WORK SESSION AGENDA

CITY COUNCIL WORK SESSION
TUESDAY
OCTOBER 27, 2020

STAFF CONFERENCE ROOM
SECOND FLOOR - CITY HALL
211 WEST ASPEN AVENUE
3:00 P.M.

ATTENTION

IN-PERSON AUDIENCES AT CITY COUNCIL MEETINGS HAVE BEEN SUSPENDED UNTIL FURTHER NOTICE

The meetings will continue to be live streamed on the city's website (https://www.flagstaff.az.gov/1461/Streaming-City-Council-Meetings)

PUBLIC COMMENT PROTOCOL

The process for submitting a public comment has changed and public comments will no longer be read by staff during the Council Meetings.

All public comments will be taken either telephonically or accepted as a written comment.

Public comments may be submitted to publiccomment@flagstaffaz.gov

If you wish to address the City Council with a public comment by phone you must submit the following information:

First and Last Name
Phone Number
Agenda Item number you wish to speak on

If any of this information is missing, you will not be called. We will attempt to call you only one time. We are unable to provide a time when you may be called.

All comments submitted otherwise will be considered written comments and will be documented into the record as such.

If you wish to email Mayor and Council directly you may do so at council@flagstaffaz.gov.

AGENDA

1. Call to Order

NOTICE OF OPTION TO RECESS INTO EXECUTIVE SESSION

Pursuant to A.R.S. §38-431.02, notice is hereby given to the members of the City Council and to the general public that, at this work session, the City Council may vote to go into executive session, which will not be open to the public, for legal advice and discussion with the City's attorneys for legal advice on any item listed on the following agenda, pursuant to A.R.S. §38-431.03(A)(3).

2. Pledge of Allegiance and Mission Statement

MISSION STATEMENT

The mission of the City of Flagstaff is to protect and enhance the quality of life for all.

3. ROLL CALL

NOTE: One or more Councilmembers may be in attendance telephonically or by other technological means.

MAYOR EVANS
VICE MAYOR SHIMONI
COUNCILMEMBER ASLAN
COUNCILMEMBER MCCARTHY
COUNCILMEMBER ODEGAARD
COUNCILMEMBER SALAS
COUNCILMEMBER WHELAN

4. Public Participation

Public Participation enables the public to address the council about items that are not on the prepared agenda. Public Participation appears on the agenda twice, at the beginning and at the end of the work session. You may speak at one or the other, but not both. Anyone wishing to comment at the meeting is asked to fill out a speaker card and submit it to the recording clerk. When the item comes up on the agenda, your name will be called. You may address the Council up to three times throughout the meeting, including comments made during Public Participation. Please limit your remarks to three minutes per item to allow everyone to have an opportunity to speak. At the discretion of the Chair, ten or more persons present at the meeting and wishing to speak may appoint a representative who may have no more than fifteen minutes to speak.

5. Review of Draft Agenda for the November 3, 2020 City Council Meeting

Citizens wishing to speak on agenda items not specifically called out by the City Council may submit a speaker card for their items of interest to the recording clerk.

6. Public Works - Snow Operations Presentation and Discussion

7. Discussion of options for the expiring Materials Recovery Facility (MRF) contract

8. Climate Emergency Declaration Update

9. JW Powell Specific Plan Study - Project Update

10. Rio de Flag Flood Control Project Update

11. Discussion about changing the zoning code to allow required commercial areas of mixed-use developments that are vacant to be converted to dwelling units in exchange for permanent, affordable housing

12. Review of current process for all Reclaimed Water agreements and their renewal

13. Public Participation

14. Informational Items To/From Mayor, Council, and City Manager; future agenda item requests

15. Adjournment

CERTIFICATE OF POSTING OF NOTICE

The undersigned hereby certifies that a copy of the foregoing notice was duly posted at Flagstaff City Hall on _____, at _____ a.m./p.m. in accordance with the statement filed by the City Council with the City Clerk.

Dated this _____ day of _____, 2020.

_____
Stacy Saltzburg, MMC, City Clerk

6.

CITY OF FLAGSTAFF

STAFF SUMMARY REPORT

To:	The Honorable Mayor and Council
From:	Scott Overton, Streets Section Director
Date:	07/30/2020
Meeting Date:	10/27/2020

TITLE

Public Works - Snow Operations Presentation and Discussion

STAFF RECOMMENDED ACTION:

Informational Item - Discussion of the upcoming winter season preparations and parking restrictions.

EXECUTIVE SUMMARY:

The City of Flagstaff historically receives approximately 100" of snow in a typical winter season. In the late fall, preparations of equipment and training of personnel begins for winter snow operations. The community has high expectations of transportation network and facilities clearing. The snow operations discussion will provide insights into the operations of Public Works and is educational for all residents and visitors of Flagstaff.

INFORMATION:

Attached Power Point Presentation

Attachments: Snow Readiness - 2020

PUBLIC WORKS
CITY OF FLAGSTAFF

Snow Operations Readiness Report 2020

Presentation Objectives

Provide the City Council and the community with a Public Works winter storm readiness report.

1. Forecasting and Storm Preparations
2. Streets - Winter Operations
3. Parks – Winter Operations
4. Post Storm Operations
5. Community Expectations and Parking Ordinance

Storm Preparations

Winter Storm Event

- NWS and all-weather briefings
- On-call supervisors and weather watch
- Weather and Road Conditions
- Resource deployment
    - Safety, Timing and Temperature
- Agency communication and reporting
- Snow operations are 24/7 with 12-hour shifts

Streets Section

- Added 3 new FTE
- Recent fleet improvements
    - 1- 10 - wheel plow truck
    - 2- 6 - wheel plow trucks
- 2020 Economic Outlook
    - Additional grader(s) on hold
    - Pilot grader gates program and increased service delayed

Streets Fleet and Equipment

- 19 - 10-wheel Plow/Spreader Box Trucks
- 4 - 6-wheel Plow/Spreader Box Trucks
- 9 - Road Graders
- 3 - Front End Loaders
- 1 - Truck mounted Snow Thrower
- 3 - Tractor-trailers for hauling operations

Streets Personnel Preparations

Snow operations are 24/7 with 12-hour shifts

- 4 - Full Time Operations Supervisors
- 18 - Full Time Streets Equipment Operators
- 4-6 - CDL operators from other sections
- 6-18 - On-Call community CDL operators
- 1 - Administrative Specialist

Minimum shift staffing, CDL pool and wage concerns

Snow Operations - Streets

First Priority Routes – Open and Passable at all times

- Main Routes and Arterials
- Major Hills
- Downtown Core
- NAIPTA Bus Routes

Second Priority Routes –

- Residential Streets and Cul-de-sacs

Plowing and Ice Control for duration of the storm event.

Parks Section - Readiness

- Same forecasting and snow season readiness as our partners in Streets with season predictions and resource analytics
- All staffing and fleet same as previous fiscal years
  - 15 equipment operators, 10 hand shovelers
  - 1 FTE is vacant during the recession plan and 1 FTE is on a leave of absence which will create impacts to the operation
- Adjustments to routes and locations accounted for and implemented into the Workforce GIS application
- Courtesy berm relocation program review and implementation

Parks Fleet and Equipment

- 10 – Plows on Trucks
- 1 – Cinder spreader
- 6 – Tractors and Backhoes
- 4 – Snow throwers
- Many shovels!

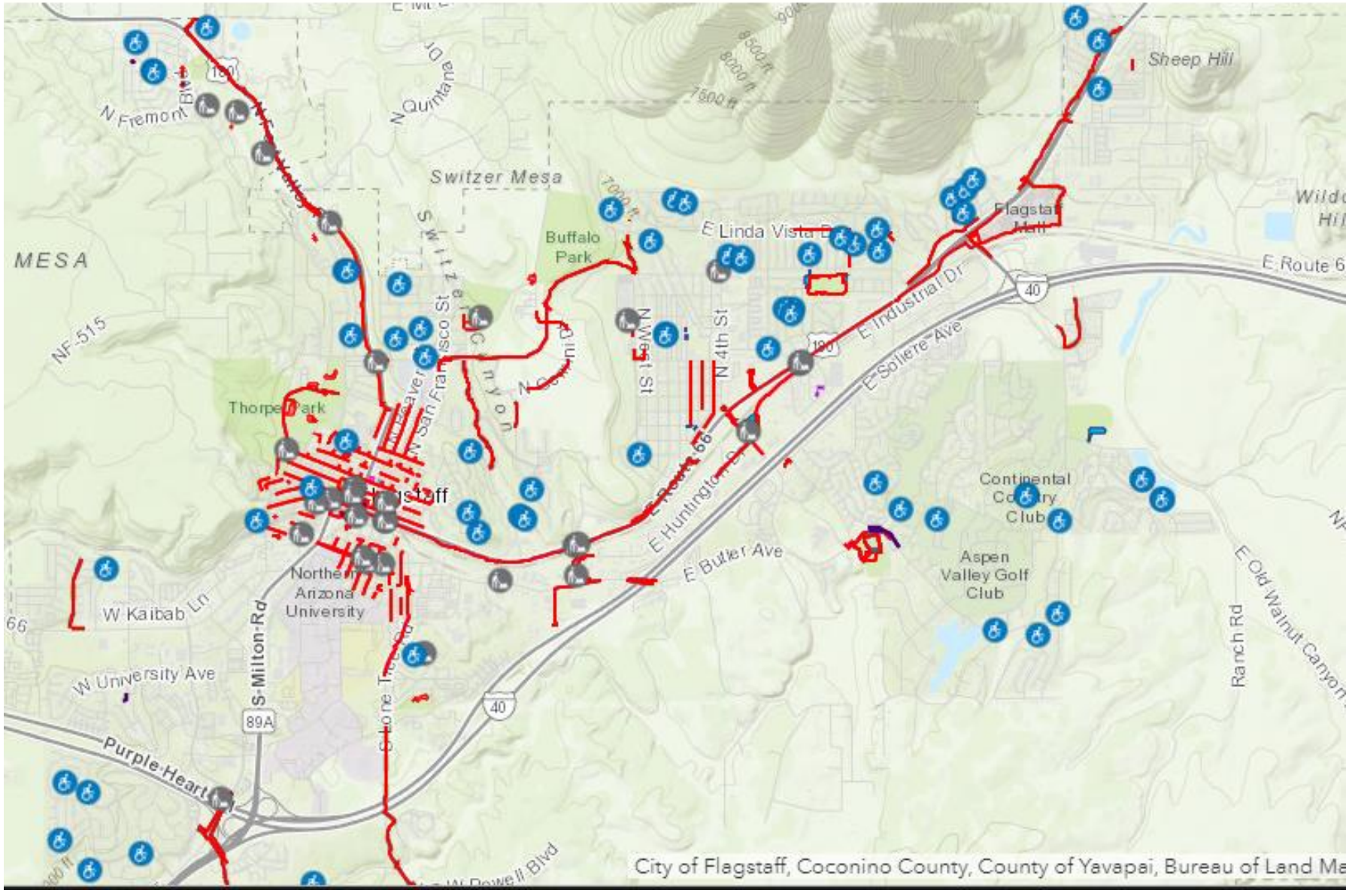
Snow Operations - Parks

- Operation is 24/7 with 12-hour shifts when applicable
  - Shifts typically 4 AM, 6 AM and 9 AM start times
  - 2 AM hauling time for downtown/Heritage Square
- Priorities of routes, in order
  - Parking lots of City-owned buildings
  - City-owned sidewalks and FUTS system (non-aggregate)
  - Heritage Square
  - Dedicated City Alleys
  - Courtesy Berm Service, when applicable
  - Entrances to FUTS – non aggregate only
  - Parking lots at park locations
  - Stairways, walkways, skate tracks and BMX track in City parks

Snow Operations- Parks

Parks snow accumulation policy:

- 1” and above – City Owned Building Sidewalks and Heritage Square Plaza
- 3” and above – City Owned Parking Lots
- 6” and above - Dedicated City Alleys and FUTS Trail Entrances



Post Storm Operations

Community-wide

- Periodic hauling operations – Downtown Parking
- Cul-de-sac stacking and removal
- Intersection clean up and push back
- Signage and damage repairs
- Prolonged Ice control and trouble spots
- Ice Cinder sweeping

    Priority is bike lanes and mains.

Public Operations Assistance

- Limit travel as much as possible
- Provide safe distances and stay alert
- Winter Parking Ordinance and Enforcement

  NO Parking on City Streets November 1st to April 1st

  Citywide – Midnight to 7:00 AM

  N. Downtown Area* – 3:00 AM to 7:00 AM
- Museum Flood mitigation areas
- City Web site for more information

Questions?

7.

CITY OF FLAGSTAFF

STAFF SUMMARY REPORT

To:	The Honorable Mayor and Council
From:	Dylan Lenzen, Sustainability Specialist
Co-Submitter:	Todd Hanson
Date:	10/14/2020
Meeting Date:	10/27/2020

TITLE

Discussion of options for the expiring Materials Recovery Facility (MRF) contract

STAFF RECOMMENDED ACTION:

Provide staff with direction on which of the presented options to pursue.

EXECUTIVE SUMMARY:

Currently, the City contracts with Norton Environmental, Inc. to operate the Materials Recovery Facility (MRF), which sorts and markets the recyclables collected by the City's Solid Waste Section. The existing contract is set to expire in September 2023 and the City needs to consider how to approach the end of this contract. Decision-making related to recycling and this MRF is critical for the goals included in the Rethink Waste Plan and Climate Action and Adaptation Plan. Ultimately, what materials are accepted for recycling, the City's recycling rate, and quality of sorted material is dependent upon the City arrangement for the processing of recyclables.

Staff consulted WIH Resource Group (WRG) to research all options available to the City. Each of these options, along with staff's corresponding ranking and justification are noted in the table below. Given current factors, such as the market for recyclable material, the volume of material generated in Flagstaff, and regional factors, staff recommends converting the MRF into a transfer operation that delivers material to a MRF in the Phoenix-area (Option 2). This option is the most cost effective, and will allow the City to expand the types of material that can be collected from residents.

Options	Staff Ranking	Justification
1) Develop a regional hub-and-spoke recycling model	**4**	Lacking support for participation from regional jurisdictions
2) Convert MRF into a transfer operation and haul to a Phoenix-area MRF	**1**	Cost savings, efficiencies, flexibility, and greater diversion potential
3) Operate the MRF internally after facility updates and upgrades	**3**	Higher direct capital and operating costs to the City than current costs
4) Procure the operation of the MRF by a private MRF operator	**2**	RFP or RFQ needs to be issued to refine costs and determine viability
5) Suspend recycling collections and processing	**5**	Not popular with residents and stakeholders

INFORMATION:

Existing Contract

The City entered into contract with Norton Environment, Inc. in January 1997 and the MRF has been operational since October 1998. The facility is responsible for sorting and selling to market all of the recyclable material collected by the City's Solid Waste Section. The materials accepted as recycling, include number 1 and 2 plastics, mixed paper, cardboard, aluminum and steel cans. This contract will expire in September 2023.

Connection to City Goals

This contract and any future arrangement for the processing of recyclables will have a significant impact on the City's capacity to achieve the goals outlined in the Rethink Waste Plan, specifically the goal to divert 90% of waste by 2050. What the City can accept for recycling and how well that material is sorted will be major determinants in achieving that goal. How the City processes recycling at the close of the existing contract, will have a significant effect on these factors.

The City's recyclables processing arrangement will also have significant implications for the Climate Action and Adaptation Plan. Achieving the City's waste diversion goals will reduce the amount of material sent to the landfill, as well as the amount of greenhouse gas emissions it produces.

Options

1) Develop a regional hub-and-spoke recycling model:

This option would make Flagstaff a centralized processing "hub," where material is sorted, baled, and sold to market. Flagstaff would accept unsorted recyclables from surrounding communities, or "spokes," to increase the volume and economies of scale of the centralized facility in Flagstaff. While this model would increase efficiencies by limiting the capital demand and investment required by each jurisdiction, WRG identified multiple barriers to implementing this model in Flagstaff, including

- Many surrounding cities and towns are tied to their own hauling and processing contracts that would prevent them from redirecting material flows to Flagstaff.
- Other cities and towns do not have municipal or franchised waste and recycling collection, which means that they do not have the means to direct collected material to their preferred destination.
- Lack of state leadership and financial support to develop this model. In states with significant hub-and-spoke infrastructure, there is administrative support and guidance, as well and funding for implementation.
- Inadequate volume to support this model. For the above reasons, WIH group found that there would not be enough recyclables from surrounding jurisdictions to sustain this recycling model.

2) Convert MRF into a transfer operation and haul to a Phoenix-area MRF:

The existing MRF would be converted into a transfer operation, where recyclables would be aggregated, stored, and transferred to the Phoenix metro area. Trips would take place approximately seven days per week. Multiple benefits are associated with this model, including the opportunity to increase the types of material accepted for recycling. Because Phoenix-area MRF's benefit from greater economies of scale, they employ better technology than the Norton MRF, which allows them to properly sort materials, such as glass, polypropylene, and thermoform plastic. This option enables greater flexibility, as it would not require the capital investment or long-term contracts of other options. This flexibility and reduced costs could enable the City to explore other innovative diversion opportunities, such as a Center for Hard to Recycle Materials (CHARM) facility that captures other materials not captured by curbside recycling services.

One challenge associated with this option is the limited control of acceptable materials, as well as the

loss of a MRF as an educational opportunity where residents can tour the facility to learn about how recycling works.

3) Operate the MRF internally after facility updates and upgrades:

Pursuing this option would require the City to upgrade nearly all existing equipment and the building, which could range between $1-10 million, depending on the quality of the technology employed. This option would mean that the City is responsible for management and staffing. While this option would provide for greater control of technology used, as well as the accepted materials, many of the necessary facility upgrades are significant. In order to limit costs, the City could choose to utilize lower-cost technology, but many of these technologies, such as Revolution Systems, would not be able to support the volume of recyclables that Flagstaff already generates. The costs per ton of material for multiple sorting technologies is shown below in comparison with the transfer of material to three different Phoenix-area MRFs.

Outsource to a Phoenix-area MRF (Option 2)	**Cost per ton**
To the City of Phoenix MRF	$72.14
To Waste Management's Surprise MRF	$110.14
To Friedman's MRF in Phoenix	$120.89
Process internally in Flagstaff (Options 1 and 2)	**Cost per ton**
BHS System #1 – update the current sort line	$127.02
BHS System #2 – Upgrade to new screens / robotics	$146.09
Revolution System #1 – single rotational system	$76.78
Revolution System #2 – dual rotation system	$134.09

4) Procure MRF operation by a private MRF operator:

This would be a continuation of the current model for recyclables processing, but with a new operator. The City would issue a solicitation for a MRF operator. The solicitation would include necessary facility upgrades, which could be completed under a low-interest loan or bond funding (estimates range from $2-10 million). Whether the City or the operator pays for these upgrades would depend upon contract negotiations. If the operator were to pay for upgrades, the resulting contract is likely to be 5-10 years longer than if the City were to pay.

WRG surveyed private sector operators to gauge interest. They identified six interested operators. While many details remain uncertain, the ideal contract length for these operators ranged from 10-20 years, depending on whether the City pays for facility upgrades.

5) Suspend recycling collections and processing:

This option would mean that recyclables would be collected as trash and delivered to the landfill. Doing so would result in cost savings, but prevent the City from achieving the goals identified in the Rethink Waste Plan and Climate Action and Adaptation Plan, and limit the life of the landfill

<u>Staff Recommendation</u>
WRG and staff recommend that the City pursue Option 2, which would convert the existing facility to a transfer operation. Of the options presented, this option would result in the lowest cost per ton of recyclables sorted, while likely increasing the accepted materials and Flagstaff's recycling rate.

Attachments: MRF Analysis Conducted by WIH Resource Group
MRF Options Presentation

WIH RESOURCE GROUP
Environmental & Logistical Solutions™

Material Recovery Facility & Recycling Alternatives Analysis

Final Report

City of Flagstaff
Solid Waste Department

May 2020

Material Recovery Facility & Recycling Alternatives Analysis

Prepared for:
City of Flagstaff Arizona – Environmental Management Section
Todd Hanson, Solid Waste Section Director
3200 W Route 66
Flagstaff, AZ 86001
Tel: 928-213-2115

Prepared by:
WIH Resource Group, Inc.
28528 N. 111th Way
Scottsdale, Arizona 85262
Tel: 480 241 9994
www.wihrg.com

WIH Resource Group Project Team:
Bob Wallace, MBA – Project Manager – Principal & Vice President of WIH Resource Group
Chris Bell, CPA – Senior Associate, Financial Analysis – President of Bell & Associates

Date:
March 2020

Disclaimer:
This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. Any dissemination, distribution, or copying of this document is strictly prohibited.

Table of Contents

Definitions and Acronyms

This section provides definitions of common words and acronyms used in this report, and that were also used in the public and private sector surveys that the WRG project team administered as part of the project research. Terms are provided in the following categories for ease in understanding their applicability:

- Report General Terms
- Recyclable Material Processed/Received
- Types of Processing
- Types of Manufacturing/End Use

Report General Terms

These common terms are used throughout the report with higher frequency.

City of Flagstaff (City): The Client who requested the research and development of this report and whose MRF and recycling program is the subject of it.

