CONSERVATION AND RESILIENCY PLAN

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Acknowledgements

Mayor:
Michelle Kaufusi

Deputy Mayor:
Isaac Paxman

Chief Administrative Officer:
Wayne Parker

City Council:
David Sewell (Chair)
Shannon Ellsworth
Bill Fillmore
David Harding
David Shipley
Travis Hoban
George Handley

Provo City Community and Neighborhood Services
Director:
Bill Peperone
Planning Supervisor:
Robert Mills
Staff:
Melissa McNalley
Hannah Salzl

Working Group:
Angela Mourik
Austin Taylor
Brandon Plewe
Bremen Leak
Dean Judd
Don Jarvis
Doug Robins
George Handley
Jessy Antonino
Jim Hamula
JJ Hearing
Keith Morey
Ned Hill
Quinn Peterson
Rachel Whipple
Rick Cox
Ryan King
Rob Slater
Scott Bowles
Shauna Mecham
Tom Taylor

Photo Credit: Josef Larsem

Cover Photo Credit: Colin O'Brian

Photo Credit: Betsy Livingston

CONSERVATION AND RESILIENCY PLAN

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

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Introduction

What is a Conservation and Resiliency Plan?

The Provo community is committed to a healthy future for the city. Through feedback received during the General Plan process, the community's desire is to "live, consume and govern in such a way that the quality of life we enjoy now is possible and perhaps even better for future generations." It will take a coordinated effort by many to achieve such a goal. There is a recognized need for clean air, a supply of clean water, a healthy natural and built environment, fairness and equity, and sustainable financial resources. Proactive strategies and dedication to actions will be required to combat the ill effects of climate change, air and water pollution, unbridled growth, inequality, and limited financial resources.

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Process
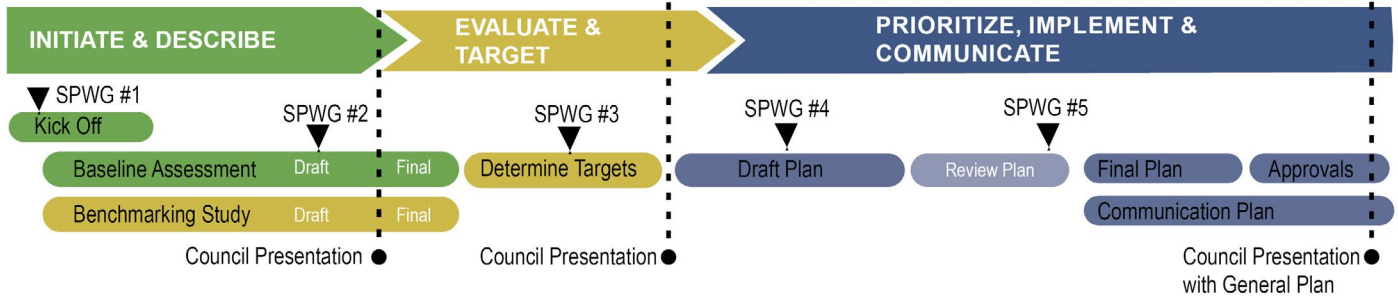
Environmental, economic, and social elements are often referred to as the Triple Bottom Line for sustainability, recognizing that these elements are tied to creating a resilient future for the City of Provo. This Plan will explore the status of Provo's sustainable activities by assessing baseline conditions, identifying targets for improvements to be made, and outlining recommendations for successfully achieving these targets. This Conservation and Resiliency Plan is the first step towards becoming a regional leader in implementing important measures that will improve the day-to-day life of current and future residents.

This Plan has been developed through a three-phase process in support of the goals of the Provo General Plan. These phases build off one another and ensure a solid understanding of data and community, agency, and City input to create an implementable framework for a resilient future.

What is Conservation and Resiliency?

The recommendations within this Plan represent ways in which we can meet the needs of people today without compromising the ability of future generations to live prosperously. Planning with a lens toward conservation and resiliency addresses the social, environmental and financial resources that residents depend on a daily basis. This Plan has evolved through the voices of the residents of Provo using their words, ideas and suggestions to craft an actionable and attainable plan.

Our Role in the Future

It is critical to act today to ensure a healthy and prosperous future for the next generation of Provo residents. This Plan outlines ways in which the City can improve operations and create a cultural shift in how residents engage in everyday activities. It is the responsibility of both the City and the residents of Provo to move towards these solutions for today's children and their children that follow.

General Plan Vision Statement

Provo is a welcoming community for all people who love access to open space, excellence in education, and a historic downtown where the local culture is celebrated through arts and innovation. We strive to be a regional economic hub within Utah County by encouraging purposeful development of walkable neighborhoods, mixed use retail and jobs centers that invite students, residents, and visitors—new and old—to call Provo home.

Coordination with the General Plan

Early in the General Plan process it became evident that conservation and resiliency are core values of the Provo community. The City and consultant team recognized that a separate, stand-alone plan would allow for specific measures and targets to make a meaningful impact beyond what a General Plan is designed to do. The General Plan process has been efficiently integrated with this Plan to align both the process and community input with the vision, values and priorities that will be used for the Conservation and Resiliency Plan.

The General Plan vision and commitments are also driving forces for the Conservation and Resiliency Plan, as a sustainable future is integral to all aspects of social, economic and environmental decision making and planning in Provo. These guiding principles will also guide the Conservation and Resiliency Plan as follows:

» **A Welcoming Community** –Community cohesion and resiliency are intended outcomes of addressing the issues in this Plan. Ensuring environmental justice and access to basic services for lower-income areas is critical to a welcoming community for all.

» **Stewardship of the Outdoors** – Our natural environment and food systems are key factors of conservation planning. The importance of maintaining green spaces, connecting networks to promote walking and biking, and conserving agricultural and natural lands has a significant impact on the overall measures in this Plan.

» **Growing Together** – Buildings, infrastructure and energy use are significant contributors to greenhouse gases and play an important role in the choices residents make around transportation and conservation of open spaces.

» **Livable Provo** – Economic vitality is an indicator of prosperity in a community. Choices around sustainable practices often have a positive impact on the economy of a community.

» **Connected and Safe** – Transportation is a key contributor to regional air quality and a comprehensive look at transportation alternatives can encourage choices that limit vehicle trips while enhancing community connectivity.

» **A City that Lead**s – The City manages important resource systems- specifically waste and water. Management and programs to reduce waste and conserve water can have an impact on preserving our natural resources for future generations.

Community Engagement

The General Plan process engaged more than 1500 residents through online surveys and virtual open houses, as well as more than 70 stakeholders through working and focus groups.

In Open House and Survey #1, the word 'Sustainability' ranked as the highest value word most important to the Provo community. However, in Open House and Survey #2, when asked what the word 'sustainability' means to the community the responses were vague and varied. This Plan offers the

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opportunity to outline what is a 'sustainable Provo' is and how the City and community can take action on this core value.

To help guide this process, a group of community advocates has provided key guidance and direction. The Conservation and Resiliency Plan Working Group met five times over the course of 3 months to identify the baseline data to be assessed, provide feedback on the appropriate performance indicators and targets, and to guide overall strategies and actions within this Plan.

How to Use this Document

This document is created in association with the Provo General Plan to provide specific strategies towards a more resilient future in Provo. The Conservation and Resiliency Plan acknowledges critical elements, such as economic resiliency and equitable communities; however, these are better addressed within the General Plan. This Plan will focus on elements related to environmental resiliency and conservation of local resources.

A Framework for Action

The Plan is organized around eight elements that contribute to conservation and resiliency. Each element has a specific target to measure performance followed by strategies and actions.

» **Element:** Elements are key opportunities to achieving a more resilient future in Provo. Many of these elements correspond to goals in the General Plan and to national standards for approaches to sustainability planning.

» **Baseline:** A baseline is the current measure within Provo of a performance metric.

» **Target:** Targets provide a precise, measurable, and time-oriented performance metric for achieving the objective of each element.

Plan Elements

Introduction to the Elements

The elements in this Plan are a result of feedback from the community, baseline assessment, working group feedback, and comparisons to benchmarked communities. While these elements are not comprehensive to those factors that impact conservation and resiliency, have been selected to provide an achievable framework with understandable actions for the City of Provo that meet the expectations of the community. The following elements are discussed in this chapter;

- Carbon Emissions
- Air Quality
- Low Carbon Energy
- Environment
- Waste
- Water
- Mobility
- Fire Risk

These eight elements selected will outline relevant baseline data, aspirational targets based on information and community feedback, and specific strategies and actions to make progress toward each target over time.

Existing Conditions

Baselines and Targets

The first step of this process was to assess strengths and weaknesses as well as current and future needs. The City of Provo has taken tangible steps to becoming a more resilient city, while recognizing that there are inherent characteristics of the city that will both limit and enhance opportunities for greater integration of sustainability moving forward. The existing conditions assessment from the General Plan paints a more broad portrait of Provo as a community, while this conservation and resiliency analysis focuses more narrowly on characteristics specifically impacting conservation and resiliency outcomes that the City can work to improve over the next 30 to 50 years.

