential customers is based on typical usage rather than on electric panel size. There are two residential service levels recognized by Hyrum City Power & Light—200-amp service and 400-amp service. Typical historic power demand seen in the experience of Hyrum City Power & Light has been about 5 kW on average for a 200-amp residential service and about 10 kW on average on a 400-amp residential service. Power factor on residential services is typically about 95%.

3.1.2.2 RESIDENTIAL IMPACT FEE CALCULATION

Recommended residential Impact Fee is calculated based on Equation 1:

Equation 1

Single Phase Residential Calculation

$$\frac{Typical\ Residential\ Demand\ (kW)}{Power\ Factor} \times Impact\ Fee\ Rate(\$/kVA) = Incurred\ Fee$$

Example 200A 120/240V Single Phase Residential Service

$$For\ 200A\ Residential\ Service\text{:}\ \frac{5kW}{0.95} \times \$240.39/kVA = \$1{,}265$$

Table 7 shows the recommended Impact Fee charge for the two residential service levels.

Table 7. RESIDENTIAL IMPACT FEES

Residential Service Level	Typical Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
200 Amp	5	95.0%	5.3	$1,265
400 Amp	10	95.0%	10.5	$2,530

3.1.2.3 COMMERCIAL POWER DEMAND

Commercial customers should be assessed an impact fee amount that is based on their estimated load placing power demand on the system. The estimated power demand for commercial customer classes have been calculated using the service panel size, voltage, and panel utilization. Typical panel utilization seen in the experience of Hyrum City Power & Light has been about 40% on average. Table A in the Appendix shows the estimated power demand (column 2) for commercial customers with various typical service panel sizes (column 1).

3.1.2.4 COMMERCIAL IMPACT FEE CALCULATIONS

The calculation of the Impact Fee charges for commercial customer classes are based on the following Equation 2 and Equation 3:

Equation 2

Single Phase Calculation

$$\frac{Main\ Panel\ Size\ \times Line\ to\ Line\ Voltage\ \times\ Panel\ Utilization}{1000} \times Impact\ Fee\ Rate = Incurred\ Fee$$

Example 200A 120/240V Single Phase Service

$$For\ 200A\ Single\ Phase\ Service\text{:}\ \frac{200A\ \times 240V\times\ 0.4}{1000} \times \$240.39/kVA = \$4{,}615$$

Equation 3

3 Phase Calculation

$$\sqrt{3} \times \frac{Main\ Panel\ Size \times Line\ to\ Line\ Voltage \times Panel\ Utilization}{1000} \times Impact\ Fee\ Rate = Incurred\ Fee$$

Example 600A 120/208V Three Phase Service

$$600A\ Three\ Phase\ Service\text{:}\ \sqrt{3} \times \frac{600A\ \times 208V\ \times 0.4}{1000} \times \$240.39/kVA = \$20{,}785$$

A selected sample of recommended Impact Fee charges for commercial class customers is shown in Table 8. A complete table of recommended Impact Fee charges for commercial class customers is included in Table A in the Appendix.

Table 8. SELECTED COMMERCIAL IMPACT FEES

Type of Commercial Service	Typical Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
Single Phase 120/240 V 200 Amp Panel	17.3	90.0%	19.2	$4,615
Three Phase 120/208 V 200 Amp Panel	25.9	90.0%	28.8	$6,928
Three Phase 277/480 V 200 Amp Panel	59.9	90.0%	66.5	$15,989

3.2 CERTIFICATION OF THE IFA

I certify that the attached Impact Fee Analysis:

1. includes only the costs of public facilities that are:
    a. allowed under the Impact Fees Act; and
    b. actually incurred; or
    c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
    a. costs of operation and maintenance of public facilities;
    b. costs for qualifying public facilities that will raise the level of service for facilities, through impact fees, above the level of service that is supported by existing residents;
    c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement; and
3. offsets costs with grants or other alternate sources of payment; and
4. complies in each and every relevant respect with the Impact Fees Act.

CERTIFIED BY:

CERTIFIED BY:

Signature: _____

Name: _____

Title: _____

Date: _____

HYRUM CITY
Power Department

APPENDIX

IMPACT FEE ANALYSIS
SUPPORTING DOCUMENTATION

Table A--Commercial Customer Power Demand and Recommended Impact Fee

COMMERCIAL IMPACT FEES -- Panel Utilization assumed 40%				
	Est. Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
Single Phase 120/240 V 200 Amp Panel	17.3	0.90	19.2	$4,615
Single Phase 120/240 V 400 Amp Panel	34.6	0.90	38.4	$9,231
Three Phase 120/208 V 200 Amp Panel	25.9	0.90	28.8	$6,928
Three Phase 120/208 V 400 Amp Panel	51.9	0.90	57.6	$13,857
Three Phase 120/208 V 600 Amp Panel	77.8	0.90	86.5	$20,785
Three Phase 120/208 V 800 Amp Panel	103.8	0.90	115.3	$27,713
Three Phase 120/208 V 1200 Amp Panel	155.6	0.90	172.9	$41,570
Three Phase 120/208 V 1600 Amp Panel	207.5	0.90	230.6	$55,427
Three Phase 277/480 V 200 Amp Panel	59.9	0.90	66.5	$15,989
Three Phase 277/480 V 400 Amp Panel	119.7	0.90	133.0	$31,977
Three Phase 277/480 V 600 Amp Panel	179.6	0.90	199.5	$47,966
Three Phase 277/480 V 800 Amp Panel	239.4	0.90	266.0	$63,954
Three Phase 277/480 V 1200 Amp Panel	359.2	0.90	399.1	$95,931
Three Phase 277/480 V 1600 Amp Service	478.9	0.90	532.1	$127,908
Three Phase 277/480 V 2000 Amp Service	598.6	0.90	665.1	$159,885
Three Phase 277/480 V 2500 Amp Service	748.2	0.90	831.4	$199,857
Three Phase 277/480 V 3000 Amp Service	897.9	0.90	997.7	$239,828