China's Scrap Ban: Enacted in March 2018 after being announced the previous year during the National Sword customs contamination enforcement action (which the ban is sometimes erroneously referred to). Both the ban and National Sword are often used as placeholder terms to describe the outsized economic impact of this considerable export market disruption (estimated at a fifth of all commodities

Material Recovery Facility (MRF): A facility accepting source-separated residential and commercially collected recyclables and processes them for wholesale distribution through sorting, size reduction, baling, or other processes for shipment to end-users or brokers. MRFs typically includes facilities that collect recyclables from public or commercial sources, and that sell the materials directly to brokers or an end market but excludes such facilities that only aggregate and transport collected recycled materials to a materials recovery facility (MRF) for further processing.

Municipal Solid Waste (MSW): Solid waste resulting from or incidental to municipal, community, commercial, institutional, and recreational activities, including garbage, rubbish, trash, ashes, street cleanings, dead animals, abandoned automobiles, and all other solid waste other than industrial or hazardous wastes.

Recycling: A process by which materials that have served their intended use or are scrapped, discarded, used, surplus, or obsolete are collected, separated, or processed and returned to use in the form of raw materials in the production of new products. Recycling also includes:

- The composting process if the compost material is put to beneficial reuse as for application to land, as organic fertilizer, of processed sludge or biosolids from municipal wastewater treatment plants and other organic matter resulting from poultry, dairy, livestock, or other agricultural operations.

WIH Resource Group (WRG): The Project Consulting Team retained by the City to conduct the research and analysis for this project and develop this report.

Recyclable Material Processed/Received

Construction & Demolition Material (C&D): Waste materials that are generated during the construction, remodeling, repair, or demolition of buildings, bridges, pavements, and other human-made structures. C&D material includes concrete, asphalt, lumber, steel girders, steel rods, wiring, drywall, carpets, window glass,

metal and plastic piping, tree stumps, soil, and other miscellaneous items related to the activities listed above. This category also includes natural disaster debris.

Electronics Materials: Post-consumer electrical or electronic devices from residential or commercial Generators.

Glass: Includes the two sub-categories as defined below:

- Containers: Containers and packaging such as beer and soft drink bottles, wine and liquor bottles, and bottles and jars for food, cosmetics, and other products.
- Other Glass: All other products, such as flat glass used in windows.

HDPE #2: High-density polyethylene (HDPE) typically used for products such as milk jugs, detergent bottles, and garbage containers.

Household Hazardous Waste (HHW): Hazardous products that are used and disposed of by residential rather than industrial or commercial consumers. These products include some paints, stains, batteries, varnishes, solvents, and pesticides, and other materials or products containing volatile chemicals that catch fire, react, explode under certain circumstances, or that are corrosive or toxic.

LDPE: Low-density polyethylene

Metals: Includes the two sub-categories defined below:

- Ferrous: Magnetic metals derived from iron (steel). Products made from ferrous metals include major and small appliances, furniture, and containers, and packaging (steel drums and barrels).
- Non-Ferrous: Nonmagnetic metals such as aluminum, lead, and copper. Products made from nonferrous metals include containers and packaging such as beverage cans, food, and other nonfood cans; non-ferrous metals found in appliances, furniture, electronic equipment, and non-packaging aluminum products (foil, closures, and lids from bimetal cans).

Mixed Paper: Paper that includes material like old newspapers, old magazines, office papers, telephone directories, bags, and paperboard packaging, including gable top and aseptic food and beverage cartons (e.g., milk and juice cartons).

Old Corrugated Containers (OCC): Old corrugated containers refer to containers made from unbleached, unwaxed paper with a ruffled (corrugated) inner liner.

Other Paper: All other types of scrap paper not including mixed paper or OCC. Excludes pre-consumer Material.

Organics: Includes the three sub-categories defined below:

- **Yard Trimmings, Brush, and Green Waste**: Includes grass, leaves, tree branches, brush, and tree stumps from residential, institutional, and commercial sources.
- **Food and Beverage Materials:** Uneaten food and food preparation wastes from residences and
- commercial establishments (grocery stores, restaurants, and produce stands), institutional sources (school cafeterias), and industrial sources (employee lunchrooms).
- **Biosolids:** Solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in treatment works.

Paper: Paper products and materials, such as old newspapers, old magazines, office papers, telephone directories, old corrugated containers, bags, and some paperboard packaging. Examples of recycling include processing paper into new paper products (tissue, paperboard, hydro-mulch, animal bedding, or insulation materials).

PET #1: Polyethylene terephthalate (PET or PETE or polyester), a thermoplastic material used to manufacture plastic soft drink containers and rigid containers.

Plastic: Plastic containers and packaging made from various resins, including PETE, HDPE, PVC, LDPE, PP,
and PS.

Plastics #3-7: Plastics labeled as #3 - #7, including polyvinyl chloride (PVC, #3), low density polyethylene (LDPE, #4), polypropylene (PP, #5), polystyrene (PS, #6), and other plastics (#7).

PP: Polypropylene

PS: Polystyrene

PVC: Polyvinyl chloride

Textiles: Fibers from discarded apparel, furniture, linens (sheets and towels), carpets and rugs, and footwear.

Tires: Used tires from cars and trucks (other vehicles).

Types of Processing

Construction & Demolition Debris Processing: Accepting commingled or sorted construction and demolition (C&D) materials and processing them through sorting, size reduction, baling, or other processes for shipment to end-users or brokers.

Electronics Processing: Processing of discarded electronics for recycling via deconstruction, shredding, sorting, baling, or other preparation, for sale to end-users or brokers. It does not include the collection of materials for shipment to other processors and does not include handling electronics for reuse purposes only.

Household Hazardous Waste Collection: Accepting household hazardous waste (HHW) from the public, including but not limited to paint, solvents, pesticides, fluorescent tubes, and other items identified as HHW.

Material Recovery Facility (MRF): Accepting source-separated recyclables and processing them for wholesale distribution through sorting, size reduction, baling, or other processes for shipment to end-users or brokers. MRFs typically include facilities that collect recyclables from public or commercial sources, and that sell the materials directly to brokers or an end market but excludes such facilities that only aggregate and transport collected recycled materials to a materials recovery facility (MRF) for further processing.

Scrap Metal Processing: Accepting discarded ferrous and nonferrous metal scrap from the public and businesses for processing via sorting, size reduction, baling, or other preparations, for sale to end-users or brokers. It does not include smelters or remelting facilities, which are defined as end-product manufacturing.

Textile Processing: Accepting textiles from the public and/or businesses for the purpose of cleaning, sorting, size-reducing, and/or other processes, for the purpose of shipping to end-users for recycling uses (not fuel or sale for reuse). This includes carpets, clothing, and other textile products. It excludes thrift stores and shipment of clothing for reuse.

Tire Processing: Receipt of whole, discarded tires and processing them through size reduction for the purpose of recycling, including the production of crumb rubber, shredding for use in civil engineering projects, or other recycling applications. This excludes shipments of whole tires for reuse and of tire shreds for use as fuel.

Types of Manufacturing/End Use

Compost/Mulch Production: Production of compost, mulch, or other soil amendment or landscaping products from recovered yard waste, food waste, or biosolids. This excludes land application and production of fuel.

Construction & Demolition Debris End-Use: Receipt of recycled C&D materials for the purpose of producing new products or using the materials in end-use applications (e.g., road base or as construction aggregate). This excludes direct reuse and combustion.

Fiberglass Manufacturer: Receipt of crushed glass, typically from glass beneficiation and/or materials recovery facilities, to manufacture fiberglass.

Glass Beneficiation: Receipt of crushed glass, typically from materials recovery facilities, and/or whole glass containers, flat glass, and/or other products direct from generators, and processing through further cleaning, sorting and crushing to meet manufacturer specifications, for sale to end-users or brokers.

Glass Containers Manufacturer: Receipt of crushed glass, typically from glass beneficiators and/or materials recovery facilities, for the purpose of manufacturing new glass containers.

Other End Product Manufacturing: Accepting recyclables from processors for the purpose of manufacturing recycled-content products for sale to consumers or other industries as intermediate products. This excludes direct reuse and combustion.

Plastics Reclamation: Receipt of recycled plastics, typically from material recovery facilities, and cleaning, sorting, and size reducing the plastics through grinding and/or extrusion of pellets meeting manufacturer specifications, for sale to end-users or brokers or on-site use to manufacture products.

Plastics Product Manufacture: Receipt of recycled plastics, typically from plastics reclaimers and/or material recovery facilities, for the purpose of manufacturing new plastic products and/or product components.

Pulp, Paper, or Paperboard Manufacturer: Receipt of baled scrap paper, typically from materials recovery facilities, other processors, or directly from commercial generators, for the purpose of manufacturing pulp, paper, or paperboard products and acronyms.

Secondary Metals Smelter, Melter, or Product Fabrication: Receipt of recycled metals, typically from scrap processors and/or material recovery facilities, for the purpose of producing refined recycled raw materials for use by other manufacturers, and/or for creating new products or product components.

Recycled Tire Product Manufacture/ End-Use: Receipt of whole tires or tire-derived materials, typically from scrap tire processors, for the purpose of producing new products or using the materials in end-use applications (e.g., as tire-derived aggregate or as synthetic turf infill). This excludes direct tire reuse and combustion.

Textiles End-Use: Receipt of recycled textiles for the purpose of producing refined recycled raw materials for use by other manufacturers, and/or for producing new products or product components. This excludes direct reuse of clothing and other textiles.

Executive Summary

This document is a report that highlights the summary of findings from research, interviews and provides the recommendations of the Materials Recovery Facility (MRF) and recycling options analysis for the City of Flagstaff (City) conducted by WIH Resource Group (WRG) under a professional services agreement with the City.

It also provides a background of the City's local solid waste and recycling operations as well as some of the local private sector services providers. The report includes the results of regional recycling data analysis, and surveys of regional jurisdictions that were conducted in the Fall of 2019, with both public agencies and private sector companies.

The study was conducted using the methodology as outlined in Section 1.3. Section One describes the many aspects that were considered when conducting the research for this Study.

While Section 1.2 provides a full description of the methodology, Section 4 includes more significant details regarding the methodology used for the economic analysis of each of the five options considered for this Study. For definitions of specific terms used throughout this study, please refer to the Definitions and Acronyms in the preceding Section of this report. Section Six provides a summary of the options and the WRG project team's recommendations for the City's consideration.

In summary, of the five options considered and researched, Option Two provides the lowest cost and most efficient alternative for the short-term given the current volatility and somewhat unpredictable conditions of the recycling markets in the US for the foreseeable future.

As identified in Section 4, five options were developed during communications and with City staff input for consideration. The five options that the WRG project team researched and analyzed for this study are summarized in Table ES-1 from Section 6. This table also shows the ranking that the WRG project team assigned each of the options, with 1 being the highest ranked and 5 being the lowest ranking.

Table ES-1: Summary of the Five Options Analyzed and Ranking

Option	Option Description	WRG Team Ranking	Primary Reason
One	Development of a Regional Hub-and-Spoke Recycling Model	4	Survey findings from regional jurisdictions lacking support in participating
Two	**MRF conversion to a transfer operation and hauling to a MRF outside the City**	**1**	**Cost savings & efficiencies**
Three	City Operations of the MRF after facility updates and upgrades	3	Higher direct capital & operating costs to the City than current costs
Four	Procurement of City's MRF operations by Private MRF Operator	2	RFP or RFQ needs to be developed and issued to further refine actual costs from private sector to determine validity
Five	Suspend Recycling Collections and Processing (Short-term solution)	5	While would save the City money, it is not popular with residents, most elected officials and other stakeholders

Of the options evaluated, the lowest cost and most efficient alternative for the City is Option 2. This option is where the City would convert the existing MRF into a transfer operation whereby recyclables are unloaded by local collection trucks, whether from City operations or private collection companies or other regional public agencies, compacted and baled and then reloaded into Class 8 transfer trucks for transport to the City of Phoenix's North Gateway MRF and Transfer Station located in North Phoenix.

Section One - Project Overview

1.1 Project Purpose & Introduction

The City of Flagstaff retained and contracted with WIH Resource Group (WRG) to conduct this Materials Recovery Facility (MRF) & Recycling Alternatives Analysis, leading to the recommendations contained in this report.

The purpose of this study, and intended outcomes, are to assist the City in conducting the alternatives analysis and development of a long-term strategic plan related to the City's recycling Material Recovery Facility (MRF).

1.2 Background

The City is nearing the end of its current operating contract for the MRF with Norton Environmental. The City of Flagstaff contracts with Norton Environmental Inc. to operate its MRF. The current contract began in December 1997 to design, build, equip, and manage the MRF. Norton presently operates and maintains the MRF and markets the recycled commodities processed at the MRF.

The existing operating agreement expires in September of 2023 with no further contract extensions. As part of this study, the City is assessing its options to determine a course of action for the future processing and marketing of its collected recyclable materials when the contract with Norton expires.

The scope of the study included the following:

1. Identifying existing recycling services and determining potential service gaps,
2. Consider alternative recycling processing options for the City's collected materials,
3. Interviewing potential public and private recycling service providers,
4. Researching a possible alternative supported by the Arizona Department of Environmental Quality (ADEQ), which is the "Hub and Spoke" recycling system.
5. Surveying and interviewing other regional cities, towns, and tribal nations,
6. And completing a financial and operational analysis of all processing alternatives.

As part of the study, the WRG team was contracted to perform the following:

- Estimate the additional cost to update the City's current MRF and calculate the cost to process the expected volume of incoming recyclable material.
- Assess whether the local markets and volumes can sustain a recycling processing facility.
- Identify facilities that would be capable of accepting materials collected from the City's current recycling program.
- Explore contracting options for providing processing services to the City
- Estimate service fees and rate impacts of the recycling processing alternatives.
- Identify potential obstacles for the proposed recycling processing alternatives.
- Consider collaborative partnerships with neighboring cities and solid waste jurisdictions in for the Hub and Spoke system.

After identifying all practical options and their respective performance and costs, the next step was to detail the options based on performance criteria. Examples of the criteria that can be applied are:

- Does the option support the City's recycling objectives/goals and comply with Arizona state laws?
- Performance and Reliability: Is the practice or option proven in other areas?

- Net Revenue and Costs: What is the impact on the City's ratepayers, and can the City support these costs?
- Compatibility with neighboring Solid Waste Management Systems: Can the option be integrated with other systems to reduce costs or increase efficiency?

1.3 Study Methodology

The study methodology followed important guiding principles intended to maximize participation and produce the highest quality results for the City of Flagstaff. The study was conducted using the methodology developed for similar studies that the WRG project team has undertaken for other regional solid waste and recycling studies conducted in North America.

The Study research also included incorporating input from the City's staff, public and private sector surveys, equipment manufacturer interviews, and ADEQ stakeholders from meetings held throughout the project study timeline. While this subsection provides a brief description of the study methodology, Section 4 provides more detail regarding the methodology used for the economic and financial analysis of the five alternatives outlined in this study.

To assess and develop this MRF and recycling options analysis and meet the objectives for the City of Flagstaff, the WIH Resource Group Project team conducted research and reviewed a wide range of reports and data provided by the City. The WRG project team also toured the City's MRF operations to gain an understanding of the current operations, management practices, quality of the end materials being processed, and performance of the MRF. The research also included reviewing the following information:

- Reviewing available data and information, including but not limited to the service agreement.
- (Agreement) and associated amendments, invoices for services, required facility reports, and historical correspondence between the City and Norton, the Operator.
- Conduct a site visit of the facility to observe MRF operations and interview the Operator's management and facility staff.
- Meet with key City staff to discuss the administration of the service agreement (Agreement), historical operations, and program performance.
- Attending meetings with and ongoing communications with personnel from ADEQ (Arizona Department of Environmental Quality) and the City's recycling coordinator.

On October 24th, a site visit of the MRF facility was conducted by representatives of the WIH Resource Group project team. The visit included discussions with City and operations staff, a walking tour of the site and facility, review of the processing equipment, baling operations, tipping floor, and outbound loading docks, and observing the overall operations including but not limited to the following:

- Discussions with the City's Solid Waste Director
- Conversations with the Norton MRF Business Office Manager
- Entrance and exiting of vehicles at the facility & scale operations
- High-level inspection of the BHS processing and baling equipment
- Inbound materials tipping floor operations and efficiency by City and non-City vehicles
- Feeding of materials into the processing system and system efficiency
- Baling and general storage of the sorted materials
- Glass residual onsite storage
- Roll-off collection, processing, and storage
- General staffing

1.4 Report Organization

This report is divided into six sections as follows to provide a logical flow to the analysis of this study:

- Section One - Project Overview – Project Purpose, Introduction, and Background
- Section Two - Current System Evaluation – Collections, Landfill, MRF and other programs
- Section Three - Waste Stream Analysis
- Section Four - Recycling Options Analysis - Financial & Environmental Impacts
- Section Five - Recycling Program Policy Issues and Considerations
- Section Six - Key Findings and Recommendations of Alternatives Analysis

Section Two - Current System Evaluation

This section provides an overview of the current solid waste and recycling services within the Solid Waste Section of the City of Flagstaff.

2.1 System Overview

The City of Flagstaff provides residential and commercial collections of solid waste and recycling to its residents, businesses, local industrial companies, and to the campus of Northern Arizona University (NAU). It owns the building housing the MRF and has an agreement with Norton Environmental to manage the facility. The City also owns and operates the Cinder Lake Landfill. The City of Flagstaff owns and operates the Flagstaff Hazardous Products Center (HPC) designed for handling hazardous products and household hazardous wastes (HHW). The HPC is located just past the scale house entrance at the Cinder Lake Landfill.

2.2 Residential Recycling Collections

The City provides waste and recycling collection services to 16,939 customers. Residents are provided two 96-gallon carts for waste and recycling, which are collected weekly. Table 2-1 summarizes the collection performance over the previous fiscal years.

Table 2-1: Residential Collection Performance

	FY18	FY19
Customers	16,939	16,939
Annual SW Pounds per Customer	1,693.67	1,710.82
Average SW Pounds per Month	141.14	142.57
Weekly SW Set-Out Average	32.57	32.90
Annual Recycle Pounds per Customer	486.79	470.90
Less Residual Waste in the Recycling	(152.49)	(168.35)
Net Recycling Per Customer	334.30	302.54
Average Pounds per Month	27.86	25.21
Weekly Recycling Set-Out Average	6.43	5.82
Landfill Diversion Percentage	16.5%	15.0%

2.3 Commercial Recycling Collections

Collection crews provide waste and recycling services to businesses within the City by subscription. Customer container volumes and frequency vary by customer; however, over the previous two fiscal years, the City collected the following amounts from commercial customers detailed in Table 2-2.

Table 2-2: Commercial Collection of Waste and Recycling

	FY18	FY19
Collected SW Tons	27,546	28,225
Collected Recycle Tons (net of residual waste)	2,967	2,516
Landfill Diversion Percentage	9.7%	8.2%

As of June 1, 2018, the City of Flagstaff announced that Flagstaff would no longer be recycling plastic grades 3 through 7 because the markets in China were no longer accepting these materials. Because NAU recycles the same materials as the City of Flagstaff, these new rules apply to the NAU campus. Flagstaff only recycles plastic bottles, jugs, and jars. Plastic that doesn't have a viable market, such as the items in Figure 2-1, are disposed of in the landfill.

Figure 2-1: Non-marketable

2.4 Cinder Lake Regional Landfill (CLL)

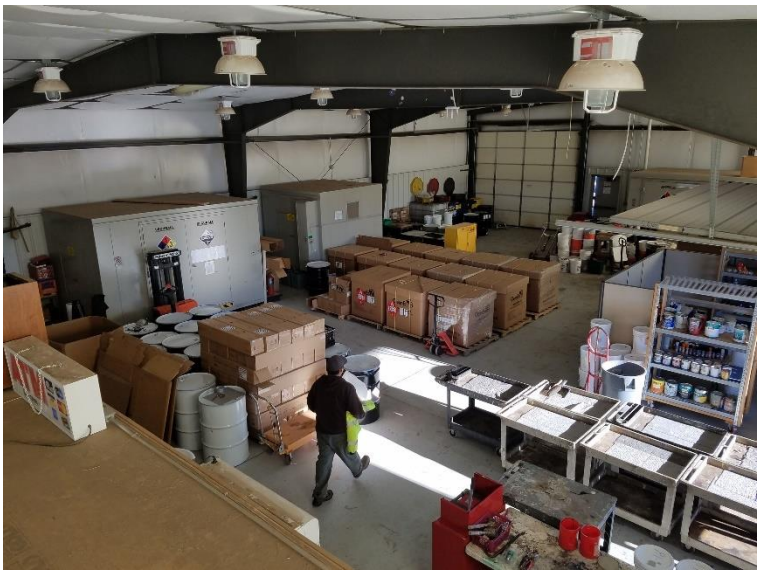
The City owns and operates the Cinder Lake Landfill, which is used by Solid Waste Division, private solid waste services providers, and residential and commercial self-haul customers.

The Cinder Lake Landfill is the only regional landfill within a 75-mile radius of Flagstaff. The landfill has approximately 40 years of remaining capacity. Solid waste disposal is currently occurring in cells A, B, and C. Future expansion in cells D and E will require engineering controls, including a leachate collection system.

2.5 Hazardous Products Center (HPC)

Constructed in 2002, the Flagstaff Hazardous Products Center (HPC) provides the City of Flagstaff and Coconino County residents with a convenient and permanent facility for the disposal of Household Hazardous Waste (HHW). With this service, the HPC helps divert more than 150-tons of Hazardous and Electronic Waste from entering the Cinder Lake Landfill per year.