Provo has had a high degree of success instituting foundational reviews and coordinating sustainability initiatives under the Parking Manager and Sustainability Coordinator. This innovative pairing of reviews and initiatives enabled a strong leverage point within one of the less considered but high impact areas of land use sustainability. The impacts of that the coordinator are detailed in the 2020 Mayor's Report from the Natural Resources and Sustainability Committee, which also contains a host of well researched and impact-driven suggestions for strategies. The resources provided by this committee are a key strength of the City and, though it is volunteer led, the insights and analysis are on par or superior in many cases to those likely to be provided by outside consultants with lesser familiarity with city-specific issues.

In addition, the vesting of operational control of key services with the City allows for Provo to exert significant sustainability measures on these services for citizens. Waste diversion, water provision, and electricity provision are all critical components of impact on conservation and resiliency. Having accountability and responsibility over all three enables the City to control these elements with fewer constraints than other municipalities. Balancing this potential with fiscal responsibility and effective management of City resources will remain a challenge, but one that Provo can embrace in shaping its future to its values.

Benchmarking

Benchmarking provides insight to help understand how Provo compares to peer communities and identify where there are opportunities to improve. It also serves as a reference point to determine targets that are appropriate and achievable. In selecting benchmark communities, the City and group looked to communities that have current sustainability, conservation or resiliency strategies, are of a similar population and with a university influence, and have similar arid climates in a mountain region.

» **Reno, NV** has several demographic similarities to Provo, along with a strong Sustainability and Climate Action Plan, produced in 2019. Using the STAR Community framework, this plan outlines ambitious, yet achievable goals and strategies developed in conjunction with the city's Master Plan. Since Reno is the fastest warming city in the US, the plan focuses on mitigating the public safety risks of increased drought, extreme heat and wildfires.

» **Fort Collins, CO** also has several demographic similarities and has proven leadership in sustainability. Fort Collins has been at the forefront of municipal sustainability efforts for years, through its numerous Climate, Energy and Waste reports. The city aims to cultivate a sustainable community through frequent monitoring, investment, equity, mitigation, and resiliency.

» **Tempe, AZ** is demographically similar and is a leader in cultivating community partnerships. The City of Tempe created a Climate Action Plan in 2019 and produces an annual sustainability report. This report takes the goals from the Climate Action Plan, measures current progress and targets future levels of attainment for each goal. Tempe strives to engage the community by involving residents in the planning process and by partnering with Arizona State University.

Baseline Data, KPIs and SPMs

Key Performance Indicators (KPIs) are intended to represent comprehensive measures of identified sustainability topics that can demonstrate progress in a comparable and relatable manner. These highest-level indicators will ideally be easily replicable/accessible for tracking purposes and based on national best practices to enable ease of comparison. In addition, through the baseline data gathering process, additional data points were identified, captured, and included in the plan appendix. These data points can be used to supplement the KPIs, convey more detailed information on specific topics, and could potentially replace or serve as KPIs if they are deemed more relevant or useful in the future. For this iteration of the plan, they may serve to provide robust answers to stakeholders, act as foundational elements of additional data gathering efforts, and provide options for implementation tracking.

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Both publicly-available and city-specific data were identified that could present an overview of key topics for planning. Owing in part to data availability and in part to being representative of a more typical year given the abnormalities presented by 2020 and the COVID-19 pandemic, 2019 was selected as the baseline year. Wherever practical, metrics were normalized by population count or land area to represent the relative impact of each citizen of Provo. The normalized indicators serve as the basis for the dashboard, with indications of both year-over-year change and impact represented by population counts to help effectively illustrate progress and status over time.

Target Selection

Specific targets were selected through a rigorous process involving baseline data assessment, benchmarking, industry research and input from the Working Group.

Implementation and Monitoring

The final chapter provides a framework and next steps towards successful implementation of this Plan. The targets in this Plan should be measured each year for progress and assessed every two to five years to review if targets need to be adjusted and ensure strategies are being addressed.

To effectively integrate the desired outcomes of this Plan into the greater Provo community, additional work will be needed. The challenge will be to turn this static Plan into a living one, with champions both within city government and involved citizenry who advocate for progress. This will require ongoing effort, honest evaluation of progress, celebration of achievements, and allocation of resources aligned with priorities. There will be a natural ebb and flow, but following key recommendations will allow for progress to be maintained and tracked over time.

LEED for Cities
(Formerly Stars Program)

In addition, metrics that would contribute to a LEED for Cities score were prioritized and collected to help pave the way for future certification under that system, should the City desire to do so. LEED for Cities and Communities is the newest iteration of the STAR Community Rating System and has boiled down that comprehensive system to a more streamlined set of performance measures intended to enable robust comparison of community-scale performance amongst peers using intensity metrics normalized by population.

LEED for Cities and Communities is a sustainability rating system developed by the United States Green Building Council (USGBC). LEED for Cities and Communities helps local leaders make their communities more sustainable by allowing for data-driven performance measurement in a variety of social, economic, and environmental categories. Some key performance categories include energy, water, waste, safety, education and quality of life. One distinct benefit of using the LEED framework is the ability to compare a community with others around the nation and globe (also called benchmarking). Hundreds of cities and communities around the world have used this rating system to increase sustainability in their communities.

2019 BASELINE DASHBOARD

Sustainability Key Performance Indicators and Supplemental Performance Metrics

The following 2019 dashboard includes the KPIs that might resonate most effectively with community members and public officials. Half of the KPIs normalized to per capita metrics, while the rest provide a value or percentage that can be used to illustrate key sustainability.

CARBON FOOTPRINT
16.5
mT CO2e Per Year Per Capita

WASTE
2,176
Pounds Per Year Per Capita

AIR QUALITY
46
AQI (Air Quality Index)
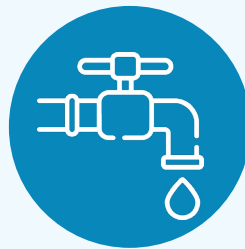
WATER
162
Gallons Per Day Per Capita

RENEWABLE ENERGY
33%
Total Low Carbon Resource

MOBILITY
16**
Vehicle Miles Travelled Per Day Per Capita

ENVIRONMENT
ND*
Tree Canopy Coverage

FIRE RISK
6
Community Wildfire Risk Index

*Provo's tree canopy coverage is currently unknown. Data collection is underway, but currently there is no baseline data.
**Provo's Vehicular Miles Travelled is the best data currently available from MAG. However, due to discrepancies in the this data may not correctly reflect the actual VMT of Provo residents.

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DEFINITIONS

CARBON FOOTPRINT

A carbon footprint is expressed as a Carbon Dioxide equivalent - how many tons of carbon dioxide and other noxious gases are emitted per year - and is a standard measure of environmental impact.

WASTE

Waste is tied to GHG (green house gas) emissions and the loss of limited resources and land dedicated to landfills. A circular economy focuses on waste reduction strategies to save money and resources.

AIR QUALITY

Clean air can improve heath and quality of life for everyone. Air Quality Index is measured on a scale of 0-600. An AQI between 0 and 50 is considered healthy.

WATER

In a desert environment, water must be managed in a way that minimizes threats of water shortages and maximize the efficient and beneficial uses.

RENEWABLE ENERGY

Clean air and energy efficient technology can improve health, save money and create jobs. Examples of low carbon resources are wind, solar and hydropower.

MOBILITY

Vehicle Miles Traveled (VMT) measures how many miles the average person drives each day.

ENVIRONMENT

Our environment has an impact on local temperature through impervious surfaces and albedo (or reflection). Increasing tree canopy and reducing impervious surfaces can greatly improve daily human comfort.

FIRE

As water becomes more of a limited resource and temperatures increase, we must care and plan for the mitigation and risk of fire. Wildfire risk index is measure as a score of 1-12 based on a series of indicators.

WHAT IS A KPI?

Key Performance Indicators (KPIs) are intended to represent comprehensive measures of identified sustainability topics that can indicate progress in a comparable and relatable manner. These highest-level indicators will ideally be easily replicable/accessible for tracking purposes, based on national best practices to enable ease of comparison, and have enough resonance with the general plan and general public to aid in both decision making and helping to shape public opinion.

TARGET SNAPSHOT

Baseline	**2030**	**2050**
CARBON FOOTPRINT **16.5** mT CO2e/Year/Capita	**40%** Decrease in Carbon Emissions	**CARBON NEUTRAL**
AIR QUALITY **46** Air Quality Index	**42** Air Quality Index	**30** Air Quality Index
RENEWABLE ENERGY **33%** Low Carbon Resource	**60%** Low Carbon Resource	**100%** Low Carbon Resource
ENVIRONMENT **ND** Tree Canopy Coverage	**15%** Increase in Tree Canopy	**20%** Increase in Tree Canopy

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WHAT IS A TARGET?

Targets are specific objectives within a larger goal. Targets help increase accountability and keep a city on track to reach its larger goals, serving as milestones along the way. Targets provide interim goals at intervals such as 2030 and 2050 shown below. Targets can be adjusted based on progress as the plan is implemented. Accomplishing targets can increase a community's motivation to continue towards the bigger goal.

	Baseline	2030	2050
WASTE	**2,176** Pounds/Year/Capita	**18%** Diversion Rate	**25%** Diversion Rate
WATER	**162** Gallons/Day/Capita	**120** Gal/Day per Capita	**110** Gal/Day per Capita
MOBILITY	**16** VMT/Day/Capita	**10%** Decrease in VMT Per Capita/Day	**30%** Decrease in VMT Per Capita/Day
FIRE RISK	**6** Community Wildfire Risk Index	**5** Community Wildfire Risk Index	**4** Community Wildfire Risk Index

provo

Carbon Emissions

Plan Element #1

Carbon emissions represent the amount of greenhouse gases released from the daily activities of Provo residents and businesses. The largest sources are transportation and energy consumption for buildings, but there are additional sources including landfill gas, agricultural emissions, and wastewater treatment. Carbon dioxide emissions (CO_2) make up the vast majority of Greenhouse Gasses (GHG). These gases are released during the combustion of fossil fuels such as coal, oil, and natural gas to produce energy to power buildings and motorized transit. CO_2 emissions are part of the global carbon cycle; however, due to human activity carbon emissions have risen rapidly for the past 70 years and are exceeding the ability of natural processes to absorb carbon, resulting in a surplus in the atmosphere.

Buildings have a significant carbon footprint and are large contributors to energy consumption. Each building material has a lifecycle history - from raw material extraction, water use, and transportation to building site, construction, and on-site waste. Once complete, building systems utilize significant energy production throughout their lifecycle of use and maintenance.

Reducing carbon emissions has significant synergistic benefits. There is often a financial value to the City and community. For example, due to low market costs, energy efficiency and renewable energy offer significant returns over time. Additionally, in cases such as vehicle electrification, the amount of local air pollutants is effectively nullified, providing better ambient air alongside the carbon emissions as the power supply includes more and more low carbon sources. With the continued downward trends in pricing for all of the above, implementing these measures makes strong financial sense for Provo.

16.5
mT CO2e/Year/Capita

What does this KPI measure?

Carbon emissions represent the amount of greenhouse gases released from the daily activities of Provo residents and businesses. The largest sources are transportation and energy consumption for buildings, but there are additional sources including landfill gas, agricultural emissions, and that from wastewater treatment.

Baseline

The baseline GHG emissions form the basis of a full inventory, and include specific information on electricity and natural gas consumption for the City of Provo as well as vehicle miles traveled. Building energy and performance measures across sustainability metrics also are categorized under this topic since the ongoing operations of buildings new and old will continue to be a significant source of carbon emissions.

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Target

Through the baseline assessment, it was found that Provo currently emits an average of 16.5 metric tons of CO2 per person each year. This is lower than the current national average of 18.4 metric tons per person per year; however, there is still much room for improvement.

In order to compete with the other benchmarking cities with carbon neutral goals by 2050 and 2060, Provo will have to take aggressive action towards emission reduction.
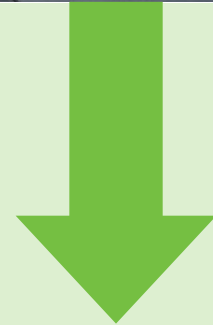
40%
Decrease by 2030

CARBON NEUTRAL
by 2050

Why This Matters

The reduction of our energy use and shifting towards more efficient energy production is central to reducing carbon emissions. Energy efficiency and renewable energy sources can help decrease air pollution by reducing the output of green house gasses as well as improve public health, air quality, and lower energy costs. Alternative transportation can reduce single car trips and increase public health. Reducing energy use through energy efficient buildings, appliances and transportation is a key strategy. In addition, reducing waste generation through increased technology or capturing CO2 before it enters the atmosphere can help to offset impacts at the source. Shifting towards renewable and low carbon energies such as wind, solar, nuclear, hydropower and geothermal power will support a long- term solution for the future.

Useful Links and Learning

Inventory of U.S. Greenhouse Gas Emissions and Sinks | US EPA

Air Quality

Plan Element #2

Ozone, particulate matter, and other pollutants in the air can have harmful effects on the lives of people. Particulate matter and airborne particles include dust, dirt, soot, and smoke. Industrial, commercial and residential buildings are major contributors- for example, construction sites and wood burning stoves. Incomplete combustion in motor vehicles, at power plants and in other industrial processes contributes indirectly to particulate pollution. Poor air quality can cause chronic bronchitis, asthma attacks, decreased lung function, coughing, painful breathing, cardiac problems, and heart attacks, as well as a variety of serious environmental impacts such as acidification of lakes and streams and nutrient depletion in soils and water bodies.

With increased temperatures causing vegetation to dry out across the Western US, wildfires are becoming more and more frequent. The smoke from these fires is negatively impacting air quality in many municipalities. It is important to note that while following the recommendations in this plan will improve air quality, it will be increasingly challenging to achieve lower AQI scores as wildfires increase.

46
Air Quality Index (AQI)

What does this KPI measure?

The median Air Quality Index (AQI) is a federal composite index that looks at five criteria pollutants to indicate general air health: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide.

An AQI between 0 and 50 is good. A level of 51-100 is acceptable, but some people who are sensitive to certain pollutants may have adverse reactions.

Average AQI in Provo by Decade

Decade	1980s	1990s	2000s	2010s
Average AQI	**63**	**50**	**51**	**48**

Baseline

Air quality measurement is a complex topic that requires careful location and calibration of equipment and can vary for different air quality constituents dramatically at different places. Considering moving towards a broader citizen-science approach to complement some of the existing monitors installed by state and federal authorities and provide greater coverage and understanding of how specific events can impact air quality and where potential mitigation solutions may work best.

Another measure to look at is total number of unhealthy days. Provo's days have varied over the past decade, as high as 25 unhealthy days per year and an low as 0 unhealthy days per year. This makes for a difficult target to track, however, these days should be measured and used as a point of comparision from year to year.

Number of Unhealthy AQI Days

Year	2017	2018	2019	2020
Unhealthy Days for Sensitive Groups	**11**	**25**	**0**	**5**

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Photo Credit: Dana Anquoe

Target

Through the baseline assessment it was found that in 2019 Provo had an average AQI of 46. Since 1980, the air quality in Provo has been gradually improving through emission reduction. By continuing to reduce CO_2 emissions, Provo will be able to achieve even cleaner air quality in the coming decades.

42
AQI by 2030

30
AQI by 2050

Photo Credit: Virginia Bryson

Why This Matters

Air quality is an essential element of public health. When air quality reaches 151-200, it is considered unhealthy; everyone may now begin to experience problems, with sensitive groups feeling more serious effects. Provo often experiences significant spikes in poor air quality during winter months due to inversion, causing a major threat to public health. Cleaner engines and a greater focus on industrial sources can contribute to improving air quality. An awareness campaign can help to support efforts. For example, Provo Power is leading a joint effort to replace gas lawn mowers with electric, which is one of the best to mitigate local air quality.

Useful Links and Learning

Air Quality Index Report | US EPA

Low Carbon Energy
Plan Element #3

Communities need reliable sources of affordable energy to keep city networks running. With increasing costs and depleting access to fossil fuels, alternative energy sources are key to a successful future. Reducing fossil fuel combustion for energy can be approached strategically over time, but looking beyond the use of natural gas as a cleaner-burning bridge fuel takes time to implement. Cities across the country are taking hard looks to building electrification and are starting to pass ordinances limiting or eliminating the use of natural gas in homes, which has the added benefit of improving indoor air quality for gas ranges.

33%
Total Low Carbon

What does this KPI measure?

This KPI measures the percentage of the source energy used to provide electricity to Provo residents and businesses that comes from renewable or low carbon sources.

Baseline

The concept of low carbon energy is wide enough to recognize the contributions of all low carbon energy sources and looks beyond pure renewables to potential sources. This metric looks at nuclear and combined heat and power that produce more efficient energy and/or co-benefits such as generating heat that displaces fossil fueled sources. As lower carbon electricity becomes more available, the incentive to convert to electric vehicles and more electric appliances becomes greater.

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Photo Credit: Betsy Livingston

Target

Through the baseline assessment it was found that in 2019, Provo produced 33% of its energy from low carbon sources. This is slightly below the national average of 39.5%. With many cities aiming to be 100% renewable by 2050 or sooner, a target of 100% low carbon was selected for Provo by 2050, with an intirum traget of 60% by 2030. These targets have already been developed and approved by Provo Power, prior to the completion of this plan.