The HPC also hosts a program for small businesses called the Small Business Waste Program (SBWP) which provides a safe, affordable and ecologically appropriate option for small businesses to dispose of hazardous waste in accordance with Local, State, and Federal regulations. By providing a local facility for Flagstaff and Coconino County businesses to drop off their hazardous waste, the SBWP helps offset the cost of storage and transportation by combining small business hazardous waste together with household hazardous waste and transporting them offsite to one of our many waste disposal vendors.



2.6 NAU Recycling and Composting Programs

The City of Flagstaff collects waste and recycling for NAU, but the University operates its own composting operations for processing food wastes. One of the stated challenges cited by City staff is the reduction of contamination of food waste in the recycling stream.

2.7 Private Sector Collections, Recycling & Disposal

Waste Management, Northern Arizona Waste Systems, JT Waste, Dynamite Dumpsters, and Tumbleweed Dumpsters provide commercial waste and recycling collection services. The City is the exclusive provider of residential waste and recycling collection services.

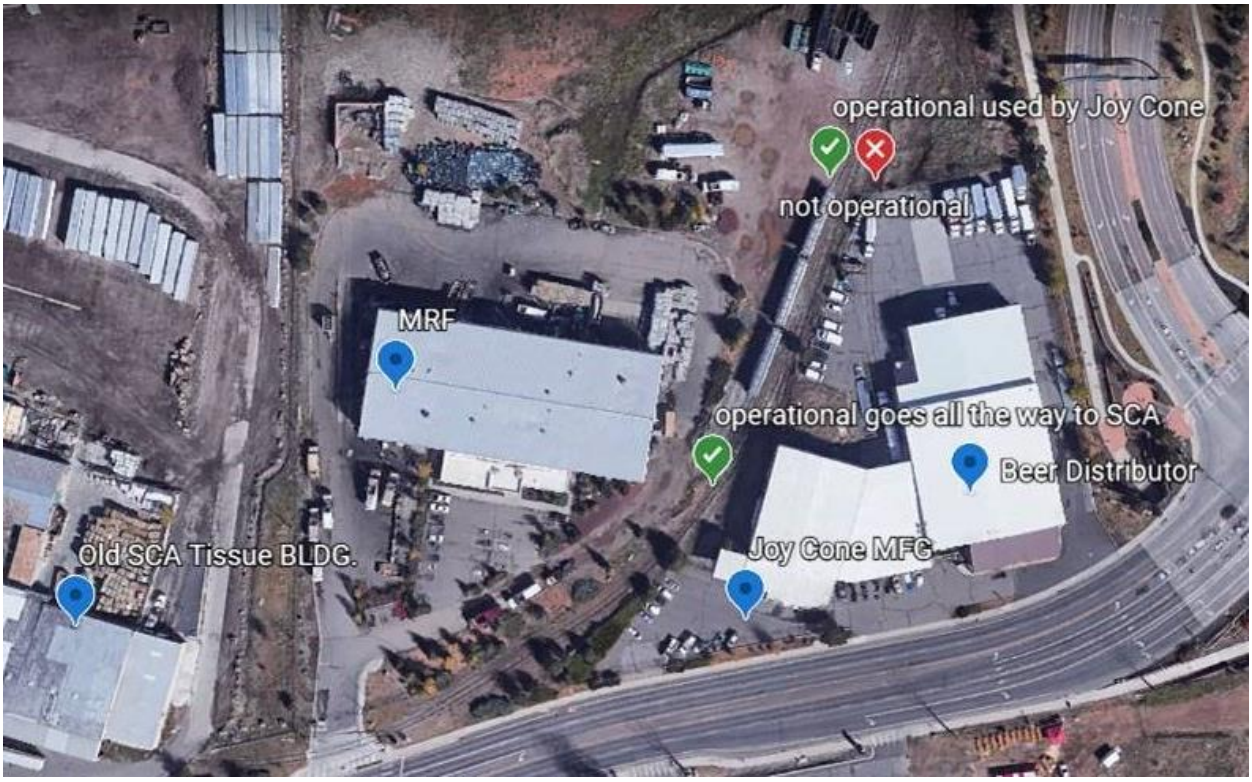
2.8 Material Recovery Facility (MRF)

The Flagstaff MRF is located at 1800 E Butler Ave, Flagstaff, AZ 86001, just off I-40. The current contract between the City and Norton Environmental started in December 1997 to design, build, equip, operate the MRF and market the processed materials.

The City owns the building located at 1800 E. Butler Ave, but Norton owns the sorting equipment. The sort line was installed in 1997-1998 by Bulk Handling Systems. Updates to the building and sort line would be required to continue processing recyclables safely.

Figure 2-2 provides an aerial view of the location of the City MRF.

Figure 2-2: Aerial View of City of Flagstaff MRF



The contract between the City has with Norton is a put-or-pay for 20,800 tons per year or 400 tons per week. In FY19, Norton processed 9,004 tons of incoming materials (8,535 from Flagstaff and 468 from Coconino County), which is only 43% of the facility's contracted capacity.

At the end of the contract with Norton, additional investments will be required by the City to keep the facility operational and safe for the employees.

Figure 2-3 are employees sorting material at the Flagstaff MRF.

Figure 2-3: Material Recovery at the MRF

Figure 2-4: Materials Processing Sort Line Enclosed Building Inside the MRF

2.8.1 – MRF Equipment

The current sort line and was designed and installed by Bulk Handling System (BHS) located in Eugene, Oregon, in 1997-98. Except for a baler and other ancillary items, the sort line is unchanged. An earlier study of the MRF, by Burns & McDonnell Engineering Company, Inc., reported the following:

Figure 2-4: Sorting area at the MRF

Much of the single-stream processing equipment is at the end of its useful life and struggles to recover materials as intended. For example, the facilities star screen is in fair to poor condition and struggles to remove paper products from the recyclable containers in the material stream. A replacement star screen would significantly increase the amount of recoverable paper material, reduce residuals, and decrease paper contamination of other streams. The eddy current and cross belt magnet are in fair condition; however, a worn belt near this equipment reduces both sets of equipment's capacities to sort aluminum and tin material. Replacement of the belt would significantly increase the yield of these materials[1]*.*

The daily volume of traffic ranges from 10 to 15 commercial collection vehicles; however, one of the constraints at the MRF is that the tipping floor can accommodate only one truck at a time.

The current sort line layout is not an effective use of the building's limited space.

Figure 2-5 shows a City residential recycling collection truck dumping a load of recyclables on the MRF's tipping floor.

Figure 2-5: MRF tipping floor

[1] Materials Recovery Facility Audit, page 3-4, completed by Burns & McDonnell Engineering Company, Inc., September 20, 2018

Section Three – Recycling Materials Stream Analysis

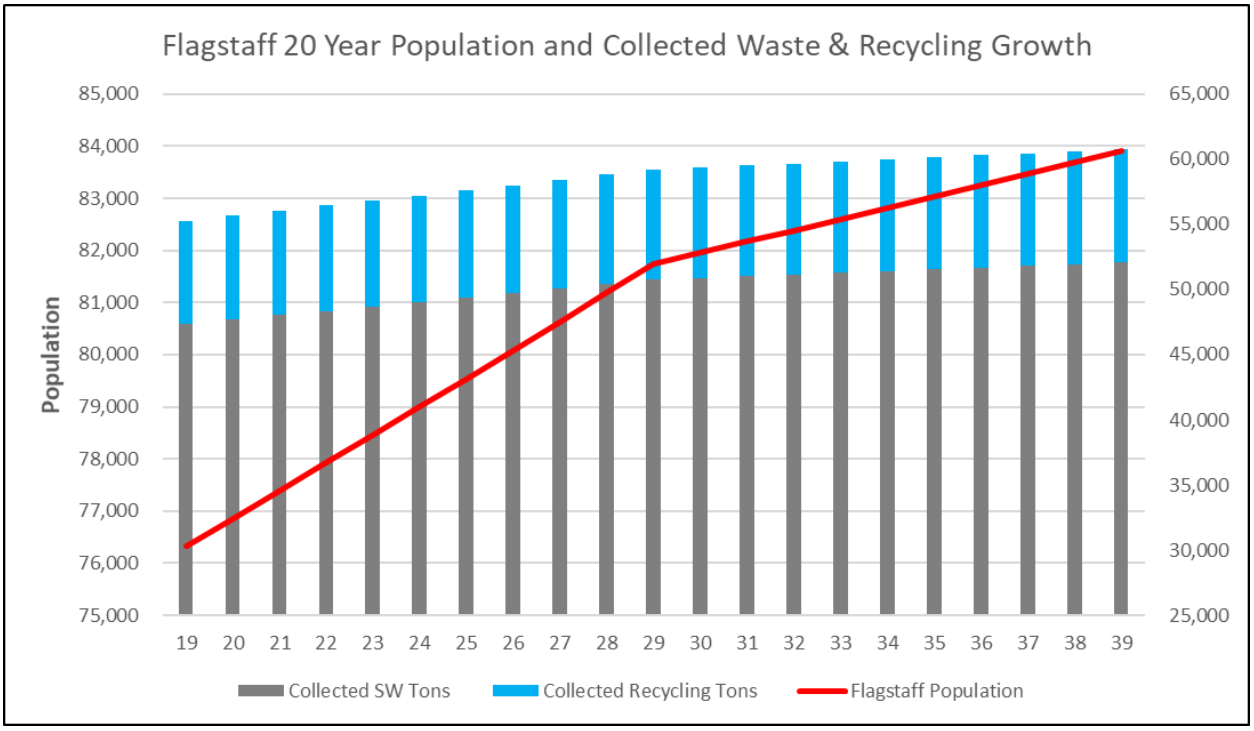
3.1 City of Flagstaff Waste & Recycling Volumes Projections

Waste and recycling generation is directly related to changes in the population. The City's current population is estimated to be 76,338 people. Growth within Coconino County is expected to increase by 9.9% over the next 20 years. Applying this level of growth, the City's population will increase to 83,899 by the year 2039.[2] Table 3-1 summarizes the amounts over five-year increments, while Figure 3-1 on the following page depicts the trend by year from 2019 to 2039.

Table 3-1: Flagstaff 20-Year Population and Tonnage Projection

Calendar Year	2019	2024	2029	2034	2039
Flagstaff Population	76,338	78,995	81,744	82,815	83,899
Collected SW Tons	47,384	49,033	50,740	51,405	52,078
Collected Recycling Tons	7,905	8,180	8,465	8,575	8,687

Figure 3-1: Flagstaff 20 Year Population and Tonnage Growth



[2] Arizona Department of Administration, Office of Employment & Population Statistics, 12/28/2018 (https://population.az.gov/population-projections)

3.2 Total MRF Inbound Tonnage Volumes

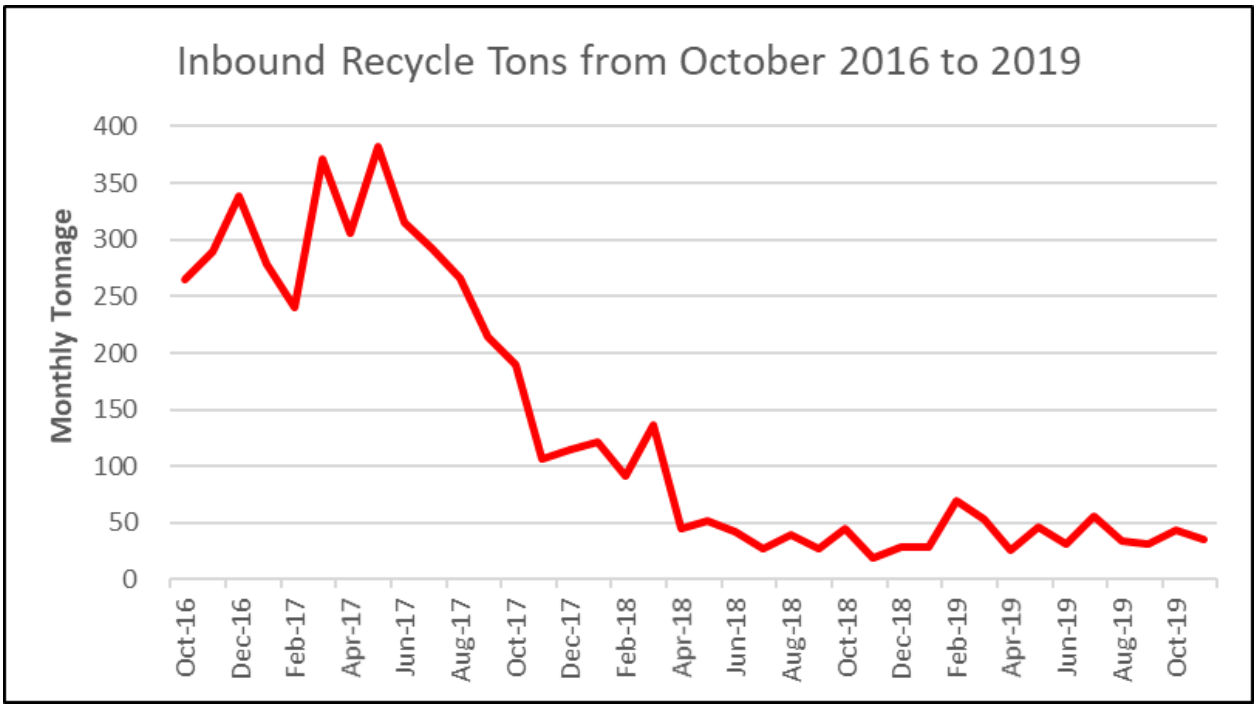
Incoming material volume is a combination of tons from recycling collection trucks, source-separated, or drop-off tons. Material tons are classified by Norton as generated from within the City or outside. In FY19, City collection crews collected 7,905 tons, and 630 tons were from other sources within the City - total City tons were 8,535. Processed tons, net of any residual contaminates, are inventoried for sale. Table 3-2 summarizes the inbound and outbound tonnage volumes over the last three fiscal years.

Table 3-2: Inbound and Outbound Material Tonnage Volume

Year	Flagstaff Tons	Outside Tons (Non-IGA)	Total Tons	Less Residual Tons	Residual %	Net Recyclable Tons	Sold Tons
FY17	9,419	3,556	12,975	3,895	30.0%	9,080	9,294
FY18	9,197	995	10,192	3,193	31.3%	6,999	6,131
FY19	8,535	468	9,004	3,219	35.8%	5,785	5,366

Incoming recycle tons, classified by Norton as Non-IGA, from outside Flagstaff have decreased significantly over the last three years. The average monthly volumes in FY17 were 296 tons but has diminished to approximately 40 tons per month. Figure 3-2 on the following page details the drop in material volumes over the last three years.

Figure 3-2: Inbound Monthly Recycled Volumes over the Last Three Years



The cost of processing recyclables for the City is comprised of three costs; 1) Processing Cost, 2) Disposal of Residual Waste, 3) Revenue Sharing.

1. The contracted cost to sort, bale, and market the incoming materials is established in the current contract. The amount is a per ton cost and is subject to an inbound minimum, which is known as a "put-or-pay" clause. The minimum the City will pay for processing is the put-or-pay amount multiplied by the processing cost per ton. Table 3-3 details the processing cost over the last three fiscal years.

Table 3-3: Contracted Processing Costs

Year	Contracted Cost per Ton	Put-or-Pay Annual Tonnage Volume	Total Annual Processing Cost Calculation
FY17	$32.25	18,200	$32.25 x 18,200 = $586,950
FY18	$32.25	18,200	$32.25 x 18,200 = $586,950
FY19	$34.25	20,800	$34.25 x 20,800 = $712,400

2. Residual waste, as a percentage of the total incoming material stream, has increased over the last three years to 35.8% in FY19. The agreement between Norton and the City states if residual waste exceeds 25% of the "City Recyclables," then Norton will pay the difference for disposal at the current tipping fee charged by the City. Table 3-4 summarizes the calculations of the City's cost for disposing of the residual waste from Norton's sorting operations.

Table 3-4: Residual Disposal Cost

Year	Flagstaff Recycled Tons	Residual Waste (25% of City volume)	Landfill Cost per Ton [1]	Disposal Cost Calculation
FY17	9,419	2,355	$23.59	2,355 tons x $23.59 = $55,547
FY18	9,197	2,299	$27.30	2,299 tons x $27.30 = $62,762
FY19	8,535	2,134	$34.39	2,134 tons x $34.39 = $73,387

Table Note: **1**. Landfill cost was calculated from internal accounting and not the posted tipping fee.

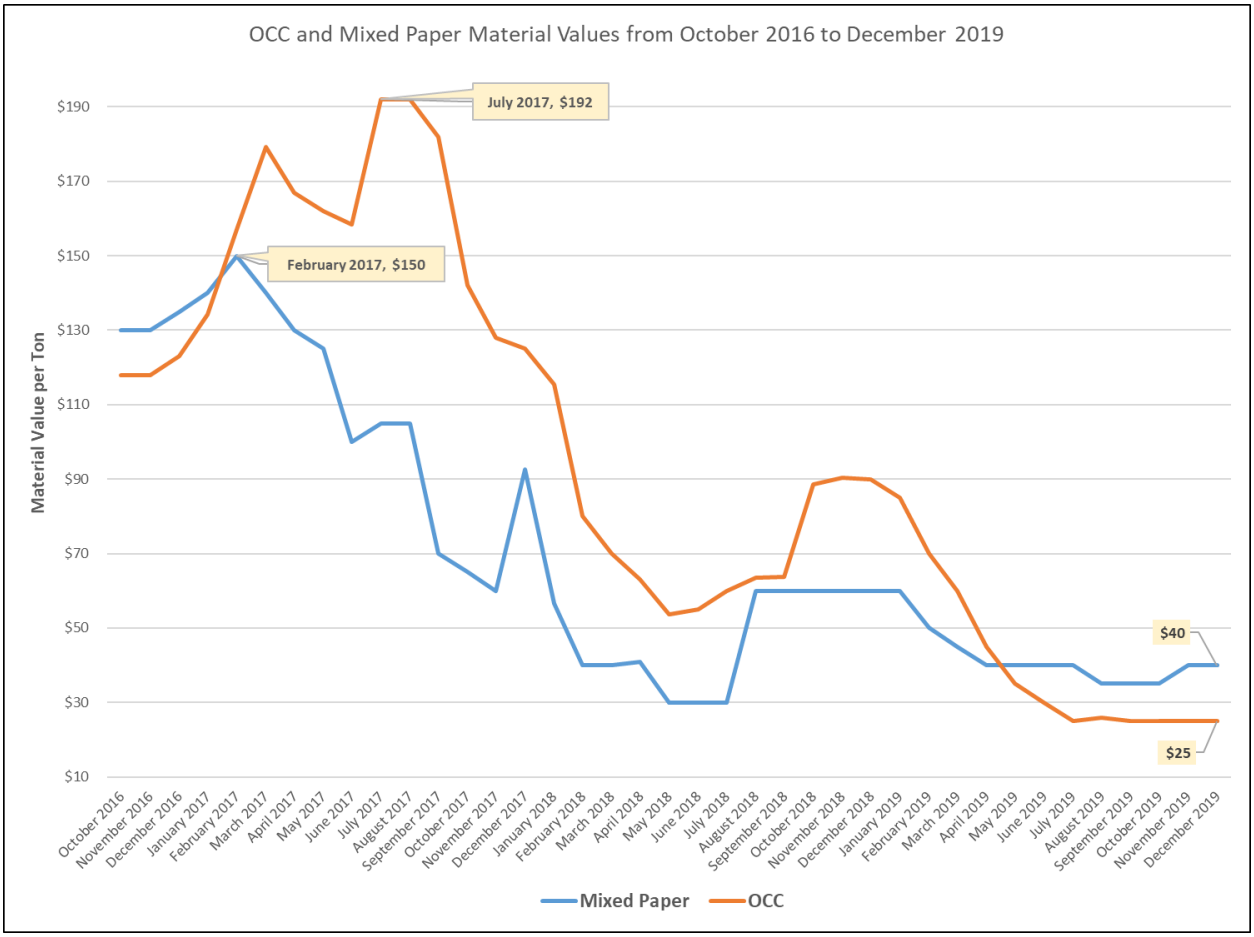
3. Revenue sharing is calculated by material, subject to a minimum base value, and split evenly between the City and Norton. For example, aluminum has a base value of $960 per ton, but the market value in July 2019 was $1,500 per ton. For every ton sold in July, the City would receive $270 per ton (($1,500 market value - $960 base) x 50%). If the value of the material is less than the base, no revenue is shared with the City. Table 3-5 summarizes the amount of revenue received by the City over the last three fiscal years.

Table 3-5: Revenue Sharing

Year	Revenue Share	Flagstaff Tons	Average Rev per Ton
FY17	$(213,013)	9,419	$(22.62)
FY18	$(112,826)	9,197	$(12.27)
FY19	$(82,714)	8,535	$(9.69)

Over the last three years, the value of the processed materials has significantly decreased due to changes in the global commodity markets. Old corrugated cardboard (OCC) and mixed paper, which comprised 65% and 62% of the total materials solid in FY18 and FY19 respectively, experienced significant decreases over the last three years. Figure 3-3 compares the value of OCC and mixed paper over the previous years.

Figure 3-3: Comparative Value of OCC and Mixed Paper 2016-2019



OCC and mixed paper reached highs of $192 per ton and $150 per ton respectively in 2017; however, the value of these materials today is $40 per ton and $25 per ton, respectively. Table 3-6 combines all three costs to calculate the net effective annual cost of processing recycling.