60%
Low Carbon
by 2030

100%
Low Carbon
by 2050
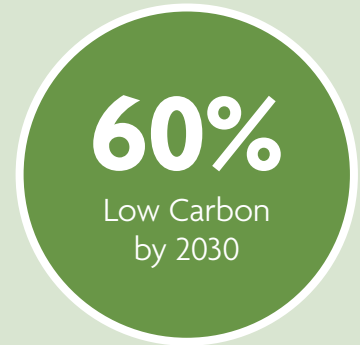
Photo Credit: Narcisa Aciko
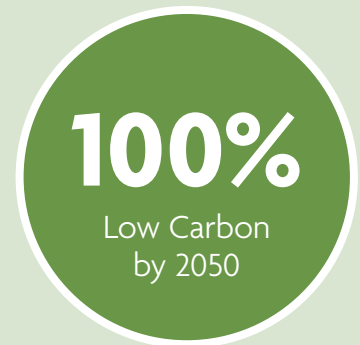
Why This Matters

Green building practices focus on energy efficiency in construction and through the lifecycle of the building. LEED Certified buildings are a standardized approach for how to measure the impacts of buildings and the environment. This can include using local materials to reduce transportation costs, implementing systems to reduce energy and water consumption, and reducing waste generated in construction and from users.

Useful Links and Learning

USGBC| United States Green Building Council
Green Building at the EPA| US EPA

Environment

Plan Element #4

As our population grows, preserving special natural spaces and agricultural lands becomes ever more important. Open spaces and natural areas contribute greatly to a core value of Provo residents for access to recreation and natural beauty. Access to nature, from trees to parks to recreation areas, improves public health, lowers the ambient temperature, and offsets carbon emissions. In addition, water pollution from building waste and stormwater runoff to our rivers and lakes impacts recreation and wildlife. Municipal water management is shared across regions and watersheds, as well as locally through land use policy and facilities management with the goal of conserving this valuable resource.

ND
Tree Canopy Coverage

What does this KPI measure?

Gathering tree canopy data allows for a good sense of a wide swath of correlating environment data without necessarily needing to collect all of these metrics individually. For instance, a higher tree canopy density, usually results in a smaller heat island effect, more mixed-use land cover, and few impervious surfaces.

Baseline

A wide array of publicly available environmental data sourced from LANDSAT and NLCD (National Land Cover Database) data and maps, National Wetlands Inventory, and EPA Envirofacts.

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Photo Credit: Melvin Pineda

Target

Although Provo currently does not have a baseline measure for tree canopy, there is high interest in developing the resources to do so. With the proper measurement system in place, Provo will be able to monitor its tree canopy at any given point in the future. Many urban foresters recommend a minimum target of 15% tree canopy for desert cities. For this reason 15% was selected as the target for 2030 and 20% as an additional target by 2050.

15%
Tree Cover by 2030

20%
Tree Cover by 2050
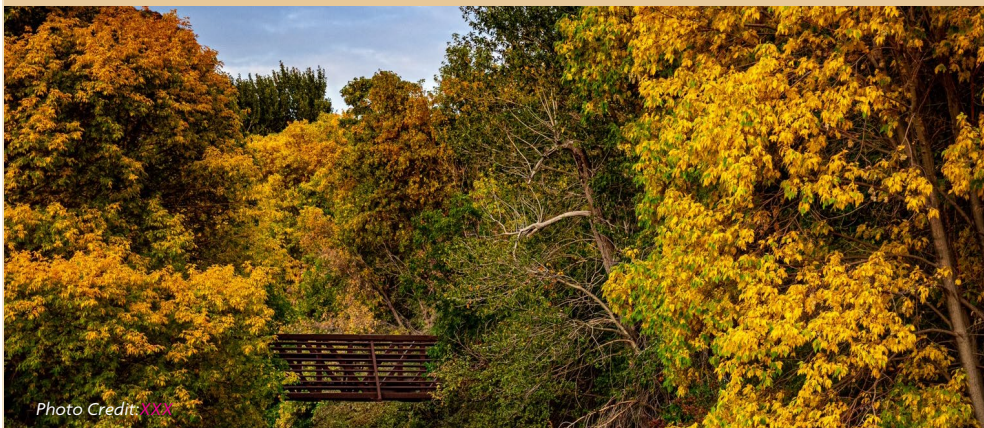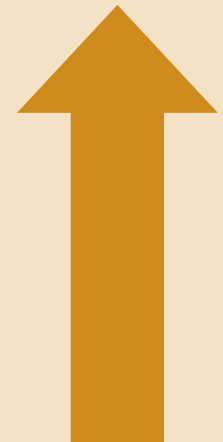
Photo Credit: XXX

Why This Matters

Strategies to protect and conserve natural areas vary from protecting wetlands and waterways, to creating conservation areas, to increasing trees and greenways in urban areas. Increasing access to natural assets increases overall community health while also positively contributing to air quality and lowering heat island effects. Green infrastructure and wastewater treatment practices can improve water quality and reduce energy needed to provide water in our communities. Renewable energies such as wind, solar, hydropower and geothermal power will support a long-term solution for the future.

Useful Links and Learning

Arbor Day Foundation
American Forests

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Waste

Plan Element #5

According to the EPA, in 2018 the average person generated 4.9 pounds of waste per day, most of which goes to landfills. As populations increase, landfills reach capacity, require additional space, and become increasingly costly to maintain and manage. The reduction of waste entering the waste stream and the reuse of raw materials can help to save valuable land and economic resources.

2,176
Pounds/Year/Capita

What does this KPI measure?

A higher diversion rate means that more waste is being diverted from a landfill to other sources of disposal, such as composting and/or recycling.

Baseline

Waste disposal and diversion rates came from Provo Public Services, which only services HOAs that utilize curbside containers. Multifamily housing, commercial residential properties, and HOAs that utilize frontload and rolloff containers are serviced by third-party waste hauling companies and are therefore not metrics currently captured by the city. Recyclable materials are comingled with other city recycling prior to being hauled to Salt Lake City for sorting and processing so it's difficult to obtain recycling-specific diversion rates at this time.

The current diversion rate is 26%, however the waste numbers provided only includes HOAs that utilize curbside containers, which is approximately 20,500 residential properties and not accurately representative of diversion throughout Provo.

Target

Since Provo's current recycling rate is 9% and the national average is 23.6%, aggressive targets have been set to increase Provo's recycling rate. These targets are an 18% recycling rate by 2030 and 25% by 2050. As many municipalities target Zero Waste goals by 2050, 25% is still a modest target and not the end goal. Provo will continue to make recycling a priority in the decades to come.

Photo Credit: Mali Maeder

18%
Diversion Rate by 2030

25%
Diversion Rate by 2050

Why This Matters

Garbage negatively impacts the environment. There are several methods to alleviate the issues. A waste audit can help to identify inefficiencies, missed opportunities for diversion, and associated costs. The first line of impact is overall reduction of waste on the part of all community members. Pay as you throw, composting, and product selection programs create a culture of awareness within the community. Municipalities can manage waste through diversion, safe disposal practices and addressing e-waste.

Useful Links and Learning

National Overview: Facts and Figures on Materials, Wastes and Recycling| US EPA

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

Water

Clean accessible water is key to community prosperity - from reliable drinking sources to clean water for local wildlife. Water is becoming an increasingly scarce resource, especially in the West as population increases, changes in weather patterns are impacting surface waters, and water use is draining aquifers faster than they can recharge.

162
Gallons/Day/Capita

What does this KPI measure?

This KPI measures the water consumption per users supplied by Provo Water including business, residential, industrial and agricultural users per day.

Baseline

Water baseline data came directly from Provo Water and was normalized by the population count.

This water is all treated/potable water, which requires significant energy and associated emissions to provide in addition to the water resource itself. There is also typically a significant amount of this treated water lost through leaks and other distribution losses, even in very well managed systems.

Photo Credit: Dallin Green

Target

Since Provo's current water usage is 162 gal/day/capita (higher than the Western state average by 33 gallons), ambitious targets were set to combat this. The targets are 120 gallons per person per day by 2030 and 110 gallons per person per day by 2050. Tempe, with a similar climate and demographics is currently at 110 gallons per day, which proves that Provo can accomplish a similar usage performance.

Photo Credit: Randy Judkins

120
Gal/Day/Capita
by 2030

110
Gal/Day/Capita
by 2050

Why This Matters

Green building practices and use of water wise landscaping can reduce consumption and repurpose water for secondary uses. Technology such as aerators, low use fixtures and water efficient irrigation and landscape can reduce consumption as much as 30% according to some sources.

Useful Links and Learning

Water Usage in the West| CSG West

Xeriscaping in the West| Utah State University

Mobility

Plan Element #7

Transportation is an integral part of our daily life yet has significant social and environmental impacts from vehicular traffic, stormwater runoff, heat islands and the loss of habitat to roadways. Transportation includes the movement of people and goods by cars, trucks, trains, ships, airplanes, and other vehicles. The majority of greenhouse gas emissions from transportation are CO_2 emissions resulting from the combustion of petroleum-based products, like gasoline in internal combustion engines, and are significant contributors to air quality - contributing about 30% of total GHG emissions. Many communities such as Provo have embraced alternative transportation methods such as bus rapid transit (BRT) and biking and walking to offset vehicular trips, save money and increase personal health.