Table 3-6: Net Cost of Processing Recycling by Fiscal Year

Year	Processing Cost (Table 3-3)	Plus, Residual Cost (Table 3-4)	Less Revenue Sharing (Table 3-5)	Net Processing Cost	Incoming Recycling Tons	Net Processing Cost per Ton
FY17	$586,950	$55,547	$(213,013)	$429,484	9,419	$45.60
FY18	$586,950	$62,762	$(112,826)	$536,886	9,197	$58.38
FY19	$712,400	$73,387	$(82,714)	$703,073	8,535	$82.37

Section Four - Recycling Options Analysis - Financial & Environmental Impacts

This section outlines and summarizes the findings for five options for the City to consider for its MRF and recycling programs in contemplation of the end of the Operating Agreement with Norton in 2023.

The five options were developed during communications and with City staff input. The five options that the WRG project team researched and analyzed for this study are as follows:

Option 1: Development of a Regional Hub-and-spoke Recycling Model
Option 2: MRF conversion to a Transfer and Hauling to a MRF outside the City
Option 3: City Operations of the MRF after facility updates and upgrades
Option 4: Procurement of City's MRF operations by Private MRF Operator
Option 5: Suspend Recycling Collections and Processing (Short term)

4.1 Option 1: Development of a Regional Hub-and-Spoke Recycling Model

The Flagstaff's MRF would serve as the centroid for the consolidation and processing of the recyclables for both the City of Flagstaff and the surrounding region's smaller cities, towns, counties, and tribal communities through a process model commonly known as Hub-and-Spoke recycling. Similar successful programs have been developed in rural areas of both New Mexico and Colorado.

4.1.1 What is Hub and Spoke Recycling?

In its purest form, the hub-and-spoke recycling model consists of a centralized processing center, or "hub," where recyclable material is sorted, baled, and sold to market. "Spokes" are the surrounding communities that feed the recyclables they collect to the central hub. Typically, the hub and spoke communities have a formal agreement that ensures the recyclables collected in the region flow from the spokes to the hub for processing. The primary role of a hub and spoke recycling model is to:

- Provide access for recycling processing
- Overcome transportation cost issues
- Consolidate marketable recycling volumes
- Whereas the Hub = Recycling Processing Center
  - Revenue covers operations
- Whereas the Spokes = Collection Points
  - Reducing tip fees and hauling costs

4.1.2 Benefits

Hub-and-spoke programs create economies of scale that avoid communities investing in duplicative recycling infrastructure. Costs for equipment, personnel, processing, transportation, and marketing are shared. Equally important is the development of a regional partnership to sustain the hub-and-spoke system. Many small communities struggle to generate enough recyclables to attract investment from large recyclers. Other program benefits and advantages include:

- Economies of scale
- Limit capital demands and investment
- Focus on efficiencies
- Providing a regionally consistent recycling processing program

4.1.3 Challenges for Smaller Cities and Rural Communities

These communities can't financially support a full-scale recycling program on their own. Consolidating recyclables from multiple communities via a hub-and-spoke partnership increases the volume of recyclables collected, adding to revenue potential.

The following are the top three rural recycling challenges:

1. Transportation cost to MRFs / Processers
2. Limited recyclable material volumes
3. Capital costs

The biggest challenge for rural areas is having enough material to make recycling financially viable, and that ties back in with the whole scope of a hub and spoke system that helps to consolidate materials. Plastics and glass also present challenges because there are currently limited markets for these materials.

Another challenge is the cost of transportation and getting recycled materials from remote, rural areas to a MRF or processing facility where they can be consolidated and combined with other materials before getting sent to the markets as an end commodity.

In a hub and spoke relationships usually, the “spokes” transport the materials to the “hub’s” MRF, and the hub must accept the regionally collected recycling materials. Another requirement of the hub and spoke program is a Memorandum of Understanding (MOU) or an Interlocal Governmental Agreement (IGA) between the hub and spokes. The MOUs or IGAs typical outlines and addresses the following:

- Maintenance responsibilities
- Who arranges and pays for the transport of the recyclables to the MRF?
- Processing / Disposal fees at the recycling center
- Cost to transport
- Rules for material delivery at the MRF

4.1.4 Hub and Spoke Recycling Regional Infrastructure

As part of this study and research for the validity and interest of a hub and spoke model for consolidating and processing the recyclables collected in other entities in Northern Arizona, the WRG project team developed and distributed a public sector and tribal survey to gather information on their recycling programs. The entire survey template that was distributed is attached in the Appendices.

The emphasis of the research of the survey was to contact and gather pertinent recycling data and related transportation and logistics information from the other Northern Arizona jurisdictions, tribes, and other entities. The entities identified for surveying were determined based on a 100-mile radius from Flagstaff. Figure 4-1 on the following page is a map of Northern Arizona, showing the City of Flagstaff and other jurisdictions.

Figure 4-1: Map of Flagstaff and Northern Arizona

4.1.5 ADEQ Support and Involvement

Key staff from the Arizona Department of Environmental Quality's (ADEQ) Recycling Program facilitated and participated in a regional hub and spoke stakeholder workshop in Flagstaff in early December 2019. ADEQ is in support of these types of regional recycling programs and have seen success with similar programs in both New Mexico and Colorado.

ADEQ stated that some limited funding, approximately $800,000, might be available in the future to support hub and spoke recycling programs within the State of Arizona if approved by the State Legislature. It is thought the grant funding would be focused primarily on recyclables end of life beneficial reuse programs and manufacturing, and not per se for infrastructure for MRF improvements by jurisdictions.

ADEQ intends to continue to grow partnerships with Arizona counties, cities, environmental groups, private companies, non-profits, and other interested individuals to address recycling challenges and provide resources to enhance their efforts. These relationships allow the exchange of best practices and knowledge to expand the scope of recycling throughout Arizona.

4.1.6 Hub and Spoke Survey Findings

As stated, regional "hub" partners were identified through discussions with City staff, and Table 4-1 provides a summary of the survey findings from the potential hub partners. The entire survey that was distributed is included in the Appendix of this report.

Table 4-1: Jurisdictions Surveyed and Responses

Municipality	Survey Response	Annual Tons
Camp Verde	No Response	N.A.
Chino Valley	No Response	N.A.
Clarkdale	Contract with Patriot Waste under a 3-year agreement for collections and processing of recyclables. No price disclosed.	72
Cornville	No Response	0
Cottonwood	No Response	0
Hopi Tribe	No Response	0
Jerome	No Response	
Kingman	Currently, it pays $125 per ton to Republic Services for transport and processing of mixed cardboard and paper to their Las Vegas MRF. All other commodities are sent locally to small recycling companies for processing and recycling.	1,144
Page	Currently contracted with Republic Services & paying $150 / ton to transport and process recyclables at Las Vegas MRF	0
Pinetop/Lakeside	Commented being fairly new to recycling and commodities are sent separately to the City of Phoenix and Strategic Materials, and others are processed and recycled locally. No costs provided.	164
Prescott	Prescott currently has an IGA for processing with the City of Phoenix at the North Gateway MRF through 2025.	5,908
Prescott Valley	No Response	0
Sedona	Currently under contract with Sedona Recycles, a private dedicated processing company located in Sedona.	3,034
Show Low	The City of Show Low has a recycling program under the sanitation services contract for residential trash collection with Waste Management. They are unsure of where the recyclables are processed and could not provide a cost since it's a bundled rate and included in the collection cost of service for both solid waste and recycling.	708
Springerville	No Response	0
St. Johns	No Response	0
Williams	No Response	0
Winslow	No Response	0

Based on the information received from the parties that did respond, most are tied to existing contracts that are between 1 and 5 years in length, and many of them do not control the recycling volumes as they are integrated as part of their solid waste and recycling collection contracts with individual haulers. The private sector haulers determine where both the collected solid waste is disposed of and where the collected recyclables are processed.

As a result of the survey findings, and without more of an ongoing coordinated, facilitated, and more robust effort, and without significant leadership and support from ADEQ, this Option for the City of Flagstaff - to bolster recycling processing volumes to justify capital costs to upgrade the City's MRF- is not viable at this time.

4.2 Option 2: MRF conversion to a Transfer and Hauling to a Distant MRF

Most of the existing sort line and associated equipment to sort and bale recyclables would be removed to make the space available to tip, store, and load collected commingled materials. The current level of incoming materials would require approximately seven weekly trips of 20 to 25 tons per load to a MRF located in the Phoenix area. Ideally, the City's current MRF tipping floor should be able to store a week's worth of collected recycling, in the event of an emergency.

Table 4-2 compares the planning level costs submitted by each MRF operator surveyed and interviewed that expressed interest in receiving and processing the City's collected commingled recycling. The three MRF owners/operators interviewed were the City of Phoenix, Waste Management, and Friedman Recycling. Their respective MRF locations are North Phoenix, Surprise, and Central Phoenix.

Table 4-2: Cost per Ton to Process Recycling with a Distant MRF

Description	City of Phoenix MRF	WM MRF	Friedman
FY 2019 Flagstaff Tons (no glass)	7,255	7,255	7,255
Reload Cost per Ton	$10	$10	$10
Transport Cost per Haul	$800	$800	$635
Tons per Load	25	20	20
Total Reload and Transport Cost	$1,050	$1,000	$835
Reload & Transport Cost per Ton	$42.00	$50.00	$41.75
Processing Cost per Ton	$75.00	$105.00	$124.00
Annual Material Processing Cost	$544,125	$761,776	$899,621
Less Annual Material Revenue (FY 2019)	$(325,495)	$(325,495)	$(325,495)
Total Annual Net Processing Cost	$218,630	$436,280	$574,125
Net Processing Cost per Ton	$30.14	$60.14	$79.14
Total Reload, Transport, and Processing Cost	$523,340	$799,031	$877,022
Total Reload, Trans, and Processing Cost per Ton	$72.14	$110.14	$120.89
$ ▲ per Ton		$38.00	$48.75
% ▲		53%	68%

A primary concern is the current level of residual waste, which is approximately 36% of total incoming tons. Efforts should be taken by the City to reduce the level of collected waste at the point of collection by customer education and outreach efforts, which would significantly decrease processing costs. If the contamination rate were reduced by 20% to 16% of the total incoming tons, the annual cost would decrease by approximately 30% of the amounts in the previous table.

4.2.1 Options for Glass

There are three alternatives to recycle glass; status quo, mixing with the commingled stream, and glass depots.

Status Quo - Collected source-separated glass, which is approximately 15% of the incoming material tons, would be shipped to Strategic Material in Phoenix. The value of glass is $0; however, the cost to reload and transport is $42 per ton. The estimated annual cost is $53,772 ((8,535 tons x 15%) x $42).

Mixing with the Commingled Stream – The City of Phoenix and Waste Management can sort glass if it is combined with the commingled stream. The processing cost for this option is multiplying the estimated glass tons that would be collected by the total cost to reload, transport, and process commingled materials from Table 4-2.

City of Phoenix cost to process glass is $92,354 ((8,535 tons x 15%) x $72.14)

Waste Management (WM) cost to process glass is $141,005 ((8,535 tons x 15%) x $110.14)

If the glass is mixed with the commingled stream, the City could eliminate the separate collection of glass.

Glass Depots – The City could eliminate the collection of glass by establishing several glass depots around the City; however, the cost of regular collection would be replaced by servicing the depots. The City would incur the cost of purchasing additional depot containers for collecting the glass and would also require labor to remove the contamination before the glass could be consolidated and transported to Strategic Material located in Phoenix.

4.3 Option 3: City Operations of the MRF after facility updates and upgrades

The City would provide the necessary upgrades to the sort line, equipment, conveyors, baler, and updates to the building to continue operating. Staffing and management would be City employees.

4.3.1 Bulk Handling Systems (BHS)

Jialu Xie, an engineer with Bulk Handling Systems (BHS), the manufacturer of the existing sort line at the City's MRF, completed an on-site planning level assessment to provide the City with three alternatives to upgrade and update the MRF equipment. Table 4-3 summarizes each alternative proposed by BHS.

Table 4-3: MRF Updates with BHS Equipment

Alternative	Description	Staff	Sort Line Cost	Throughput Tons per hour
Status Quo	Replace worn equipment	9	$600,000	6
Sort Line Update / Save Volume	Replace OCC screen, add debris screen and Max-AI robot for containers	8	$2,650,000	6
Sort Line Update	Replace OCC screen, add debris screen and Max-AI robot for containers	8	$2,650,000	12
New Sort Line	Complete system with optical sorters and Max-AI robots	12	$9,300,000	22

The third alternative assumes an annual throughput of 27,000 tons, and the fourth alternative requires 46,000 tons. Therefore, if the tonnage volumes remain the same as FY19, the first two alternatives are the most viable for further consideration.

4.3.2 Revolution Systems

Revolution Systems is a company that manufactures circular sorting systems (mini-MRFs as pictured at right) also provided planning level cost estimates to replace the existing BHS system.

The Revolution system would require seven FTEs to operate and support the sort line at the City's current material volume. The system could be expanded if the future recycling material volumes increase. Table 4-4 summarizes both alternatives for the Revolution system.

The Revolution Systems Sort

Table 4-4: MRF Updates with the Revolution System

Alternative	Description	Staff	Sort Line Cost	Tons per hour
Current Volume	20 Tons Per Day System	7	$716,500	3
Sort Line Update	40 Tons per Day System	11	$1,363,800	6

The following table summarizes the estimated cost for both sorting systems upgrades utilizing City employees.

Table 4-5: City of Flagstaff Operated MRF

Upgrade Alternative	BHS 1	BHS 2	RS 1	RS 2
Material Tons	7,255	7,255	7,255	7,255
Annual System Tonnage Capacity	12,480	12,480	6,240	12,480
Upgrade Cost	$500,000	$2,500,000	$566,500	$1,213,800
Equipment Removal / Install	$100,000	$150,000	$150,000	$150,000
20 year annual cost @ 4%	$44,149	$194,992	$52,721	$100,351
Facility Upgrade Cost per Ton	$6.09	$26.88	$7.27	$13.83
Annual Labor Cost	$728,624	$691,184	$511,576	$723,736
Annual Operational Cost	$474,240	$499,200	$318,240	$474,240
Total MRF Cost	$1,247,013	$1,385,376	$882,537	$1,298,327
Less Material Value (FY 2019)	$(325,495)	$(325,495)	$(325,495)	$(325,495)
Net MRF Operational Cost	$921,518	$1,059,881	$557,042	$972,832
Cost per Ton	$127.02	$146.09	$76.78	$134.09

The principals of Revolution Systems expressed an interest in operating the Flagstaff MRF. Revolution Systems currently operates a similar facility in Steamboat Springs, Colorado, for Twin Enviro. This small scale MRF receives material from two haulers servicing four rural cities. They sell processed materials throughout the US. Recovered cardboard and mixed paper are sold directly to the mills. Because the processing is local, Revolution Systems can advise the haulers and other stakeholders on load quality to control residue rates and increase participation.

4.4 Option 4: Procurement of City's MRF operations by Private MRF Operator

Contracting with a private company to continue operations at the MRF would require an RFP process and updates to the existing MRF. The City would need to contemplate how to craft the RFP and whether to include the necessary MRF upgrades in the RFP or complete upgrades under a low-interest loan or bond funding. Prior capital cost estimates to upgrade the entire MRF, range from $2 to $10 million. Depending on the specific requirements of the City, expect the cost to improve to be within 10% to 20% of the amounts calculated in the prior Tables 4-3 and 4-4.

4.4.1 Private Sector MRF Operator Surveys

Twelve companies were contacted to seek their interest in being considered as a contracted operator for the City's MRF. Of the twelve contacted, six responded favorably expressing interest and provided a response to the survey. The summary of the survey respondents is provided in Table 4-6 on the following page.

(The remainder of this page left intentionally blank)

Table 4-6: Private Sector Operator Survey Findings

Company	Ideal Length of MRF Operating Agreement	Revenue Share Opinion	Experience with Similar MRF Operations	Estimated Cost per Ton to Operate the City's MRF
Envision Waste	5-10 years if City pays for capital improvements. 20 years if Envision pays for capital improvements.	Yes, flexible. Did not provide details.	Stated having a contract that they had in place for 21 years but did not provide the name of the municipality. Envision Waste was one of the original designers of the City's MRF.	Did not provide.
FCC Environmental	10-15 years	In favor of as long as blended commodity values exceed processing and transport costs.	Dallas and Houston	$49.50
Friedman Recycling	10 years	Interested in a fixed rate fee on a Cost-plus type of contract.	Various Clients. Most notably, Albuquerque and El Paso.	Provided costing for transport & processing at their MRF in Phoenix only
Northern Arizona Waste Systems (NAWS)	Did not respond to Question	Did not respond to Question	Operate their transfer station and recycling facility, but no municipal MRF operational contract experience	Did not respond to Question
Recology	10 years if City pays for capital improvements and 15 years if Recology pays for the MRF capital improvements	In favor of as long as blended commodity values exceed processing and transport costs.	Have experience operating their own MRFs and has municipal transfer station operating experience in Portland OR transfer station contracts for Metro.	Depends on the terms and conditions of an Operating Agreement with the City
Waste Management	Did not provide a response.	WM charges a processing fee upfront and if the value remains after processing fees are paid. Excess value is shared in most cases, 50/50.	Did not provide examples.	Said it depends on the terms and conditions of the final agreement between the City and WM.

4.5 Option 5: Suspend Recycling Collections and Processing (Short term)

Recycling services are a combination of the collection cost and the processing cost. If the City decided to eliminate the service for residential and commercial customers, Table 4-7 details the cost for the residential customer and the average commercial customer costs.

Table 4-7: Monthly Cost of Recycling Collection Service

Expense	Residential	Commercial
Collection	$6.46	$67.41
Processing	$1.62	$23.30
Total Cost	$8.07	$90.70

Table Calculations

Collection costs were calculated from the FY20 budget. Residential collection costs are the amounts from accounts 211-06-166-0643-0-XXXX; whereas, commercial collection costs are the totals of accounts 211-06-166-0646-0-XXXX. Because there are various levels of service for commercial customers, the collection and processing costs are the average of all commercial customers.

Processing costs are calculated at net recycling processing cost of $82.37 from FY19 (Table 3-6).

The average monthly set out weight for residential customers in FY19 was 39.24 pounds. The calculated cost to process recycling per resident is 39.24 pounds / 2,000 pounds per ton x $82.37.

Commercial customers have an average of 5.6 yards of recycling collected weekly. The average weight per yard of recycling is 23.36 pounds. The calculation of the processing cost is (5.6 yards per week x 23.36 pounds x 4.33 pickups per month) / 2,000 pounds per ton x $82.37.

Section Five - Recycling Program Policy Issues and Other Considerations

This subsection addresses some, but not all of, the factors within the City of Flagstaff and the surrounding areas that affect recycling participation, costs, and program effectiveness.

5.1 Flow Control Ordinance

One potential proposal for both increasing revenue of the Solid Waste operations and gaining better data on both solid waste and recycling generation within the City of Flagstaff, would be to implement a flow control ordinance. This effort would require that all waste and recycling collected within the City of Flagstaff's boundaries be delivered to City-sponsored facilities for processing and disposal. Currently, private haulers are delivering significant tonnages to landfills and material recovery facilities outside of Flagstaff. Correcting this issue would assure the City maintains the volume of solid waste to the landfill and recycling volumes to the MRF. Without a flow control ordinance, the City can only control what it collects residentially and with the commercial and industrial customers that elect to utilize the City's collection services.

5.2 Policy changes to improve data collection

Reporting solid waste and recycling collection data needs to be improved to gain a better understanding of Flagstaff's waste landscape and establish baseline metrics. Mandatory reporting by private haulers and waste generators operating in Flagstaff is critical to data integrity and improvement.

One of the most significant gaps in the existing data is the lack of reporting of waste and recyclables delivered to non-Flagstaff facilities. Examples include waste and recycling collected by private haulers operating in the region or large waste generators sending their waste outside Flagstaff. Without this information, it is difficult to know what actual recycling rates and waste generation numbers are for the City. One potential solution is to implement a permitting system for private haulers operating in Flagstaff that includes reporting requirements. Such a system would also allow for the City to ensure private haulers are operating in a manner that enables the community to achieve its goals and to know the actual waste and recycling collection and disposal volumes, as well as identify new opportunities for improvement.[3]

5.3 Policy and resources to improve access to recycling services

Flagstaff residents have long supported recycling, yet many still lack access to convenient recycling services. A great example can be found in Flagstaff's multi-family complexes, where recycling services are not offered, or if it does, it is inconvenient for tenants. Local businesses might suffer from similar issues if their property manager does not choose to provide recycling services.[4]

5.4 Space requirements for new development and resources

One of the most significant barriers to successful recycling programs on multifamily properties is a lack of space, which is because new construction does not have to create dumpster enclosures with enough space to support recycling and trash bins. Additionally, multi-story complexes using chutes to handle waste from tenants are not required to have chutes to accept recycling. This lack of space and infrastructure makes developing a successful recycling program in the future when tenants demand it.[5]

[3] City of Flagstaff Rethink Waste Plan
[4] City of Flagstaff Rethink Waste Plan
[5] City of Flagstaff Rethink Waste Plan

5.5 Recycling Commodity Pricing

The purpose of curbside recycling collection programs is to capture the commodity materials from disposal and supply them for the manufacturing of new products. As commodities, curbside recyclables begin to have market value when MRFs distribute them into a marketplace of material utilization and beneficial reuse.