16
VMT/Day/Capita

What does this KPI measure?

This metric was gathered from the regional transportation organization and represents 2019 total VMT per person per day from the Provo model managed by that organization.

Baseline

Though Vehicle Miles Travelled (VMT) seems straightforward, it is complicated by how many trips are made within city-limits versus those from outside the city or inside the city that either pass through or make stops within city limits. Complex models are generally used to estimate actual VMTs.

An alternative measure of 4.9 Trips per day was identified using internal and out of city trips as a potentially more accurate measure. Trips per capita could substitute VMT and the target would remain the same.

As part of this effort, access to Google transportation data was requested, which if granted would be some of the most accurate data available based on actual aggregated data rather than a model.

CONSERVATION AND RESILIENCY PLAN

Photo Credit: Nubia Navarro

Target

Provo's current VMT is 16 miles traveled per person per day. This KPI was chosen because it provides a general idea of how auto-dependent a city is. By following the recommendations in this plan, Provo will be able to reduce the amount of vehicle miles traveled by 10% by 2030 and 30% by 2050.

Photo Credit: LeAnn Liu

10%
Decrease in VMT
by 2030

30%
Decrease in VMT
by 2050

Why This Matters

Reducing trips and time spent in single use vehicles is central to successful multimodal transportation networks. Improving planning for all travel options and building community support to promote all modes of travel is central to how people choose to get around. Reduction of roadways and vehicle trips improves overall environment and increases mental health and wellness. Renewable energies such as wind, solar, hydropower and geothermal power will support a long- term solution for the future.

Useful Links and Learning

VMT Per Capita| US Department of Transporation

Fire Risk

Plan Element #8

The topic of wildfires is becoming more and more prominent in everyday conversations when discussing a community's overall health, natural resources, and hazard preparedness. Unfortunately, as our climate heats up and periods of drought increase, wildfires will only increase in numbers and ferocity. Ensuring that proactive wildfire mitigation efforts and investments are made now can help ensure that Provo will be on the leading edge of protecting lives and property should a wildfire occur too close to home. While having trained emergency service teams is important should a wildfire occur, community education around wildfire prevention and mitigation efforts by the community and city is key.

6

Community Wildfire Risk Index (1-12)

What does this KPI measure?

Factors that play into the Overall Risk include fire occurrence (number of fires in the area), fuel hazard (fuel conditions of surrounding landscape), values protected (human and economic value within the community and surrounding landscape), and protection capabilities (ISO [insurance services organization] rating for the community).

Baseline

The Fire Risk overall rating was obtained using the City's Community Preparedness Wildfire Plan, as well as the UtWRAP (Utah Wildfire Risk Assessment Portal) and Communities at Risk data provided by the Utah Division of Forestry, Fire & State Lands.

Photo Credit: Pixabay

Target

On a scale of 1-12, the average fire risk for communities in Utah is 9. Provo was able to drop their risk score from 8 to 6 in the past year through their fire mitigation plan. Since Provo is already doing well in this category, moderate targets of a 5 by 2030 and a 4 by 2050 were selected.

5 Fire Risk Score by 2030

Fire Risk Score by 2050 **4**

Photo Credit: Sippakorn Yamkasikorn

Why This Matters

Fire Risk is one of the greatest threats to human life and property in the City. Taking preventative measures now to reduce the rating of each Fire Risk category is key to reducing overall harmful impacts. By annually updating the Community Wildfire Preparedness Plan and including evacuation information and mitigation efforts, citizens and emergency services will be able to stay up-to-date on one of the most prevalent issues facing the city today.

Useful Links and Learning

Utah Wildfire Risk Assessment Portal

Utah Fire Sense

Implementation

Implementation & Partnerships

How to Get Involved

This Plan, more than many, will require active participation from a variety of stakeholders. Broadly, there are two primary ways to get involved:

> » by focusing on a particular topic – or topics – and;
> » by demonstrating and advocating for support.

In either case, a complete understanding of the plan and status will be critical, so reading through and inquiring to the current status should be done prior to more specific reaching out.

One of the defining features of a successful plan is built in redundancy and partnership so teaming up on an effort already underway and becoming a second point of impact is a powerful way to determine how to best engage. If supporting the plan efforts with political will or financial resources resonates more strongly than time and targeted efforts, looking into current opportunities to do that may serve the outcomes better.

CONSERVATION AND RESILIENCY PLAN

Sustainability Plan Coordinator

The Sustainability Coordinator (SC) will work collaboratively with City staff, department leads, the employee committee and citizen's committee, and the public to design, organize, and promote effective sustainability initiatives. The role will lead in educating the community about sustainability, coordinating effective initiatives, and annual reporting. This position will have the authority for budget responsibility, collaboratively creating workplans with department leads, and tracking their progress and incorporating achievement into annual performance metrics. The SC role will serve as a leadership role to different positions and departments. The success of these departments on achieving the targets identified in workplans should be tied to annual raises, demonstrating commitment to the success of the Plan while allowing the department leads to guide progress.

Responsibilities include:

- Lead and prioritize programs and projects, collaboratively creating workplans with department leads pertaining to different areas of the Plan;
- Establish and lead a system for tracking performance metrics progress and incorporating achievement into annual performance metrics;
- Monitor best practices related to sustainability of peer cities and tpo make recommendations for new sustainability programming and modifications to existing programs;
- Support departments as appropriate in relation to implementing sustainability programs.
- Research and identify grants and other funding opportunities in support of sustainability efforts and will have a significant role in the city budget process;
- Lead promotional and educational materials for brochures, displays, guides, and training materials, and coordinate updates to the City's sustainability webpage.

Sustainability Committees

There is currently an Employee Sustainability Committee and a Citizen Sustainability Committee that are advocates of the goals in this Plan. The SC will work to align the roles and responsibilities of these committees and serve as both a lead role and liaison. Additional coordination may be needed external of these groups to ensure successful outcomes. The current structure of these committees should be reviewed to include local business owners, University partners and other stakeholders impacted or needed to support the goals of this Plan.

Coordination with General Plan Elements

The General Plan has alignment with the goals in this Plan. Transportation and Mobility goals in the contribute to multimodal options to reduce vehicle trips. Economic goals recognize the importance of enhancing the commercial and retail businesses to achieve sustainable best practices. Open space goals support the preservation and improvement of parks, trails and conservation areas to contribute towards tree canopy goals. When appropriate, the SC has been identified to lead General Plan goals that support the goals identified in this Plan.

Implementation is organized by the eight elements. Each element includes strategies and actions followed by methods to achieve these actions.

- » **Strategy:** Strategies are recommended approaches to achieving the targets.
- » **Action:** Actions are the steps needed to implement the strategy through programs, initiatives, policies, projects, or tasks.
- » **Partnerships**: Identifies key players needed to lead or coordinate actions.
- » **Impact:** Measures the potential magnitude of these actions towards overall goals.
- » **Cost:** Measures potential funding needed from low ($) to high ($$$).
- » **Timing:** includes short-range projects (1-2 years), Medium range projects (3-5) years and Long range projects (5 years and beyond) to achieve the targets.

Carbon Emissions

Strategies and Actions

STRATEGY	ACTION
1. Increase the efficiency of commercial buildings	1.a. Opt-in to Utah C-PACE program to enable supportive financing mechanism for private energy efficiency and renewable energy projects. 1.b. Pass a commercial energy benchmarking ordinance to phase in energy disclosure for commercial buildings over time. 1.c. Ensure energy codes are most up to date versions and/or consider a more stringent code.
2. Develop a comprehensive Greenhouse Gas Inventory and identify significant emissions sources	2.a. Utilize national benchmarking such as Google's Environmental Insight Explorer or similar for largest emissions sources and sponsor a complete GHG Inventory to identify additional sources and provide a complete GHG picture for Provo. 2. b. Consider joining ICLEI for ongoing carbon emissions support and inventory development. 2.c. Catalog sources and related opportunities from the inventory to develop either a Climate Action Plan (CAP) or integrate strategies into the Conservation and Resiliency System.
3. Investigate Carbon Capture projects for City-owned facilities and land	3.b. Investigate the potential for methane capture programs for wastewater treatment plants and carbon sequestration with land applied biosolids. 3.b. Align conservation easement requirements with the potential to include and encourage carbon offset projects.
4. Increase use of higher recycled content and/or lower embodied carbon materials in City projects	4.a. Designate one person as point-of-contact for building projects. 4.b. Examine city building specifications for opportunities to reduce higher embodied carbon content and increase lower carbon content (i.e. fly ash content in cement, recycled plastic in road mix) 4.c. Consider an ordinance requiring public projects or all new development to calculate and disclose the amount of embodied carbon in their major building materials.
5. Increase the number of LEED certified buildings in Provo	5.a. Identify areas in code to allow for bonuses (height, parking reductions, etc.), waivers (tap fee reductions, etc.) or permitting efficiencies (expedited reviews) in exchange for LEED certification . 5.b. Pursue LEED for Cities certification using the Local Government Leadership Program if available.

CONSERVATION AND RESILIENCY PLAN

PARTNERSHIP	IMPACT	COST	TIMING	PRIORITIZATION
Sustainability Coordinator (SC), Sustainability Committee and City Council	MEDIUM	$$$	MEDIUM TO LONG	HIGH
SC to coordinate with Administration	HIGH	$	SHORT TO MEDIUM	HIGH
Identify point of contact to help understand energy efficiency	HIGH	$$$	SHORT TO MEDIUM	HIGH
Provo Power, UDOT, City representative, SC	MEDIUM	$ - $$	SHORT TO MEDIUM	MEDIUM
SC to coordinate with Administration	MEDIUM	$$$	MEDIUM TO LONG	LOW

Air Quality

Strategies and Actions

STRATEGY	ACTION
1. Increase air quality monitoring capacity	1.a. Deploy additional air quality monitors (e.g. Awair monitors) city-wide on municipal buildings and share information with the public. 1. b. Encourage the use of citizen-based science (e.g. Purpleair) to develop a more robust picture of air quality in Provo.
2. Decrease vehicle idle times	2.a. Implement, strengthen and enforce no-idle regulations.
3. Incentivize electric vehicle use, mass transit and alternative modes of transportation	3.a. Increase number of publicly available charging stations and subsidize private owners. 3.b. Require charging infrastructure be included in all new developments. 3.c. Review code to identify any opportunities to encourage and incentivize installation of charging stations for existing projects, including allowing exemptions from reasonable constraints. 3.d. Require priority parking spots for electric vehicles and Identify additional or priority parking spaces for low/zero emission vehicles. 3.e. Incentivize Provo employees to use mass-transit or alternative transportation. 3.f. Incentivize local businesses to use mass-transit or alternative transportation.

CONSERVATION AND RESILIENCY PLAN

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

PARTNERSHIP	IMPACT	COST	TIMING	PRIORITIZATION
SC, City Administration, coordination between City and BYU	HIGH	$$$	SHORT	LOW
City Departments	MEDIUM	$	SHORT (Quick Win)	MEDIUM
SC, Provo Power, Sustainability Committee	MEDIUM	$	MEDIUM	MEDIUM

Low Carbon Energy

Strategies and Actions

STRATEGY	ACTION
1. Remove barriers to renewable energy installations	1.a. Get technical assistance from the DOE SolSmart program to assist in permitting and attain high level SolSmart designation. 1.b. Review zoning code to remove any prohibitive language that would limit the installation of renewable energy installations.
2. Encourage renewable energy in all new development	2.a. Include the DOE Net Zero Ready Checklist as part of all new residential construction. 2.b. Pass a solar-ready ordinance mandating appropriate infrastructure for solar in all buildings that meet threshold requirements.
3. Mandate renewable energy targets for all city facilities	3.a Include on-site renewable energy installations for all new municipal facilities to the extent viable on that site. 3.b Identify all solar retrofit opportunities and implement most cost-effective solutions.
4. Couple energy storage with renewable energy for resiliency	4.a. Utilize battery storage systems to power critical needs at municipal facilities; couple with renewable energy where feasible. 4.b. Incentivize and allow backup storage along with renewables for community resiliency centers like churches and schools.
5. Empower residents to access zero/low carbon energy options	5.a. Expand Shared Solar Program and other RenewChoice programs in Provo. 5.b. Support legislation to allow for large and medium scale solar farms in and around Provo. 5.c Increase education and awareness for residential and commercial solar programs to inform and lower barriers to entry.
6. Support Provo Power in meeting zero/low targets	6.a. Council member to sit on board for Provo Power. 6.b. Support Provo Power in the acquisition of additional low and no carbon fuel supply. 6.c. Investigate utility scale renewable energy project partnerships using City land to accelerate low and no carbon project development
7. Support gradual electrification of buildings and shift from the use of natural gas	7.a. Consider requiring all new greenfield developments to run efficient electric power and no natural gas lines to support electrified buildings. 7.b. Include incentives and education on the conversion from gas furnaces to air source heat pumps for residents.

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

PARTNERSHIP	IMPACT	COST	TIMING	PRIORITIZATION
SC and Provo Power	HIGH	$$	MEDIUM TO LONG	HIGH
SC with Council Support	HIGH	$- $$$	SHORT TO MEDIUM	HIGH
SC with City Departments	HIGH	$$$	MEDIUM	MEDIUM
SC and Provo Power	HIGH	$$$	MEDIUM	MEDIUM
SC and Provo Power	MEDIUM	$	SHORT (Quick Win)	HIGH
Provo Power and UMPA	HIGH	$$$	SHORT TO LONG	HIGH
CNS and Provo Power	MED	$$$	LONG	LOW

Environment

Strategies and Actions

STRATEGY	ACTION
1. Inventory the current tree canopy percentage	1.a. Determine current percentage of tree coverage based on national best practice. 1.b. Review 15% Target based on current baseline
2. Develop an Urban Forestry Master Plan	2 a. Increase tree health. 2. b. Adopt best practices in native tree planting specifications and preservation-reference other plans such as SLC to develop BMPs. 2.c. Study census data overlaid with tree canopy data to determine which areas are in greatest need of trees and biodiversity. 2.d. Collaborate with local partners and create an urban forestry volunteer group that plants native trees throughout the city. 2.e. Apply for grants to increase funding.
3. Incentivize the planting of native or adapted trees on private properties	3.a. Implement initiatives such as Arbor Day, where residents can buy trees at a discounted price. 3.b. Coordinate with local biologists and arborists to host seasonal gardening classes for the community. 3.c. Implement city ordinance requiring green strips to have native or adapted trees planted.
4. Increase and preserve open space	4.a. Preserve agricultural land through conservation easements and selling of development rights.
5. Improve overall water quality of water entering Utah Lake and waterbodies that feed into it, like Provo River.	5.a. Implement quarterly river/stream cleanups with the community throughout the city. 5.b. Conduct routine water quality testing in the three assessed streams for TMDLs. 5.c. Implement stormwater management controls and BMPs to improve water quality. 5.d. Instruct the community about stormwater and overall watershed health. 5.e. Incentivize businesses, residential homes, and neighborhoods with rebates in order to implement LID practices such as bioswales and permeable pavement. 5.f. Create city ordinance that increases the construction of green infrastructure and LID for new development or renovation projects.
6. Create a sustainable tree watering plan	6.a. Ensure that the proper watering infrastructure is in place prior to tree plantings. 6.b. Wherever possible, ensure that non-potable water is used for tree watering. 6.c. Implement a non-potable water use/reuse strategy within UFMP for street trees.

CONSERVATION AND RESILIENCY PLAN

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

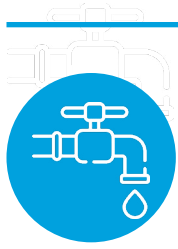| PARTNERSHIP	IMPACT	COST	TIMING	PRIORITIZATION
SC, Provo City GIS, Provo Urban Forester and Universities	HIGH	$	SHORT	MEDIUM
SC, CNS, Parks and Recreation Staff	MEDIUM	$$	SHORT	MEDIUM
SC, CNS, Provo Power, and Parks and Recreation Staff	LOW	$	SHORT	MEDIUM
SC and Parks and Recreation Staff with City Council support	HIGH	$$$	LONG	HIGH
SC and Parks and Recreation Staff	MED	$$$	MEDIUM	MEDIUM
SC and Parks and Public Works	HIGH	$$	SHORT	HIGH

Waste

Strategies and Actions

STRATEGY	ACTION
1. Increase number of single family, multi-family and commercial buildings that subscribe to recycling and compost services	1.a. Create a "pay as you throw" system where large trash cans cost more money, small trash cans cost less money and recycling is free. 1.b. Explore the feasibility of composting or the potential to add that service using the same equipment.
2. Divert construction and demolition waste from landfill	2.a. Implement a construction and demolition waste recycling program. 2.b. Pass a deconstruction ordinance requiring a certain percentage of demolition to be reused or recycled.
3. Increase proper household hazardous waste (HHW) disposal	3.a. Coordinate with waste haulers to host regular informational sessions regarding HHW disposal. 3.b. Conduct semi-annual HHW drop-offs around the city to allow for more participation.
4. Decrease amount of food waste sent to landfill	4.a. Implement a city-wide composting program for single family, multi-family, and commercial businesses. 4.b. Implement city-wide informationals and training regarding waste reduction. 4.c. Create city ordinance that allows for commercial businesses to apply for grants or rebate if they're able to achieve a 50% diversion rate.
5. Create a Zero Waste Plan	5.a. Establish and implement waste reduction goals to achieve diversion rates by 2030 and 2050 5.b. Require all haulers operating within City limits to report on total waste collected by stream