Recycling commodity market issues have been precipitated by numerous factors, including China's scrap ban and other export restrictions. These market challenges have been exacerbated by structural issues in some domestic commodity sectors, increased competition with cheaper new materials, and changes in packaging design that have introduced more complexity to recycling collection, processing, and educational efforts. These combined circumstances have created a fundamental change in the value of collected curbside recyclables.[6]

5.6 Community Actions to Address Contamination

Recycling contamination continues to be problematic for most cities, especially for Flagstaff, where the contamination rate is above 30% of total tons delivered to the MRF. A portion may be attributed to NAU's student population, where students tend to practice "wishful recycling" by placing most dry items into the recycling container along with recyclables contaminated with food waste.

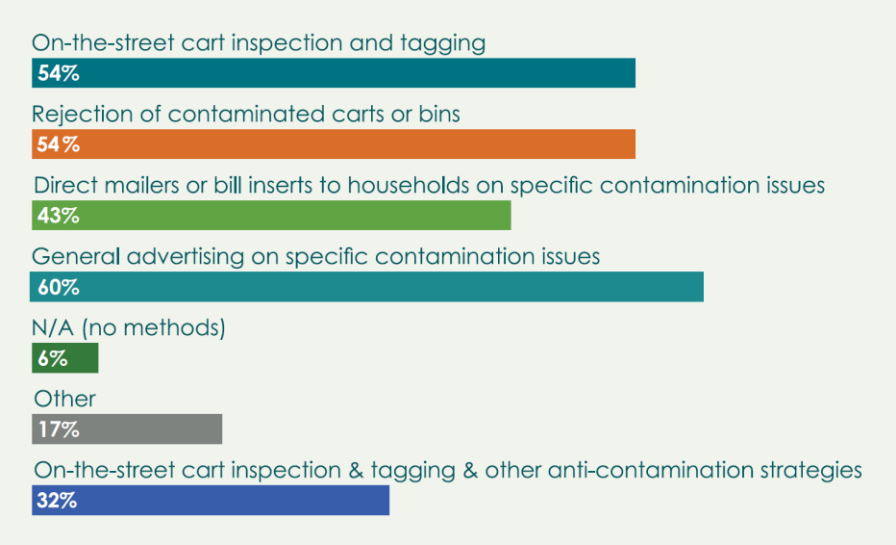
A community should measure and benchmark its recycling program to evaluate the effectiveness of its anticontamination strategies to increase the quality of the material stream. Curbside programs should address inbound contamination to deliver a steady stream of high-quality recyclable materials by funding outreach resources.

The Recycling Partnership's 2019 State of Curbside Survey provides a glimpse into how communities are taking action on contamination issues (see Figure 5-1 below). Approximately 22 percent of survey respondents implemented all four anti-contamination strategies recommended by The Recycling Partnership.

1. Cart tagging (putting "oops" tags on carts that tell a resident what materials were found in their carts that don't belong),
2. Rejecting contaminated carts (not picking them up and leaving them on the curb),
3. Sending direct mailers or bill inserts to residents on what recyclables are and are not accepted,
4. And using general advertising to promote what recyclables are and are not accepted.

[6] THE RECYCLING PARTNERSHIP | 2020 STATE OF CURBSIDE RECYCLING REPORT

Figure 5-1: Methods of Contamination Control Reported by The Recycling Partnership's 2019 State of Curbside Survey Respondents



The Recycling Partnership's website offers free online resources to communities that outline the best management practices for tackling contamination both at the curb and at community drop-off recycling centers. An **Anti-Contamination Toolkit** and **Campaign Builder** designed to provide steps, tools, and resources to help improve the quality of your recycling program is on their website: https://recyclingpartnership.org/fight-contamination/

5.7 Recycling Collection Pricing Adjustment

To absorb the costs of low market values and associated MRF processing charges, some communities have adjusted the service fees charged to households. Increasing fees is an act of political will by a community's elected leadership. An example of a city where that political will resulted in the retention of a program is Little Rock, Ark., where the city's leadership agreed to increase the local recycling service fee from $2.99 to $4.29 per month, albeit while also eliminating glass from the collection programs.[7]

In all, the increases to local fees seem to be modest and in line with processing fee increases: e.g., if a household sets out 400 pounds of recyclables per year, or one-fifth of a ton, a $15 increase on its recycling fee is equal to $75 per ton. In the disaggregated nature of the U.S. curbside recycling services, the effect of large processing charges and weak markets have forced individual communities around the country to debate the value of recycling, all while dramatic media narratives report a recycling crisis.[8]

[7] **https://www.arkansasonline.com/news/2018/oct/02/lr-says-yes-to-recycle-changes-20181002/**

[8] THE RECYCLING PARTNERSHIP | 2020 STATE OF CURBSIDE RECYCLING REPORT

Section Six - Key Findings and Conclusions of Options Analysis

As identified in Section 4, five options were developed during communications and with City staff input for consideration. The five options that the WRG project team researched and analyzed for this study are summarized in Table 6-1. This table also shows the ranking that the WRG project team assigned each of the options, with 1 being the highest ranked and 5 being the lowest.

Table 6-1: Summary of the Five Options Analyzed and Ranking

Option	Option Description	WRG Team Ranking	Primary Reason
One	Development of a Regional Hub-and-Spoke Recycling Model	4	Survey findings from regional jurisdictions lacking support in participating
Two	**MRF conversion to a transfer operation and hauling to a MRF outside the City**	**1**	**Cost savings & efficiencies**
Three	City Operations of the MRF after facility updates and upgrades	3	Higher direct capital & operating costs to the City than current costs
Four	Procurement of City's MRF operations by Private MRF Operator	2	RFP or RFQ needs to be developed and issued to further refine actual costs from private sector to determine validity
Five	Suspend Recycling Collections and Processing (Short term)	5	While would save the City money, it is not popular with residents, most elected officials and other stakeholders

Of the options evaluated, the lowest cost and most efficient alternative for the City is Option 2. This option is where the City would convert the existing MRF into a transfer operation whereby recyclables are unloaded by local collection trucks, whether from City operations or private collection companies or other regional public agencies, compacted and baled and then reloaded into Class 8 transfer trucks for transport to the City of Phoenix's North Gateway MRF and Transfer Station located in North Phoenix. For comparison, Table 6-1 summarizes the estimated cost per ton for options 1 through 4.

Table 6-1: Phoenix MRF Bundled Cost Comparison Summary (Options 1-4)

Outsource to a Distant MRF (Option 2)	Cost per Ton
To the City of Phoenix MRF	$72.14
To Waste Management's Surprise MRF	$110.14
To Friedman's MRF in Phoenix	$120.89
Process in Flagstaff (Options 1, 3 & 4)	**Cost per Ton**
BHS System #1 – update the current sort line	$127.02
BHS System #2 – upgrade to new screens / robots	$146.09
Revolution System #1 – single rotational system	$76.78
Revolution System #2 – dual rotation system	$134.09

Based on the project team's research and findings described in the prior sections of this report, and after in-depth analysis as provided for each of the five options outlined and considered in Section Four of this report, the WIH Resource Group project team recommends Option 2, to transfer and transport to a distant MRF. This alternative provides the most economically viable and sustainable solution for the City of

Flagstaff to continue to deliver cost-effective recycling services to its residents and commercial customers. Of the greater Phoenix Valley MRFs interviewed – City of Phoenix, Friedman Recycling and Waste Management, the City of Phoenix provided the most cost-effective option.

Table 6-2 below provides a cost comparison summary of the three MRFs. Table 4-2 in Section 4 of this report provides greater detail of the cost breakdown and compares the planning level costs submitted by each MRF operator surveyed and interviewed that expressed interest in receiving and processing the City's collected commingled recycling.

Table 6-2: Phoenix MRF Bundled Cost Comparison Summary

MRF Owner	City of Phoenix	WM	Friedman Recycling
Reload, Trans, and Processing Cost per Ton	$72.14	$110.14	$120.89
$ ▲ per Ton		+$38.00	+$48.75
Cost Difference to City of Phoenix % ▲		+53%	+68%

6.1 Interview with the City of Phoenix

On February 10, 2020, the WRG project team interviewed Rick Peters, Deputy Director – Diversion and Disposal Division and manager of the City's two transfer stations / MRFs – the North Gateway and 27th Avenue facilities. The WRG project team discussed the potential of the City of Flagstaff entering into an Intergovernmental Agreement (IGA) with the City of Phoenix for the processing of Flagstaff's recycling volumes.

The North Gateway Transfer Station / MRF is located in north Phoenix just off the I-17 at 30205 N Black Canyon Hwy in Phoenix. The City of Phoenix has a processing operating agreement with Republic Services for the MRF operations. The City of Peoria and some smaller rural cities currently deliver their recyclables to the MRF for processing under an IGA with Phoenix.

The sort line at North Gateway processes between 32 and 34 tons per hour, 80 hours per week, between two work shifts. The North Gateway MRF began operations in 2005 and is currently being upgraded to accommodate increased material volumes.

Mr. Peters is optimistic that with their planned MRF upgrades, their facility could accept Flagstaff's additional volumes in 2023 when the Operating Agreement between the City of Flagstaff and Norton Environmental ends.

LIST OF APPENDICES

Future Materials Recovery Facility Planning

Todd Hanson – Solid Waste Section Director

Dylan Lenzen - Sustainability Specialist

TEAM FLAGSTAFF

WE MAKE THE CITY BETTER

Outline

1. Background
   - Existing Materials Recovery Facility (MRF) contract
     - Limitations and challenges
   - Connection to Rethink Waste Plan
2. Options
3. Additional considerations
4. Discussion and questions
5. Direction

Existing MRF Contract

Terms and Conditions

- Original agreement signed on January 16, 1997 with commercial operations starting October 1, 1998
- Norton Environmental designed, constructed and equipped the facility
- Norton agreed to process City-delivered recyclables, maintain the facility and market recovered materials
- The term of the agreement is ten (10) years and three (3) options to extend for five (5) year terms each unilaterally by Norton not by mutual agreement
- All options have been exercised for an end date of September 30, 2023

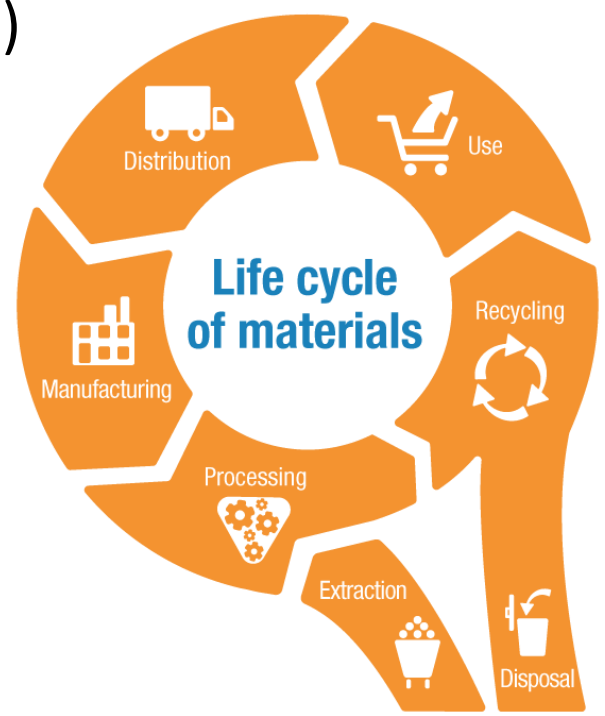
Limitations and Challenges

- Minimum tonnage guarantee
  - On a "put or pay" basis the City is guaranteed to deliver tons of recyclables as described in the agreement. Currently, 80 tons per day is guaranteed per the agreement
  - The City will pay the minimum tonnage fee regardless of whether the material was delivered
  - The City has never met the minimum guarantee
- The MRF is allowed 25% residue rate with non-recycled material disposed of at no cost up to 25% of total
- The Facility has not been upgraded with new technology since construction (22 years)

Connection to Rethink Waste Plan

Recyclables processing is key to waste diversion goals

- Key goal: Divert 90% of waste from the landfill by 2050
  - Current diversion rate: 13% (single-family) and 8% (commercial)
- The recyclables processing facility determines:
  - What can and cannot be accepted for recycling
  - Quality of sorted and marketed material
- The future recyclables processing contract is just one piece of the materials management puzzle
  - Hazardous waste and “hard-to-recycle” material diversion
  - Organics collection
  - Waste prevention (i.e. household food waste reduction)
- Connected to the Climate Action and Adaptation Plan



Future Options

At the close of the existing contract (2023), the City can:

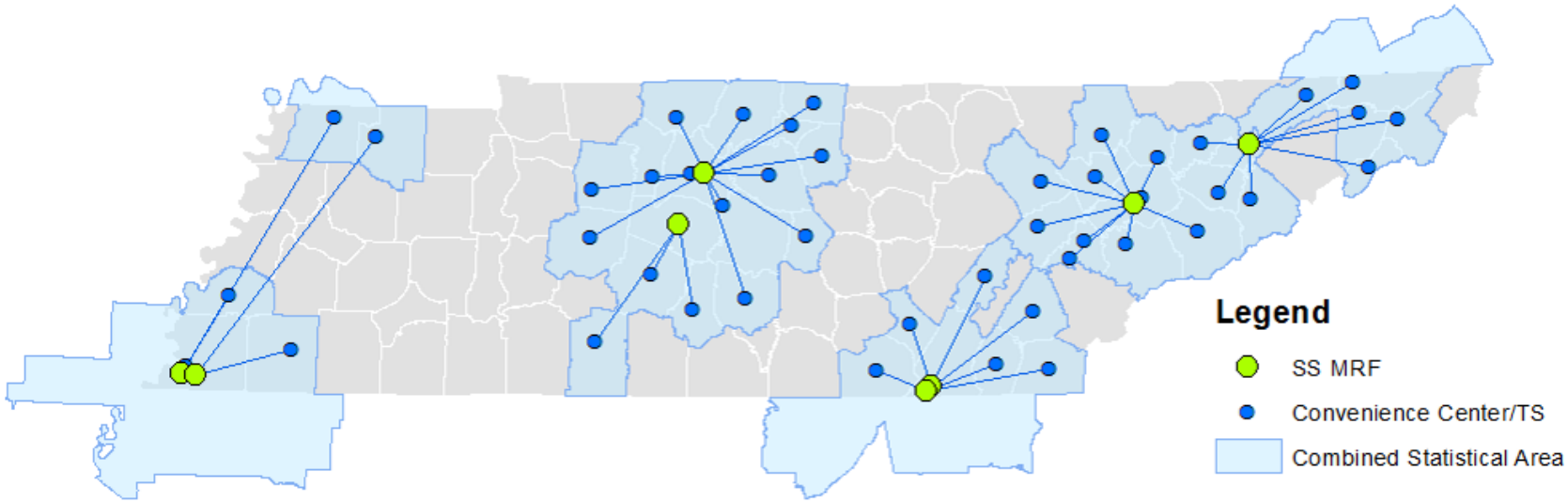
1. Develop a regional hub-and-spoke recycling model
2. Convert MRF into a transfer operation and haul to Phoenix-area MRF
3. Operate the MRF internally after facility updates and upgrades
4. Procure the operation of the MRF by a private MRF operator
5. Suspend all recycling collections and processing

Option 1

Develop a regional hub-and-spoke recycling model

- Consists of a centralized processing “hub” where material is sorted baled, and sold to market
- “Spokes” are the surrounding communities that feed the recyclables they collect to the central hub

Example: Hub-and-spoke model from North Carolina



Option 1

Benefits

- Economies of scale
- Limit capital demands and investment
- Focus on efficiencies
- Provide a regionally consistent recycling processing program

Challenges

- Many cities/towns are tied to their own contracts
- Many cities/towns do not control recycling volumes
- Lack of state leadership and financial support
- Survey of surrounding cities/towns did not yield a viable volume of material

Option 2

Convert MRF into a transfer operation and haul to Phoenix-area MRF

- Existing facility would be used to tip, store, and load collected recyclables into long-haul trucks
- Recyclables would be delivered to a Phoenix-area MRF
  - Approximately 7 weekly trips

Example: Interior (left) and exterior (right) of transfer operations

Option 2

Benefits

- Multiple MRF options exist
- Creates opportunity to increase acceptable materials:
  - Glass, polypropylene, and thermoform plastic, are accepted by these larger MRFs
- Creates flexibility – no long-term contract
- Creates opportunities for innovative programs – i.e. Center for Hard-to-Recycle Materials

Challenges

- Limited control over acceptable materials
- Lack of an educational opportunity – limited facility tours

Option 3

Operate the MRF internally after facility updates and upgrades

- City would need to upgrade nearly all existing equipment and building
- City would be responsible for management and staffing

Photo: Interior and equipment at existing MRF

Option 3

Operate the MRF internally after facility updates and upgrades

Table: Cost comparison of transfer vs. internal operation

Outsource to a Distant MRF (Option 2)	Cost per Ton
To the City of Phoenix MRF	$72.14
To Waste Management's Surprise MRF	$110.14
To Friedman's MRF in Phoenix	$120.89
Process in Flagstaff (Options 1, 3 & 4)	**Cost per Ton**
BHS System #1 – update the current sort line	$127.02
BHS System #2 – upgrade to new screens / robots	$146.09
Revolution System #1 – single rotational system	$76.78
Revolution System #2 – dual rotation system	$134.09

Option 3

Benefits

- City would control what materials can be accepted
- City would make decisions related to sorting technology

Challenges

- Facility upgrades will be costly
- Lower-cost technology is likely to further constrain what can be accepted

Option 4

Procure MRF operation by a private MRF operator

- City would enter an RFP process for MRF operation
  - RFP could include necessary facility upgrades
  - Upgrades could be completed under a low-interest loan or bond funding
    - Estimates range from $2 – $10 million
- 6 private sector operators expressed interest
  - Ideal Operating Agreement lengths ranged from 10-15 (dependent upon whether the City pays for facility upgrades)
- RFP or Request for Qualifications need to be issued to refine actual costs from private sector to determine viability

Option 4

Benefits

- Separate entity responsible for operation
  - Equipment maintenance
  - Labor
  - Marketing
- Similar to current status quo

Challenges

- Long-term contracts (10-20 years)
- Contracts are becoming expensive
  - Reduction in risk from market fluctuations
- Limited opportunity for revenue share for marketed material

Option 5

Suspend recycling collections and processing

- Recyclables would be collected as trash and delivered to the landfill
- Doing so would prevent the City from achieving Rethink Waste and Climate Action goals

Table: Monthly cost of recycling collection service per customer

Expense	Residential	Commercial
Collection	$6.46	$67.41
Processing	$1.62	$23.30
Total Cost	$8.07	$90.70

Policy Issues and Other Considerations

Consultant researched other opportunities

- **Flow control** – requiring that all material collected in City-limits be directed to City-sponsored facilities
- **Solid waste reporting requirements** – improve understanding of waste landscape by requiring that private haulers report key metrics
- **Improve access to recycling –** increase recycling services offered at multifamily and commercial properties
- **Enhanced recycling outreach –** cart tagging, rejecting contaminated carts, direct mailers
- **Recycling collection pricing adjustment –** adjust fees covering recycling collection to cover market changes and enhanced programs

***State pre-emption may limit available policy change**

Future Options

In summary, staff's ranking of the options are as follows:

Options	Staff Ranking	Justification
1) Develop a regional hub-and-spoke recycling model	**4**	Lacking support for participation from regional jurisdictions
2) Convert existing MRF into a transfer operation and haul to a MRF out the City	**1**	Cost savings & efficiencies, flexibility, increased diversion potential
3) Operate the MRF internally after facility updates and upgrades	**3**	Higher direct capital & operating costs to the City than current costs
4) Procure the operation of the MRF by a private MRF operator	**2**	RFP or RFQ needs to be issued to refine costs and determine viability
5) Suspend recycling collections and processing	**5**	Not in alignment with CAAP or Rethink Waste Plan

Discussion & Direction

Seeking Council direction on recommended path

1. Develop a regional hub-and-spoke recycling model
2. Convert existing MRF into a transfer operation and hauling to a MRF outside the City
3. Operate the MRF internally after facility updates and upgrades
4. Procure the operation of the MRF by a private MRF operator
5. Suspend recycling collections and processing

Next Steps

- Staff will refine the planning-level costs for your preferred approach
- Future updates to Council throughout this process


Thank you.
Questions?
CITY OF FLAGSTAFF
ARIZONA
ESTABLISHED 1882
TEAM FLAGSTAFF
WE MAKE THE
CITY BETTER

CITY OF FLAGSTAFF

STAFF SUMMARY REPORT

To:	The Honorable Mayor and Council
From:	Nicole Antonopoulos, Sustainability Director
Date:	10/18/2020
Meeting Date:	10/27/2020

TITLE:
Climate Emergency Declaration Update

DESIRED OUTCOME:
This is an informational update on staff's work since the Climate Emergency Declaration Resolution was passed on June 23, 2020.

EXECUTIVE SUMMARY:
On June 23, 2020 City Council declared a climate emergency through Resolution 2020-09.
The resolution accelerates sustained and meaningful action to address the climate emergency. It identifies eight specific actions:

1. Dramatic increase in ambition to combat climate change
2. Commits to City-wide transition and climate emergency mobilization effort
3. Commits to educating residents and especially youth
4. Underscores the need for full community participation
5. Commits to keeping vulnerable communities at the forefront of decision making
6. Joins a nationwide call for mobilization
7. Advance goals of the Climate Action and Adaptation Plan
8. Calls on all governments to initiate a transition

Staff will provide City Council with an update on the work completed to date and next steps.