CONSERVATION AND RESILIENCY PLAN

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

PARTNERSHIP	IMPACT	COST	TIMING	PRIORITIZATION
SC, Sustainability Committee	MEDIUM	$$	MEDIUM	MEDIUM
Public Works	HIGH	$$$	MEDIUM	LOW
SC in partnership with Provo Waste Haulers	LOW	$$	SHORT	MEDIUM
Public Works and local business partners	MEDIUM	$	SHORT	MEDIUM
SC, Sustainability Committee, and City Council	HIGH	$$	MEDIUM	MEDIUM

Water

Strategies and Actions

STRATEGY	ACTION
1. Incentivize the purchase of water-efficient appliances	1.a Install water efficient appliances in all City Buildings. 1.b. Establish education programs, grants, and rebates for residential and commercial businesses who invest in efficient appliances.
2. Reduce outdoor water use	2.a. Review SLC water-wise programs and model successful strategies. 2.b. Create an education program/campaign to increase community awareness of water use. 2.c. Require xeriscaping, native or adaptive species planting on all city projects property. 2.d. Create standards or incentives for low to no water landscape such as a turf buy-back program. 2.e. Create and implement a Drought Contingency Plan to reduce unnecessary outdoor water usage during high water stress and drought periods. 2.f. City to install rain sensors/monitors on all City irrigation systems.
3. Continue to Implement water use monitoring	3.b. Install water use monitors and/or AMI meters at each residence that allows residents to see their water use each month. 3.c. Create incentives for residents who reduce and maintain water usage, especially during drought periods and summer months.
4. Increase the appropriate use of non-potable water.	4.a. Support the development of a non-potable water system for uses such as median, tree, and golf course irrigation. 4.b. Pass any needed water capture laws to allow and encourage residents to use rain barrels and other sources of rain harvesting for irrigation needs.

CONSERVATION AND RESILIENCY PLAN

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

PARTNERSHIP	IMPACT	COST	TIMING	PRIORITIZATION
SC to lead City. SC to coordinate education with Provo Power and UMPA	MEDIUM	$	SHORT TO MEDIUM	MEDIUM
SC, Public Works, and Parks and Recreation	HIGH	$	SHORT	HIGH
SC and Provo Water	HIGH	$$	MEDIUM	MEDIUM
Public Works and Parks and Recreation	HIGH	$$	LONG	MEDIUM

Mobility

Strategies and Actions

STRATEGY	ACTION
1. Track overall mode split and refine transportation KPI	1.a. Work with MAG to refine VMT metric for national comparability. 1.b. Track usage of various transportation modes
2. Implement Travel Demand Management Strategies	2.a. Encourage parking management districts, more paid parking downtown, and limit free parking opportunities in the public realm. 2.b. Support development of Congestion Management Plan or similar. 2.c. Work with Utah TravelWise to implement strategies.
3. Become a gold-level bicycle friendly city (League of American Bicyclists)	3.a. Support Transportation Master Plan goal of becoming a gold-level city.
4. Support mobility goals of the General Plan to decrease VMT	4.a. Prioritize residential and mixed use development in alignment with the Future Land Use Map.
5. Support mobility goals in Transportation Master Plan	5.a. Prioritize and support key elements of transportation master plan specific to street design to support multimodal transportation alternatives.

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

PARTNERSHIP	IMPACT	COST	TIMING	PRIORITIZATION
SC, UTA, MAG, Public Works and UDOT	LOW	$	SHORT (Quick Win)	MEDIUM
SC and Provo Transportation	LOW	$$	MEDIUM	HIGH
Administration, Public Works, and BikeWalk Provo	MEDIUM	$	SHORT (Quick Win)	HIGH
Public Works, UDOT, MAG, UTA	MEDIUM	$$$	LONG	MEDIUM
Public Works and CNS	MEDIUM	$ - $$$	MEDIUM	MEDIUM

Fire Risk

Strategies and Actions

STRATEGY	ACTION
1. Limit new development in areas with high fire risk	1.a. Identify highest risk areas and work with planning department to discourage development in these areas. 1.b. Establish boundary that limits new development up into the foothills.
2. Decrease fuels in and around high and extreme risk areas	2.a. Identify hazardous areas requiring mitigation. 2.b. Set aside funds in the annual budget to allow for fuel reduction efforts.
3. Implement wildfire protection and prevention measures	3.a. Establish city ordinance for increasing defensible space around residences and businesses in extreme and high-risk area. 3.b. Purchase wood chipper(s) for city staff to use in spring for wildfire prevention work. 3.c. Incentivize homeowners with grants and/or rebates to implement wildfire mitigation strategies on already-built homes, such as using fire-resistant lumber, installing non-wood or non-shingle roofing, and installing dual-triple pane thermal glass and fire-resistant shutters. 3.d. Provide community members with fire prevention materials in high and extreme risk areas.
4. Increase capacity of fire response	4.a. Increase fire department resources. 4.b. Establish/maintain relationships with neighboring communities for assistance in fire-fighting activities and outreach/ education efforts. 4.c. Evaluate fire response facilities and equipment annually.
5. Update the Community Wildfire Preparedness Plan	5.a. Annually update the Plan and make it publicly available on the town's website. 5.b. Include outline of evacuation plans that can be accessed on town's website. 5.c. Establish yearly wildfire preventative maintenance goals. 5.d. Educate community members on the dangers of wildfires and how to prepare for wildfire season.

CONSERVATION AND RESILIENCY PLAN

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

PARTNERSHIP	IMPACT	COST	TIMING	PRIORITIZATION
Fire Department, Public Works, and CNS	HIGH	$$	SHORT	MEDIUM
Fire Department	HIGH	$$	SHORT	HIGH
Fire Department	HIGH	$$$	MEDIUM	MEDIUM
Administration and City Council	MEDIUM	$$$	MEDIUM	LOW
Fire Department and MAG	HIGH	$	SHORT	HIGH

Additional Actions

Strategies and Actions

The following additional strategies and actions are reccomended universally for the success of the Plan. These Sustainability Coordiantor would lead these actions including the prioritization, budgeting and coordination.

STRATEGY	ACTION
Increase community participation and awareness	Improve sustainability page and increase visbility on city's website and/or create a newsletter
Increase city staff's participation and awareness	Establish a cross-departmental conservation and resiliency committee to build capacity/create department specific work plans to divide tasks
Incorporate the plan into city budgeting and prioritize actions	Incorporate conservation and resiliency performance into annual budgeting and provide recommendations for programs to support these goals.
Provide ongoing monitoring and periodic reporting	Create quarterly meetings to hold departments accountable for progress on targets
Create accountability and ownership	Establish clear roles and responsibilities for city staff, elected officials, boards and commissions and participants
Utilize alignment with the General Plan in decision making	Refer frequently to the General Plan as support for the conservation and resiliency targets
Explore partnerships in the community to increase awareness and capacity	Partner with public, private and nonprofit organizations to leverage available resources and promote participation and innovation
Build redundancy and resiliency into plan implementation	Ensure champions are supported with a co-champion structure and clear documentation system

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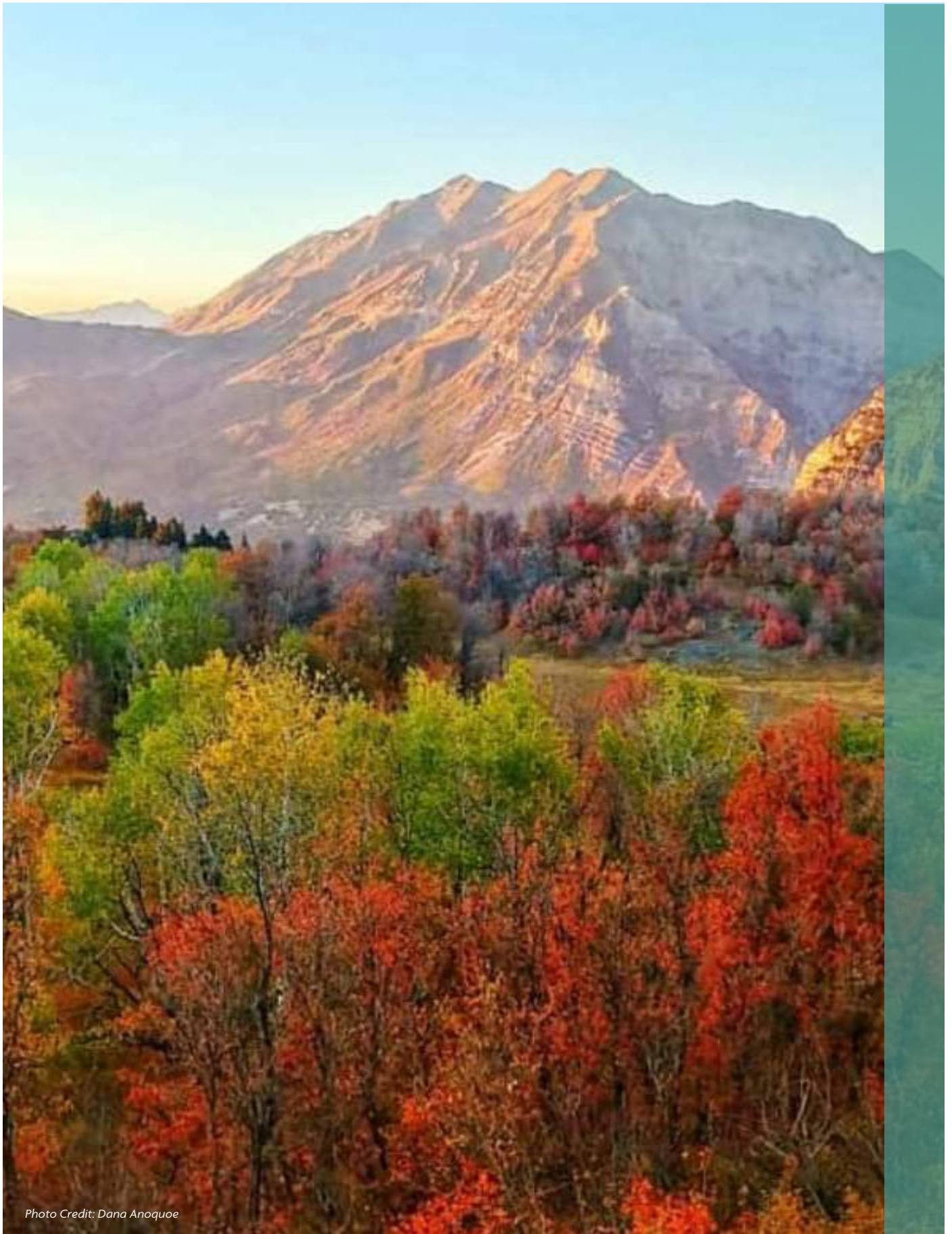
Photo Credit: Dana Anoquoe