INFORMATION:
Staff have been working with technical consultants and the Flagstaff community to advance the goals of the 2018 Climate Action and Adaptation Plan to achieve carbon neutrality by 2030.

Attachments: Climate Emergency Update

Climate Emergency Declaration Update

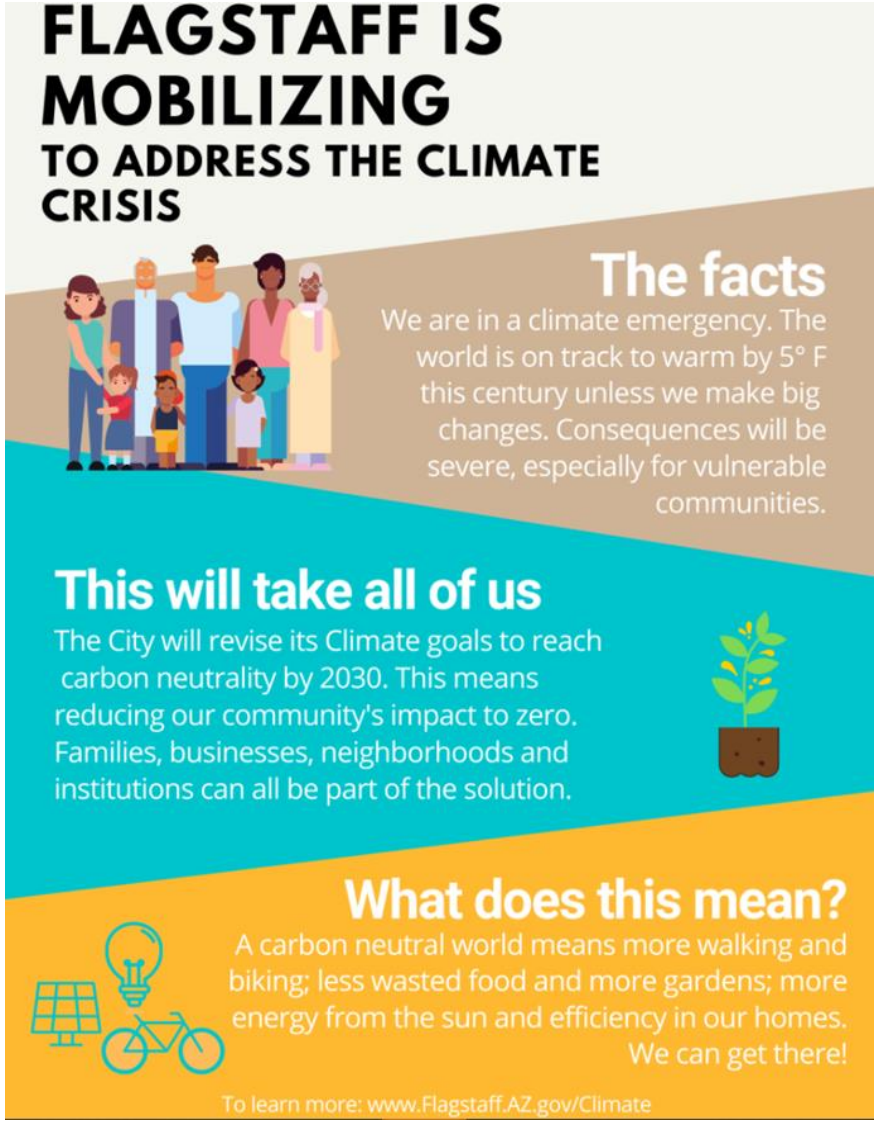
October 27, 2020

TEAM FLAGSTAFF

WE MAKE THE CITY BETTER

Discussion

1. The Climate Emergency Declaration
2. The Path to Carbon Neutrality
3. Mobilization Efforts
4. What's Next?



The Climate Emergency Declaration

Climate Emergency Declaration

1. Dramatic increase in ambition to combat climate change
2. Commits to City-wide climate emergency mobilization
3. Commits to educating residents and especially youth
4. Underscores the need for full community participation
5. Commits to keeping vulnerable communities at the forefront of decision making
6. Joins a nationwide call for mobilization
7. **Advance the Climate Action and Adaptation Plan's goals to achieve carbon neutrality by 2030**
8. Calls on all governments to initiate a transition

The Path to Carbon Neutrality

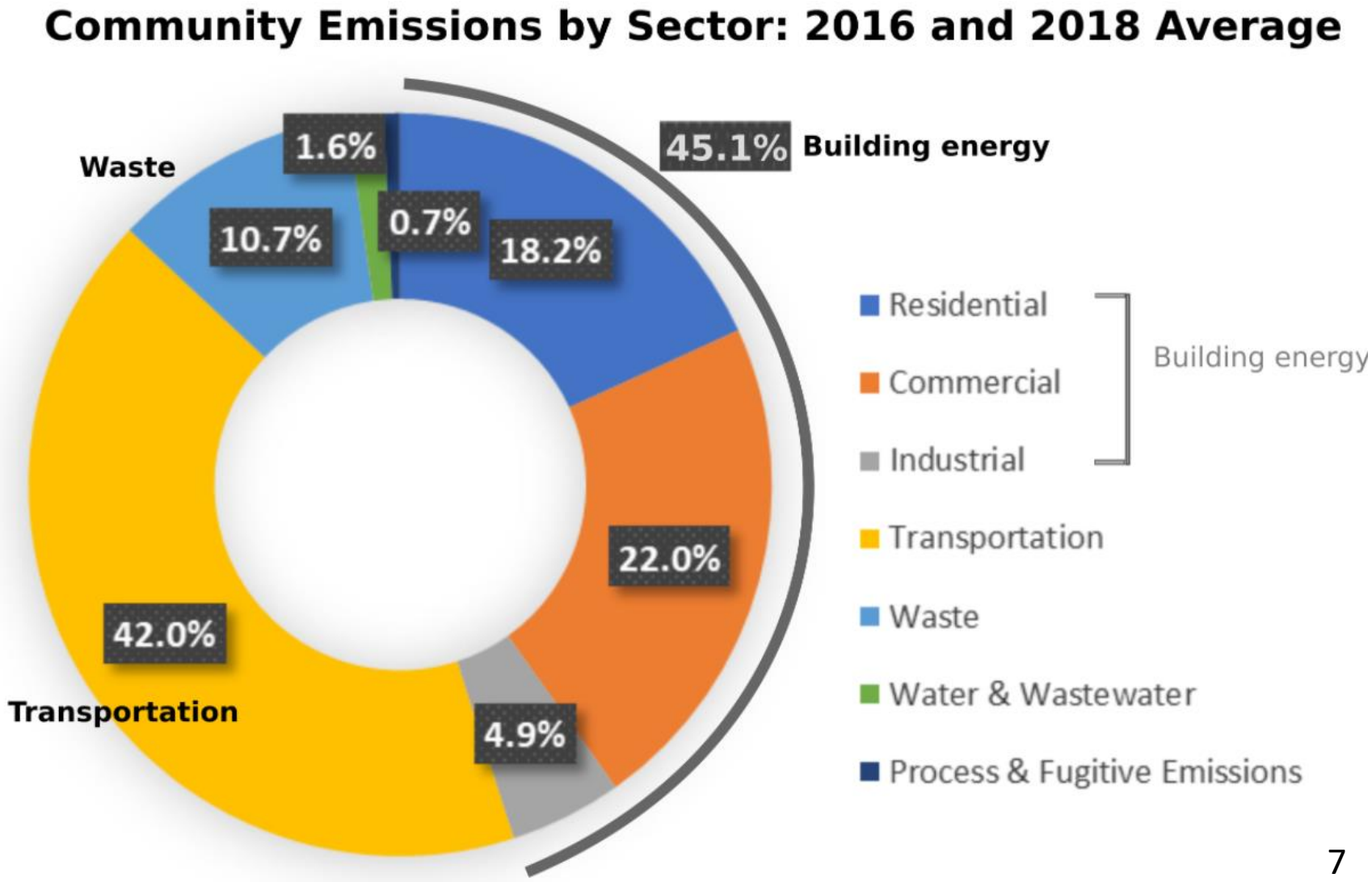
The Path to Carbon Neutrality

- Requires sustained and focused commitment
- Requires re-aligning systems
- Requires bold action and big shifts
  - Reimagine the future
  - Shift organizational strategies and operations
- There are no “silver bullets”
- Accelerate the 2018 Climate Action and Adaptation Plan (CAAP)
- Prescriptive measures in key sectors

Flagstaff's Greenhouse Gas Emissions

#1
Powering Buildings

#2
Car Emissions



Mobilization Efforts

Since the Climate Emergency Declaration …

Staff have been focusing on:

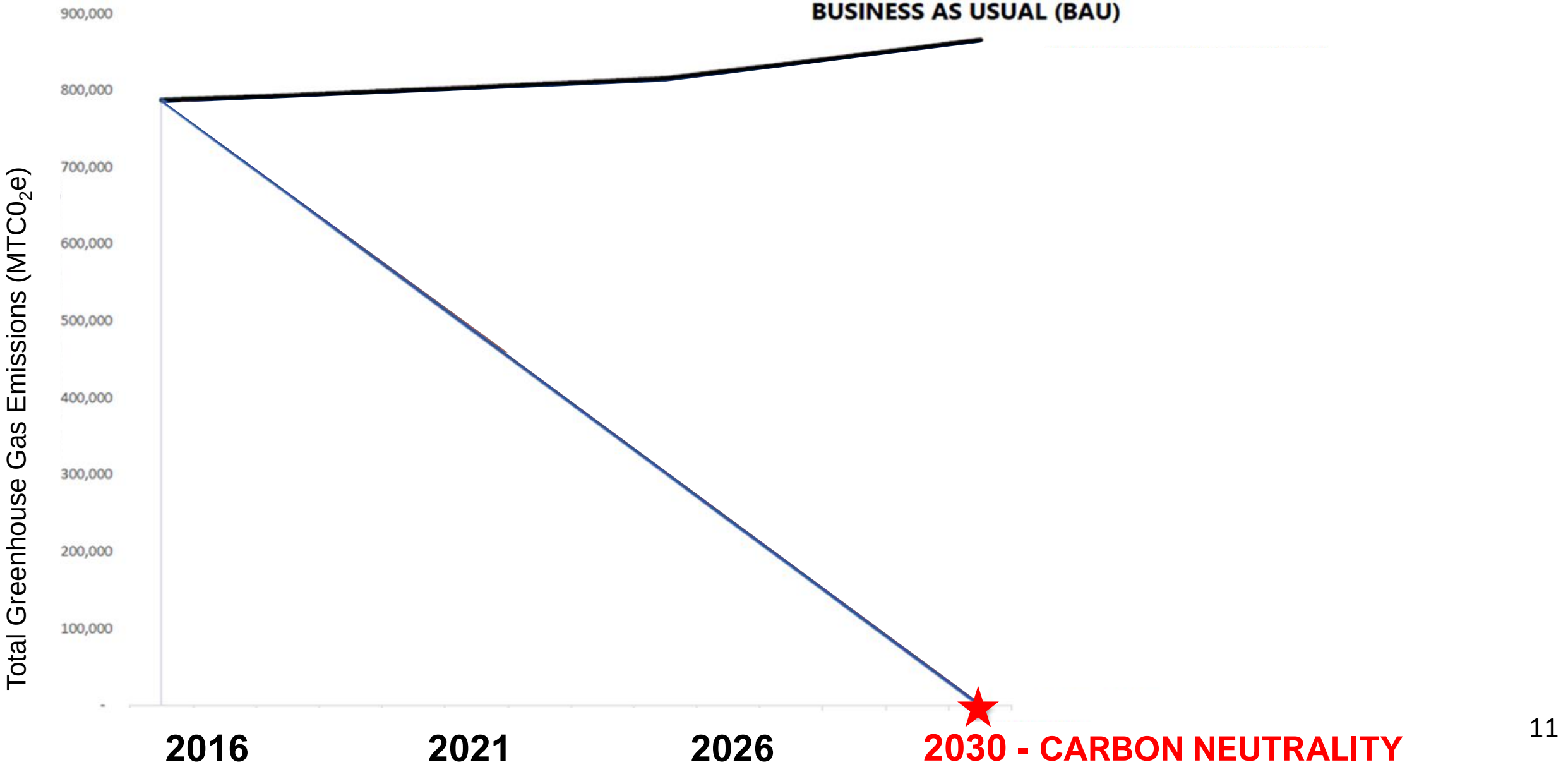
- Technical analysis and impact scenarios
- Community engagement
- Re-engaging the Climate Action and Adaptation Plan Steering Committee
- Updating 2018 Climate Action and Adaptation Plan
- Determining social cost of carbon

Technical Analysis

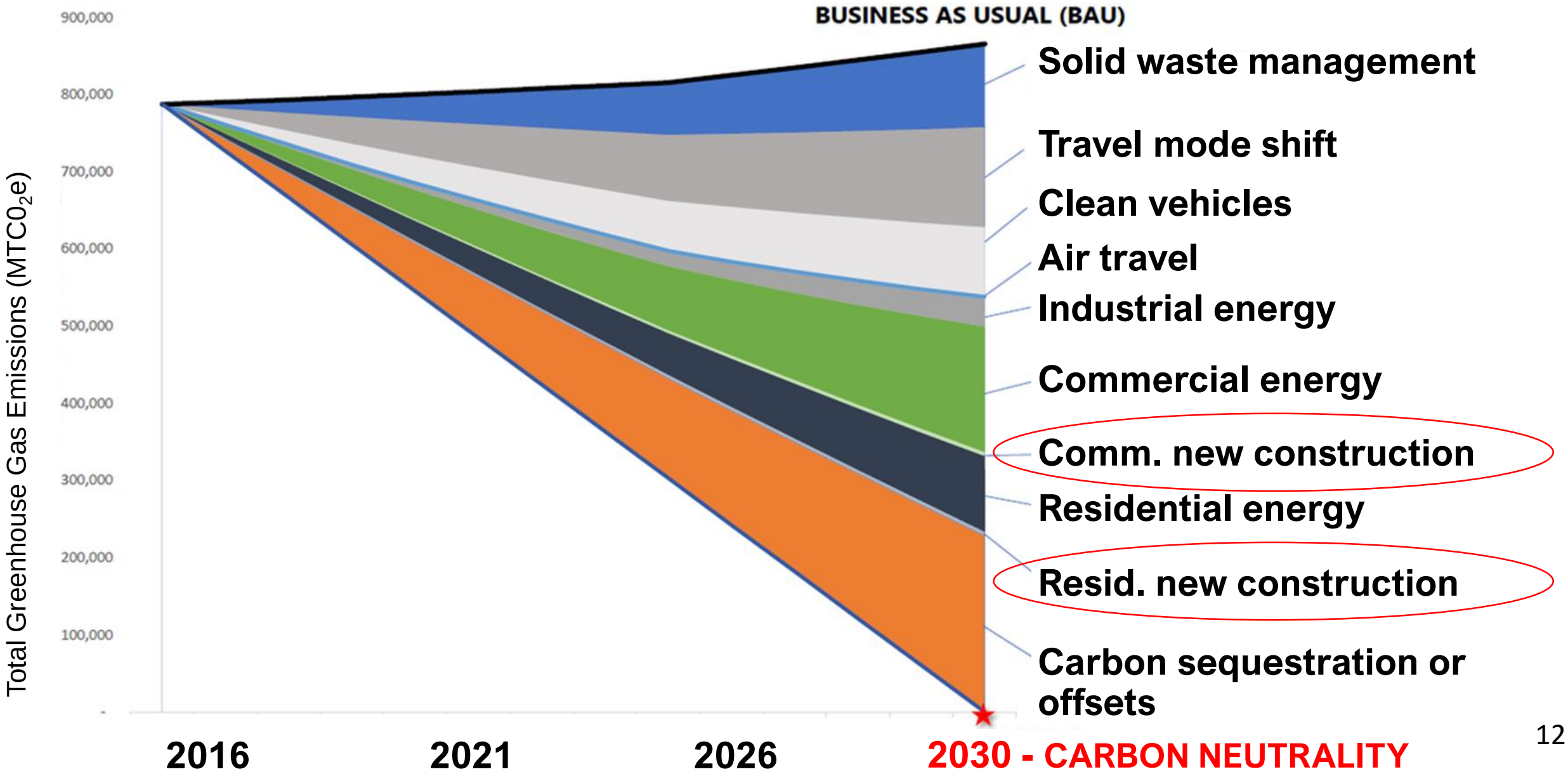
Determining how Flagstaff achieves carbon neutrality by 2030 considers:

- 2016 and 2018 greenhouse gas inventories
- 2018 Climate Action and Adaptation Plan
- 2018 Climate projections for Coconino County
- Regional, national, and international best practices
- Public comment
- City Council direction

Preliminary Emission Reduction Targets Needed to Achieve Carbon Neutrality



Preliminary Emission Reduction Targets Needed to Achieve Carbon Neutrality



Preliminary Emission Reduction Targets Needed to Achieve Carbon Neutrality

Solid Waste: Reduce materials sent to the landfill 80%

Travel Mode Shift: Reduce vehicle miles traveled an additional 50% by promoting biking, walking, and public transit

Clean Vehicles: Reduce fuel consumption by 75% through zero emission vehicles

Air Travel: Reduce fuel consumption 15%

Industrial Energy: 100% renewable electricity, reduce natural gas and electricity consumption by 50% and 5% respectively

Commercial Energy: 100% renewable electricity, reduce natural gas and electricity consumption by 40% and 20% respectively

Preliminary Emission Reduction Targets Needed to Achieve Carbon Neutrality

Commercial New Construction: No natural gas*

Residential Energy: 100% renewable electricity, reduce natural gas and electricity consumption by 70% and 40% respectively

Residential New Construction: No natural gas*

Carbon Sequestration/Offsets: 173,367 MTCO2e

**Banning of natural gas is prohibited in Arizona*

Community Engagement

- Climate Emergency Forums
- City Commissions presentations
- Community Group presentations
- *Flagstaff Community Forum*
- City staff presentations
- Social media
- Print/web/radio advertising
- Water Services billing

Community Engagement

Flagstaff Community Forum Survey

- Walks participants through preliminary emission reduction targets
  - Dives deeper with questions about Flagstaff specific actions within each target sector
- 500+ respondents
- Themes in the **Energy Sector**:
  - Rooftop solar is the highest ranked renewable energy generation model
  - 71% of respondents would support a ballot measure to raise funds for major renewable energy projects
  - 48% of respondents are interested in switching their natural gas appliance to electric

Community Engagement

Themes in the **Transportation Sector**:

- 58% of respondents are interested in working remotely 2 days per week
- For commuting and social engagements respondents said they would bike more if there were more bike lanes, safe routes, lanes and streets were clear of debris, and there were manageable bike times

Themes in the **Waste Sector**:

- 66% of respondents are interested in residential composting service
- 77% of respondents would participate in a food recovery program

Themes in the **Sequestration Sector**:

- 49% of respondents are interested in keeping a sequestration project local
- 34% of respondents are interested in affordability of a sequestration project

CAAP Steering Committee

- Reconvened CAAP Steering Committee and invited new community representatives to join
- Have had seven meetings taking a deep dive into preliminary emission reduction targets and exploring specific actions within each target sector
- Discussion themes:
  - Need to create and commit to a “Big Shift” to achieve this goal, especially in an equitable manner
  - Incentivizing actions will be critical in supporting/assisting with the Big Shift (so none are left “behind”)
  - This commitment requires on-going dialogue

CAAP Steering Committee

Specific discussion regarding the **Transportation Sector**:

- Transitioning to electric vehicles is integral to reducing emissions, emphasis on EV adoption can be a distraction to other more impactful, equitable and sustainable strategies
- Therefore City resources and focus should be directed to the harder work that will benefit and be *accessible* to the larger community, not just those that can afford electric vehicles
- Rather than thinking about how to subsidize getting another car on the road, electric or not, our focus should be on transforming our city to support biking, walking, public transit and other forms of micro-mobility
- This means **ReThinking Mobility** and will require policy changes related to infill, density, codes, lane conversations, etc.

What’s Next?

Plan for Action

- Continue community engagement efforts
- Synthesize feedback from 800+ community members
  - Refine sector based targets
  - Develop specific actions to achieve targets
- Identify which CAAP strategies will need to be accelerated
- Develop a 10-year investment scenario
- Develop funding scenarios
- Bring updated CAAP with refined targets and prioritized actions back to City Council in February
  - The 2030 carbon neutrality goal necessitates that this will be a living document

In addition to 2018 CAAP actions and strategies …

- Developing equity review committee
- Partnering with Solar United Neighbors
- Collaborating with City Planning
  - Developing carbon neutrality scoring index for new development
  - Active Transportation Management Plan
- Collaborating with City Capital Improvements
  - Lone Tree Overpass
- Developing Climate Action decision matrix
- Determining the social cost of carbon

Thank you.

TEAM FLAGSTAFF

WE MAKE THE CITY BETTER

CITY OF FLAGSTAFF

STAFF SUMMARY REPORT

To:	The Honorable Mayor and Council
From:	David Pedersen, Capital Improvements Project Manager
Date:	10/15/2020
Meeting Date:	10/27/2020

TITLE

JW Powell Specific Plan Study - Project Update

STAFF RECOMMENDED ACTION:

Facilitate Council discussion with an update on the project.

EXECUTIVE SUMMARY:

The JW Powell Specific Plan Study has recently completed a land use model for the future JW Powell corridor. In the cultivation of this model, City Staff and Peak Engineering reached out to a myriad of community organizations to encompass the future facilities and planning of this area. This presentation seeks to share the information and exhibits from this land use model as part of the current contract with Peak Engineering for the 30% engineering design.

INFORMATION:

Information:

Connection to Key Community Priorities, Objectives, Council Goal, Regional Plan and/or Team Flagstaff Strategic Plan:

Sustainable, Innovative Infrastructure

Utilize existing long-range plan(s) that identify the community's future infrastructure needs and all associated costs

Environmental Stewardship

Actively manage and protect all environmental and natural resources

Council Goal 2017 – 2019 - Transportation and Other Public Infrastructure

Deliver quality community assets and continue to advocate and implement a highly performing multi-modal transportation system.

Council Goal 2017 – 2019 - Environmental and Natural Resources

Actively manage and protect all environmental and natural resources

Region Plan Goal – Environmentally Sensitive Lands Goals and Policies

Goal E&C.7. Give special consideration to environmentally sensitive lands in the development design and review process.

Team Flagstaff Strategic Plan – Priority 3
Deliver outstanding services through a healthy environment, resources, and infrastructure.

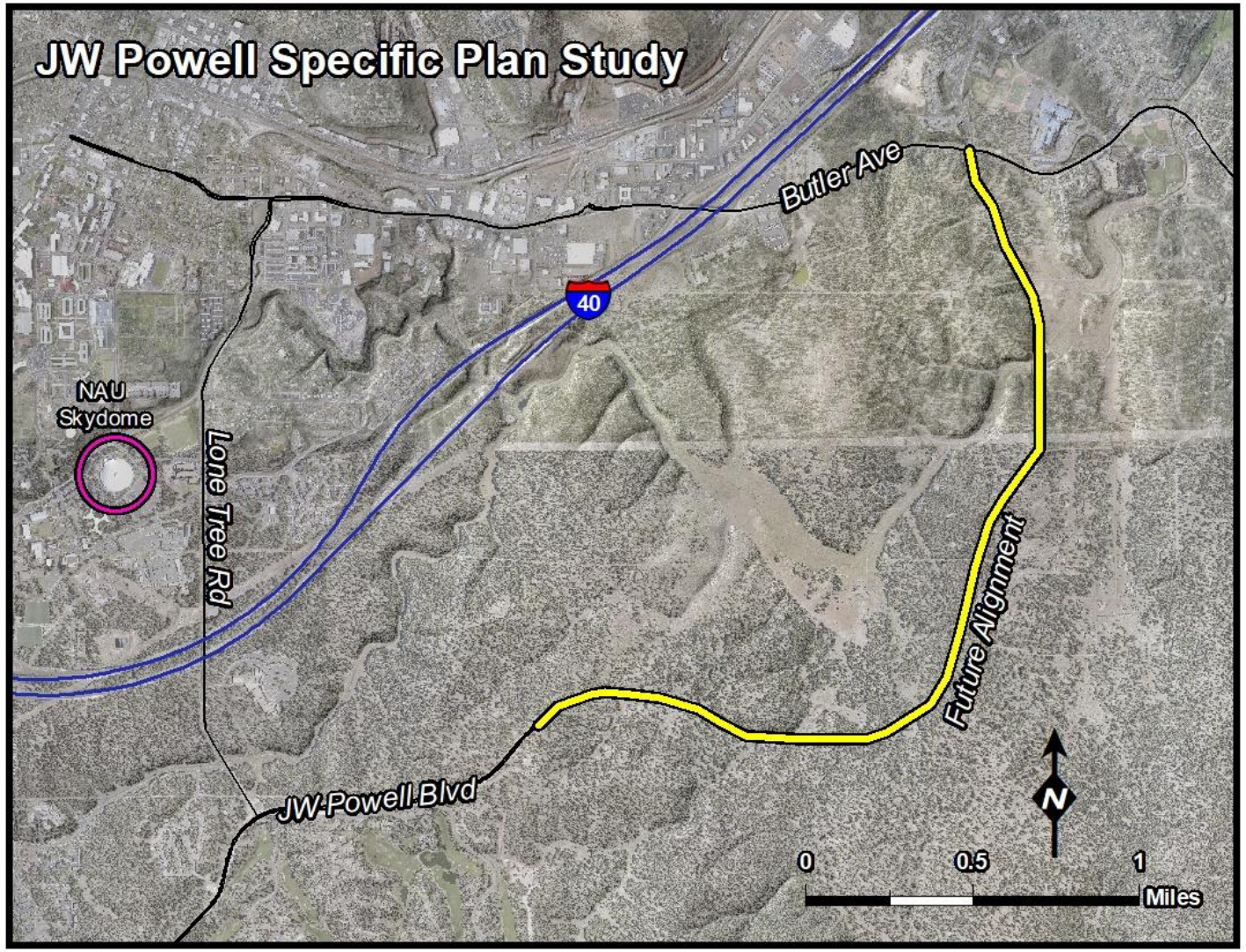
Has There Been Previous Council Decision on This:
The JW Powell Specific Plan Study Project has been before the City Council twice in the past four years. The first occurrence was a Council Work Session on October 25, 2016, with a discussion on Infrastructure and Public Facilities Planning and Engineering in the John Wesley Powell Boulevard area. The second occurrence, on February 6, 2018, was the award of a contract to Peak Engineering for the JW Powell Specific Plan Study which is currently underway. Furthermore, the JW Powell Specific Plan Study was also discussed during the Capital Planning Presentation on April 7, 2020.

Attachments: Presentation
Context_Map

J.W. Powell Boulevard

Specific Plan Study

Context Map


JW Powell Specific Plan Study
Butler Ave
40
NAU
Skydome
Lone Tree Rd
Future Alignment
JW Powell Blvd
N
0
0.5
1
Miles

JWP Specific Plan Study

- Meeting Objective:
  - Inform & Receive Council Feedback
- Project Team:
  - City Staff – Multiple Departments
  - Community Service Providers – Mountain Line, MetroPlan, FUSD, ASLD, AZ Forestry & Fire Management, Northern Arizona Healthcare, Flagstaff Arts Coalition, USPS
  - Consultants – Peak, Swaback, Charlier & Entellus

Process

WE ARE CURRENTLY IN PHASE 1

PHASE 1

- Land Use Framework
- 30% Roadway & Utility Design
- Focused Public Involvement

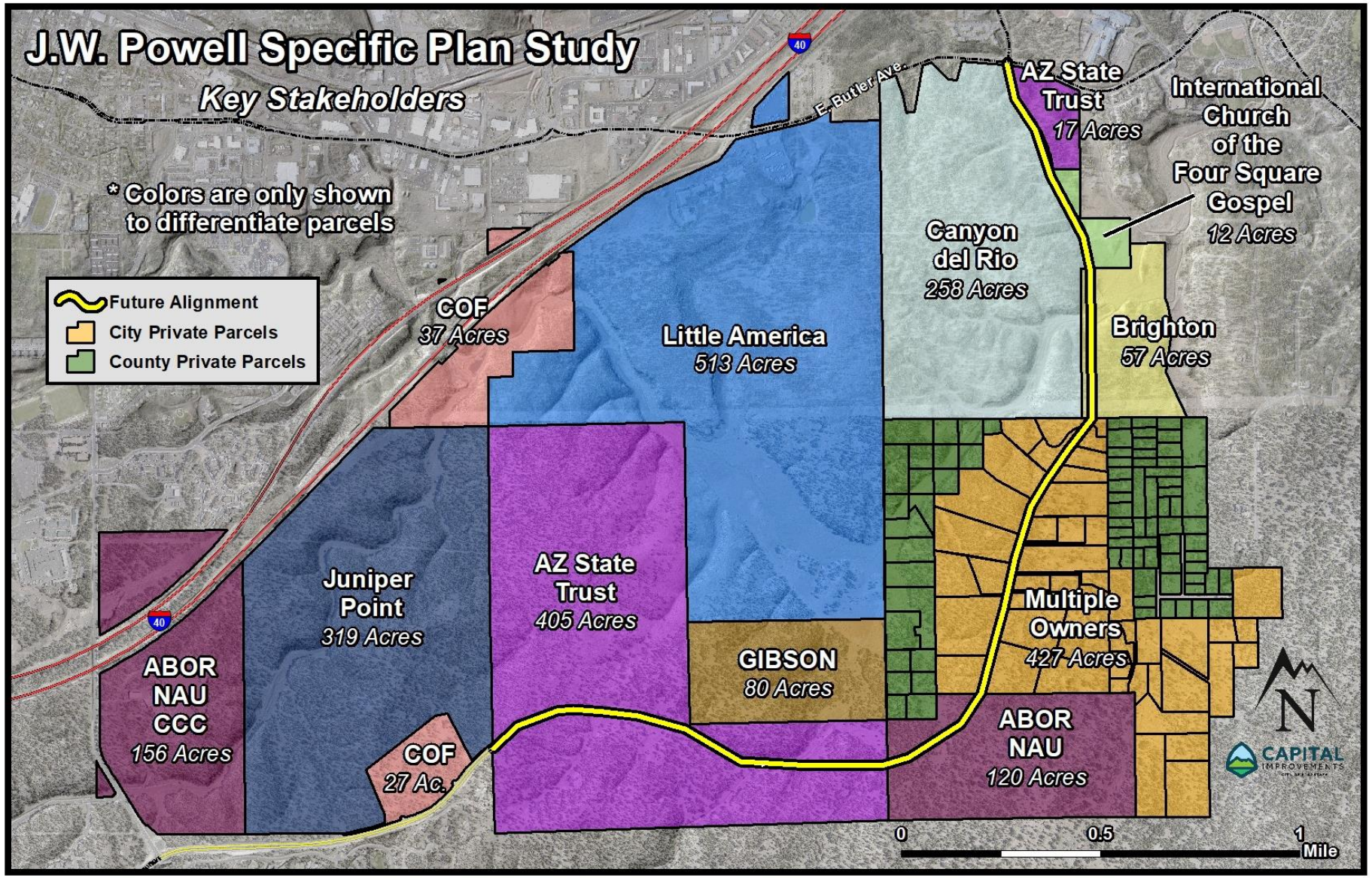
PHASE 2

- Specific Area Plan
- Regional Plan Update
- Community-wide Public Involvement

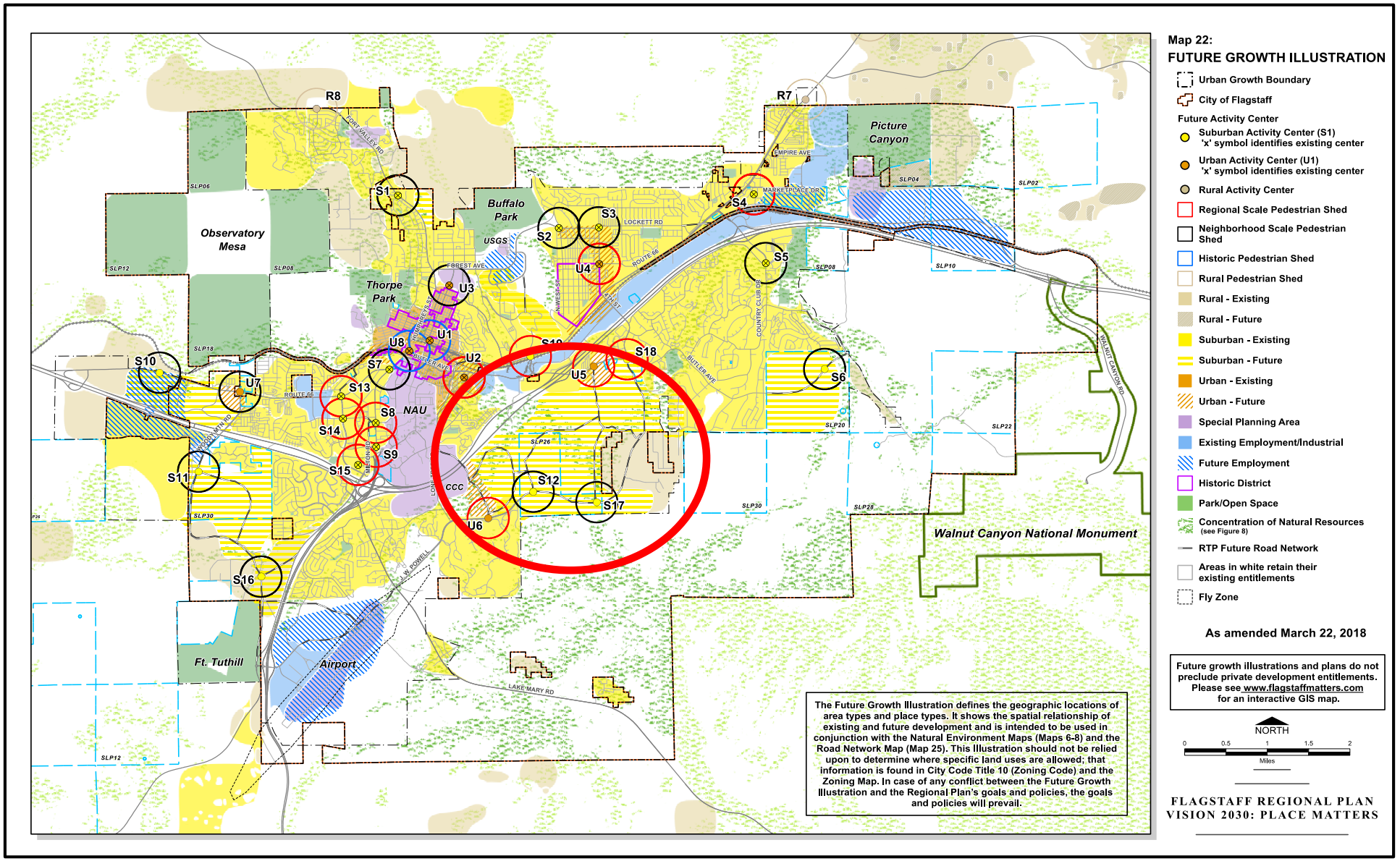
FUTURE

- Partnerships
- Funding Opportunities
- Conceptual Development Plans

Key Stakeholders



Future Growth Illustration



The Future Growth Illustration defines the geographic locations of area types and place types. It shows the spatial relationship of existing and future development and is intended to be used in conjunction with the Natural Environment Maps (Maps 6-8) and the Road Network Map (Map 25). This Illustration should not be relied upon to determine where specific land uses are allowed; that information is found in City Code Title 10 (Zoning Code) and the Zoning Map. In case of any conflict between the Future Growth Illustration and the Regional Plan's goals and policies, the goals and policies will prevail.

Map 22:
FUTURE GROWTH ILLUSTRATION

- Urban Growth Boundary
- City of Flagstaff

Future Activity Center

- Suburban Activity Center (S1) 'x' symbol identifies existing center
- Urban Activity Center (U1) 'x' symbol identifies existing center
- Rural Activity Center
- Regional Scale Pedestrian Shed
- Neighborhood Scale Pedestrian Shed
- Historic Pedestrian Shed
- Rural Pedestrian Shed
- Rural - Existing
- Rural - Future
- Suburban - Existing
- Suburban - Future
- Urban - Existing
- Urban - Future
- Special Planning Area
- Existing Employment/Industrial
- Future Employment
- Historic District
- Park/Open Space
- Concentration of Natural Resources (see Figure 8)
- RTP Future Road Network
- Areas in white retain their existing entitlements
- Fly Zone

As amended March 22, 2018

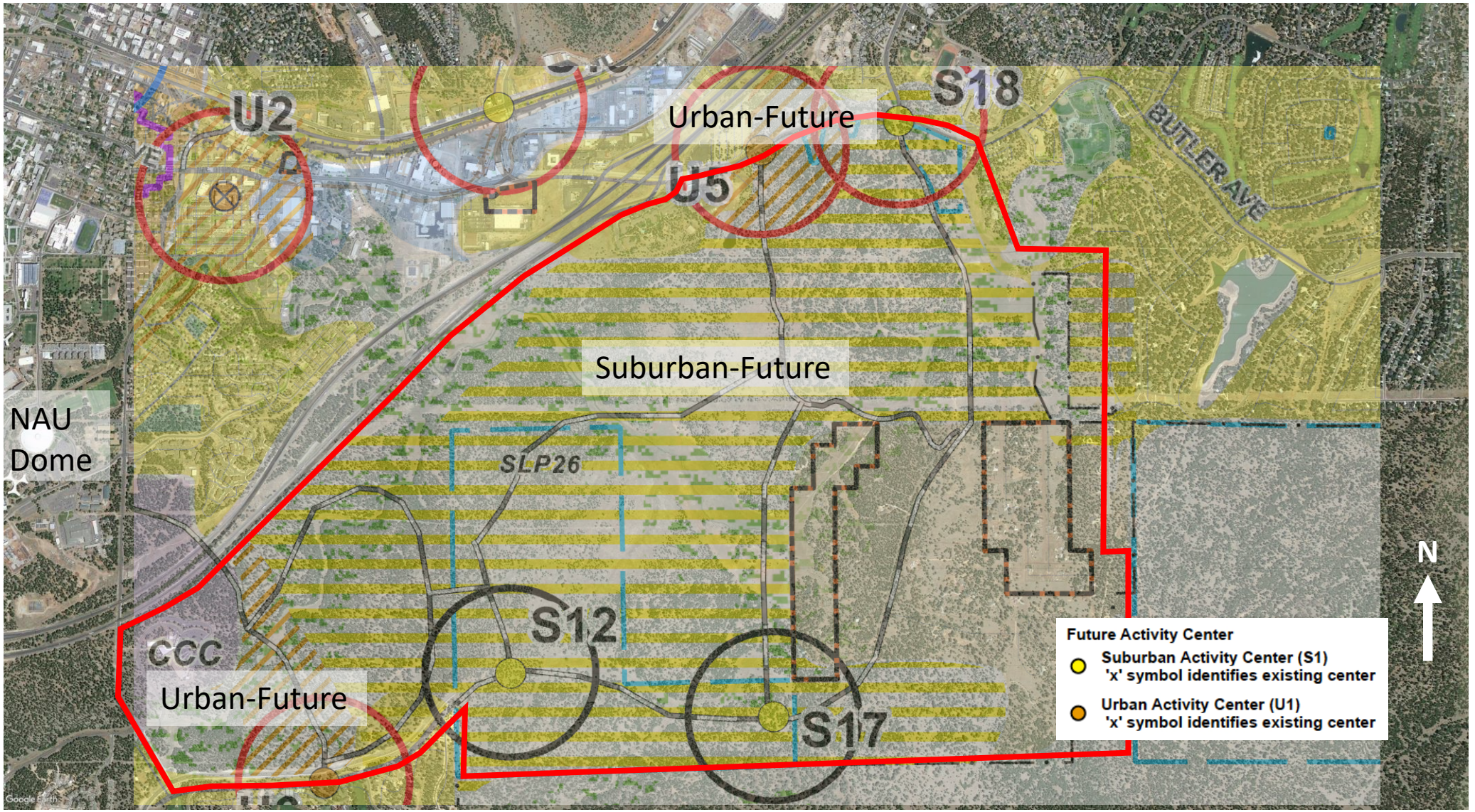
Future growth illustrations and plans do not preclude private development entitlements. Please see www.flagstaffmatters.com for an interactive GIS map.