Appendix A:
2019 Benchmarking Studies

COMMUNITY	PROVO, UT	FORT COLLINS,	TEMPE, AZ	RENO, NV
Population	116,594	174,081	203,923	514,000
Growth since 2000 (%)	10.30%	32	23	41
University Town	Yes	Yes	Yes	Yes
Median Age	23.6	29.3	29.5	35.8
Median Income	15,450	29,477	30,221	31,399
Characteristics	Brigham Young University, largest city in Utah County	Colorado State University	Arizona State University	University of Nevada Reno
Geographic Assets	Provo River, Wasatch Front	Poudre River, Proximity to Rocky Mountains	Salt River, Proximity to Phoenix, arid climate	Truckee River, Sierra Nevadas, proximity to Tahoe, arid climate
Existing Sustainability Actions	Website, Sustainability and Natural Resource Committee	Climate Action Plan, Sustainability Department, Energy Policy, Road to Zero Waste Plan	Climate Action Plan	Sustainability and Climate Action Plan
Sustainability Plan Framework	N/A	STAR	LEED	STAR
Density (Pop/Sq Mile)	2,798	3,044	5,101	2,451

CONSERVATION AND RESILIENCY PLAN

FINAL DRAFT - FOR CONSIDERATION FOR APPROVAL

TARGET CATEGORY	FORT COLLINS , CO	TEMPE, AZ	RENO, NV
Climate	80% decrease in GHG emissions by 2030	80% decrease in GHG emissions by 2050	80% decrease in GHG emissions by 2050
	Carbon neutral by 2050	Carbon neutrality by 2060	
Renewable Energy	100% renewable by 2030	100% renewable by 2035	80% renewable by 2050
	5% from local renewable sources by 2030		
Waste	75% diversion rate by 2020	25% solid waste diversion by 2020	50% recycling rate by 2025
	Zero waste by 2030		Zero waste by 2050
Water	130 gallons per capita per day by 2030	110 gal per capita per day	100% water source protection
Urban tree canopy	No target found	25% urban tree canopy coverage by 2040	10% urban tree canopy coverage by 2036
City Operations	Increase electric vehicle fleet	Carbon neutrality by 2050	80% decrease in municipal GHG emissions by 2050
Other	At least 85% of recycled material is actually recycled (no year)	80% satisfaction with transit system by 2024	25% increase in green buildings by 2025

Appendix B:
Supplemental Baseline Data

The following tables present key data from the assessment for consideration in plan development moving forward.

TABLE 1-1   RECOMMENDED KEY PERFORMANCE INDICATORS (KPIS)

CRITERIA	TOPIC	2019 METRIC	UNIT
Median AQI*	Air Quality	46	days
Registered LEED Projects*	Built Environment	9	-
GINI Index*	Economic	0.46	-
Resource Mix (% Low Carbon)	Energy Source, Efficiency, Usage	33	%
100 Year Flood (# of Buildings)	Flood Event Preparedness	48	-
Total GHG Emissions*	Carbon Footprint / Greenhouse Gas Emissions	1,053,127	mt CO2e
Average Evening Ambient Surface Temperature Deviation from Average	Human Comfort	40	% of Provo City
Residents within a ½ Mile of a Park / Open Space	Human Health	86,106	people
EV Charging Stations*	Land Use Patterns	16	dual units
Vehicle Miles Traveled / Day*	Mobility	1,668,047	-
Tree Canopy	Natural Environment Health	pending	
Municipal Solid Waste Diversion Rate*	Waste Disposal & Diversion	26	%
Total Community Water Consumption*	Water Quality, Supply, Usage	6.9	billion gal
Total Overall Risk Rating	Wildland Fire Preparedness	6	moderate

Indicates that the KPI is also a LEED for Cities and Communities criteria

TABLE 1-2   SUPPLEMENTAL PERFORMANCE METRICS (SPMS)

CRITERIA	TOPIC	2019 METRIC	UNIT
Energy Consumption*	Energy Source, Efficiency, Usage	798,581	MWh
Daily Transit Boardings (Provo City)	Mobility	16,058	-
Internal Trips as % of Total Trips	Mobility	35	%
Bikes Lanes	Mobility	48.90	miles
Trails	Mobility	58.26	miles
Total Municipal Solid Waste Generated*	Waste Disposal & Diversion	22,304.75	tons
Total Recycle Materials Recycled	Waste Disposal & Diversion	2,595	tons
Total Green Waste Collected	Waste Disposal & Diversion	5,271	tons
Total Available Supply Broken Down by Sources	Water Quality, Supply, Usage	8.42	billion gal
Total AOI for Moderate Wildfire Threat	Wildland Fire Preparedness	22,895	acres

Indicates that the SPM is also a LEED for Cities and Communities criteria

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TABLE 1-3   ADDITIONAL LEED FOR CITIES & COMMUNITIES METRICS

CRITERIA	TOPIC	2019 METRIC	UNIT
AQI Unhealthy for Sensitive Group Days	Air Quality	1	day
Unemployment Rate	Economic	4.5	%
Median Household Income in the Last 12 Months	Economic	53,864	$
Median Gross Rent of a Household Income	Economic	32.3	%
High School Graduate or Higher	Demographics / Quality of Life	96	%
Bachelor's Degree or Higher	Demographics / Quality of Life	45	%
Violent Crime	Demographics / Quality of Life	135	-

Data Notes

In all cases, sources are noted for ease of replicability and comparative purposes. Not all metrics are all inclusive, and in some cases they will need to be refined based on future efforts as part of the Conservation and Resilience Plan. Some specific data points worth of special mention include:

Greenhouse Gas metrics
The latest relatively full public data set that was available was from 2016, and while it included the major sources of energy generation and transportation, it excluded all additional sources. A complete GHG Inventory is outside the scope of this baseline effort, but the calculation workbook and sources will expedite the process of developing a complete GHG Inventory.

Air Quality
While Median Air Quality is an appropriate meta-metric to monitor over time, this datapoint is based on two regional air quality monitors, neither of which is located in Provo. In addition, the sustainability committee has indicated a preference for alternate metrics, and there are additional monitoring stations with data available to represent air quality in more robust ways that could be more relatable over time. Using the purple air monitoring and recently installed air monitors in the City to develop better SPMs in the meantime and then elevating an appropriate one to the Air Quality KPI is recommended.

Energy
Electricity use is a readily available and relatively representative metric for energy consumption, though the (pending) lack of natural gas information

is limiting. Especially with the trend towards electrification and increased lower-carbon resources as part of Provo Power's generation mix, the City may want to see increasing electricity consumption where it replaces natural gas and transportation fuel alongside lower electrical consumption for other uses in buildings.

Vehicle Miles Traveled (VMT)
In terms of overall traffic reduction, VMT is the appropriate metric and readily available from MAG year over year. Other trends in sustainability such as vehicle electrification may be underrepresented in this metric and will be better represented in other metrics and not create enough of an impact on this metric to cancel out the benefit of using it as a KPI.

Solid Waste
Waste metrics are based on City provided services and may exclude or undercount certain sectors such as commercial, multi-family, and construction waste. Recycled material (or total recyclable material collected, subtracting the contaminated materials) has not been calculated, but this effort may be useful for helping to convey impacts of proper recycling if it can be calculated easily by City staff.