NORTH

0 0.5 1 1.5 2
Miles

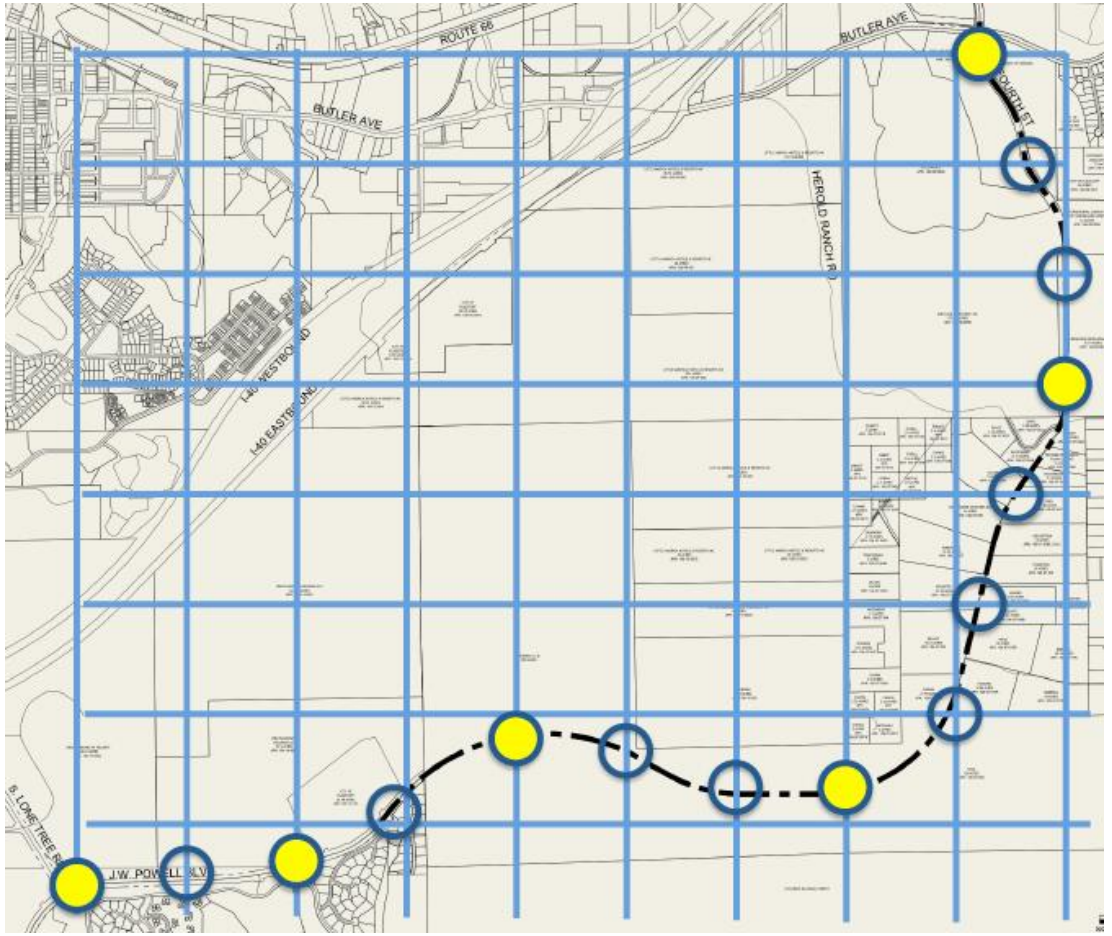
FLAGSTAFF REGIONAL PLAN
VISION 2030: PLACE MATTERS

Future Growth Illustration with Image



Traffic Engineering & Planning

- Importance of Good Connectivity
  - Emergency Service Response
  - Emergency Evacuation
  - Traffic Safety
  - Vehicle Miles of Travel (VMT)
  - Pedestrian Environment
  - Bicycling Environment
  - Transit Serviceability

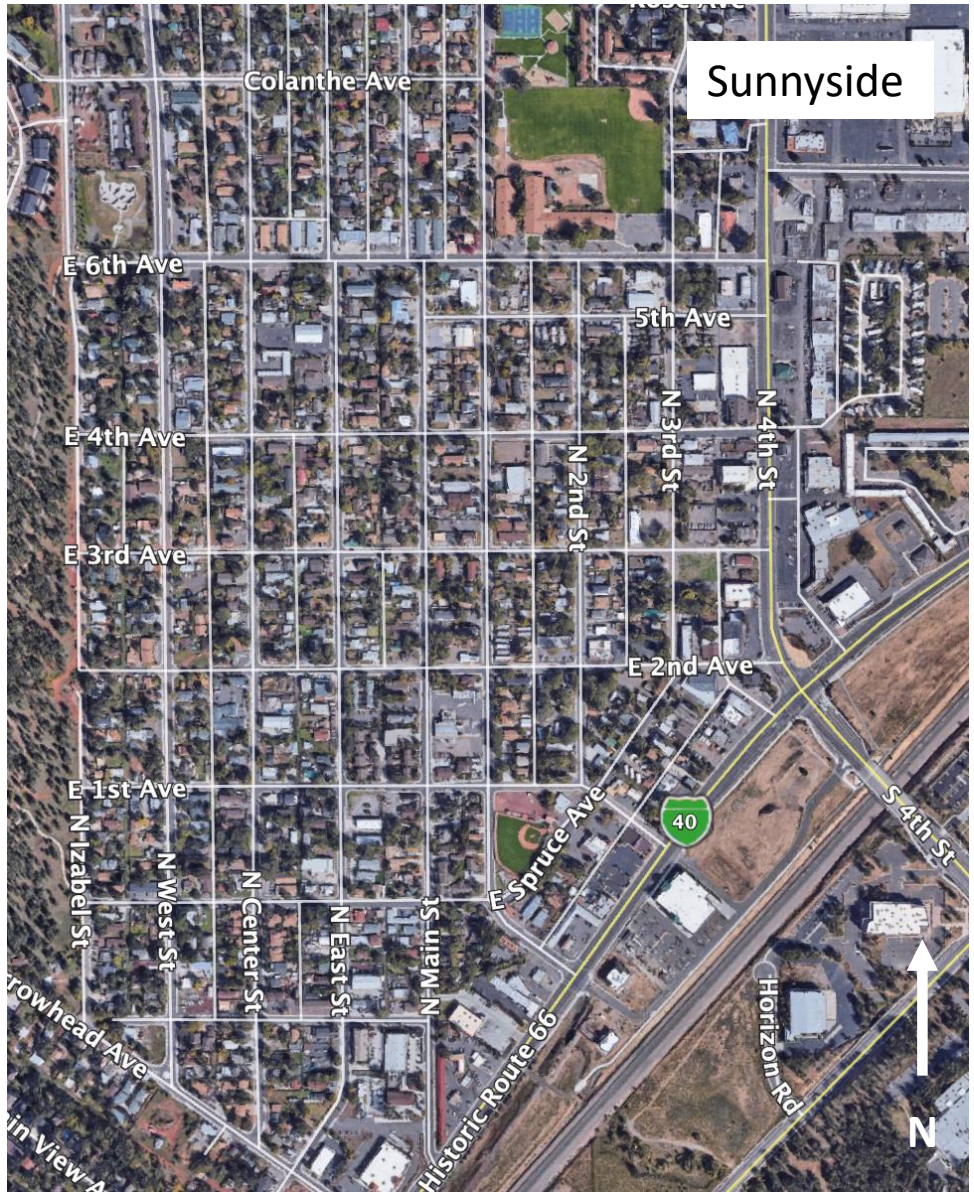


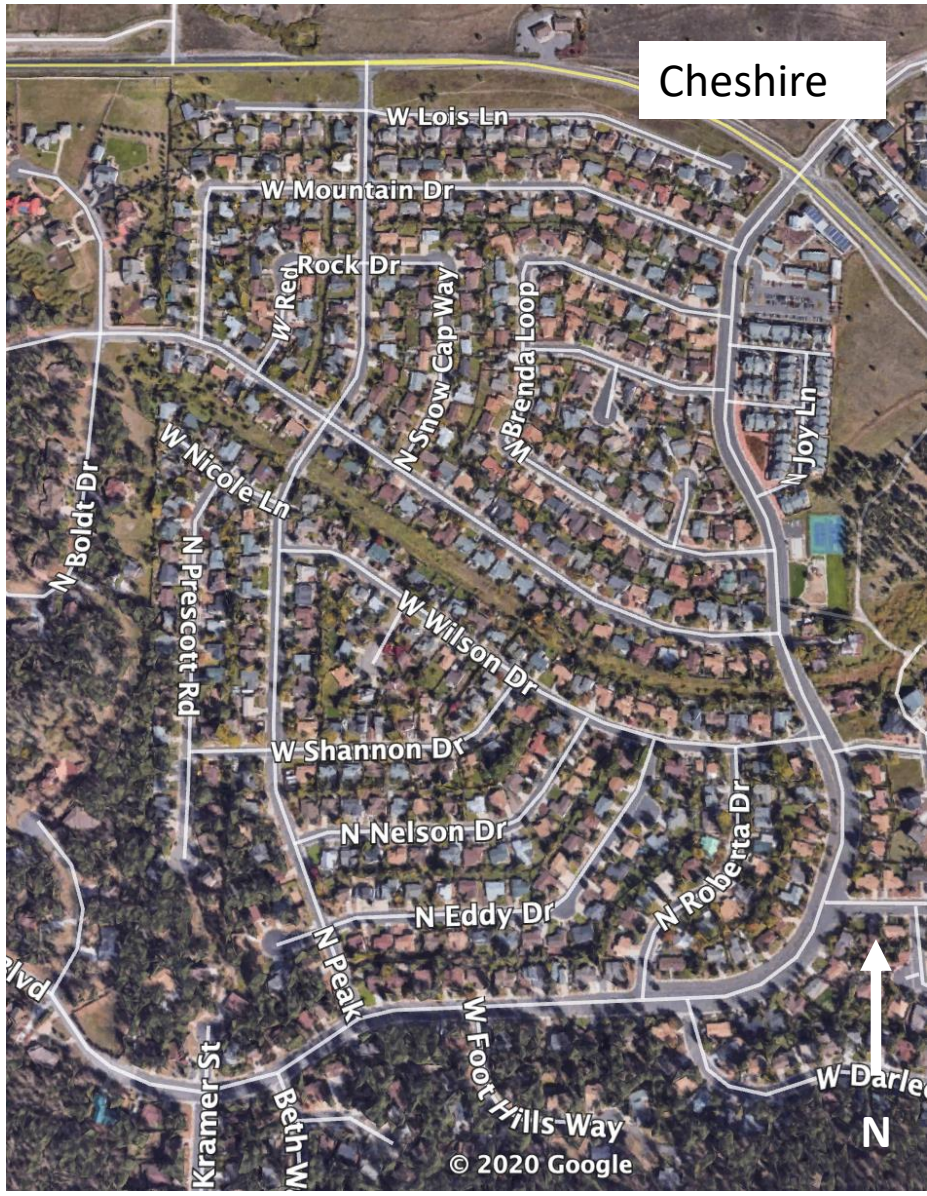
Depiction of a ¼ mile transportation grid.
Yellow dots are major intersections or activity nodes.

Traffic Engineering & Planning

TEAM FLAGSTAFF
WE MAKE THE CITY BETTER

Flagstaff Neighborhood Examples:



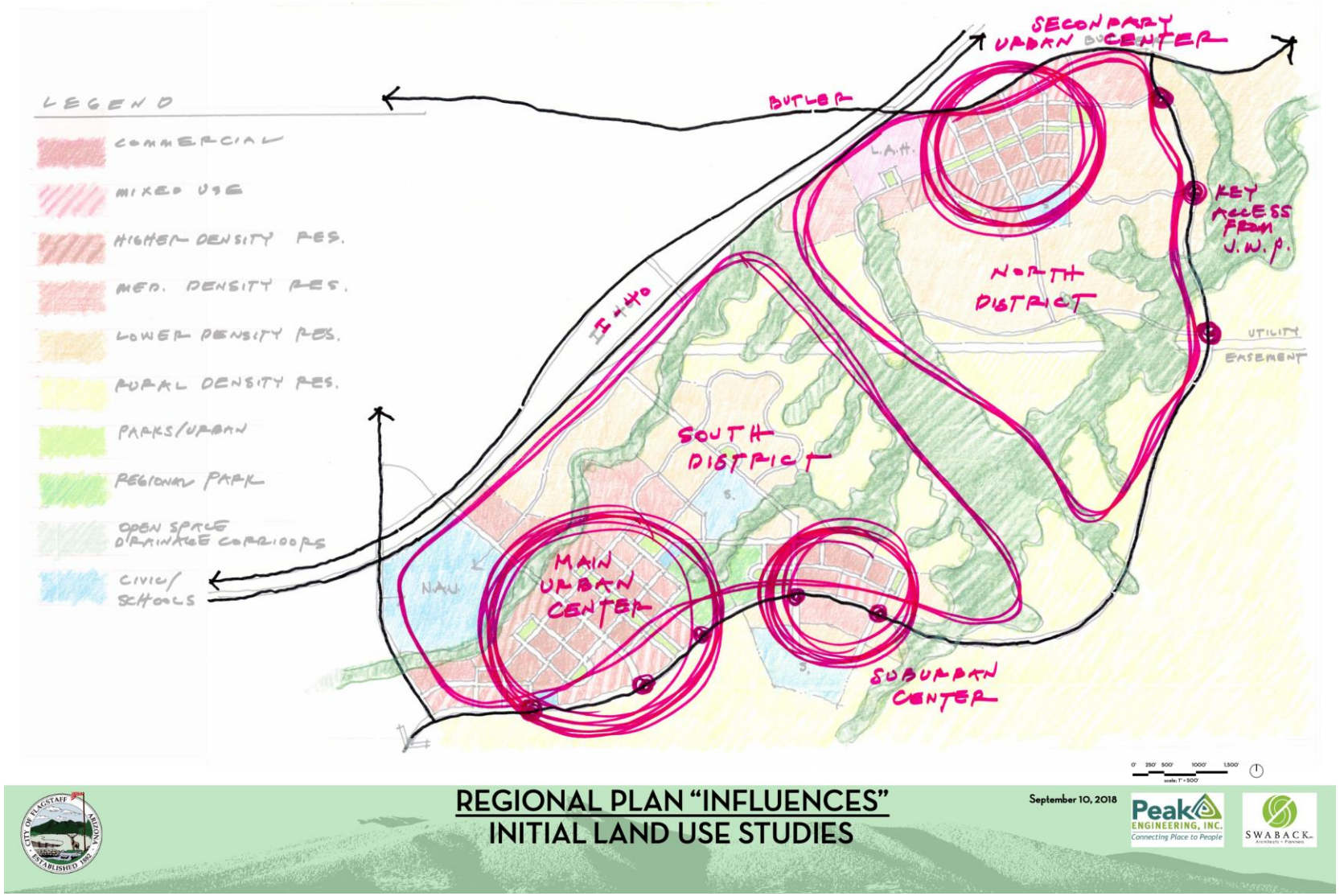


J.W. Powell LU Framework Illustrations

- Refinement of Regional Plan
- Not as Detailed as Specific Area Plan
- Purpose
  - Imagine the Possible
  - Understand Spatial Needs
  - Test the Regional Plan and Infrastructure Needs (an application of a set of assumptions)
- Much Work to Do!

J.W. Powell Land Use Framework

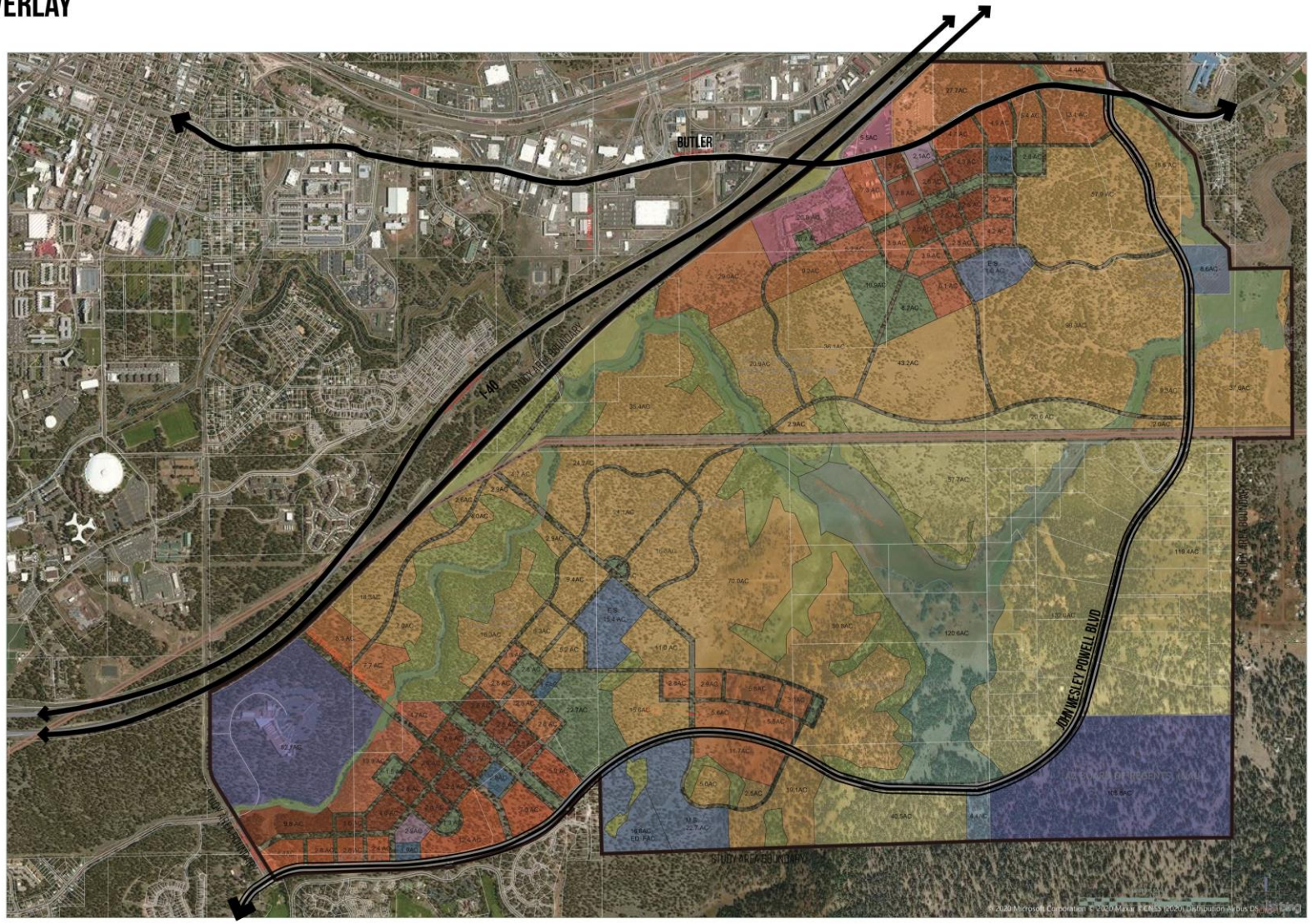
- Early Ideas – Application of a Scenario
- Guided by Regional Plan
- Consider:
  - Connectivity
  - Sensitive Environmental Areas
  - Topography
  - Resources



J.W. Powell Land Use Framework

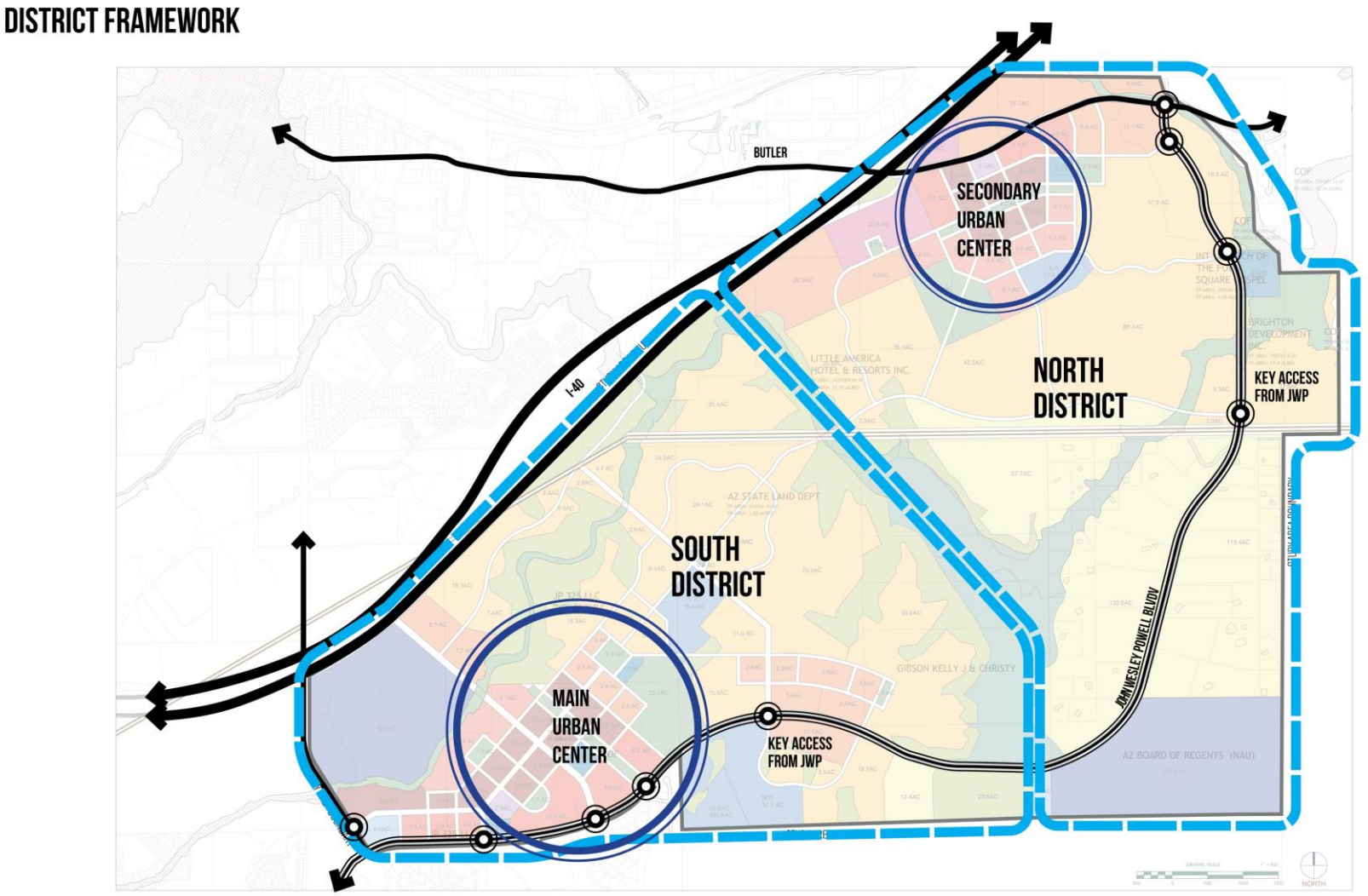
- Why a Framework
- Layering in Land Use
  - Colors Represent Different Land Use
- Break Down By:
  - Place Types
  - Connectivity
  - Amenities
  - Intensity & Density

AERIAL OVERLAY



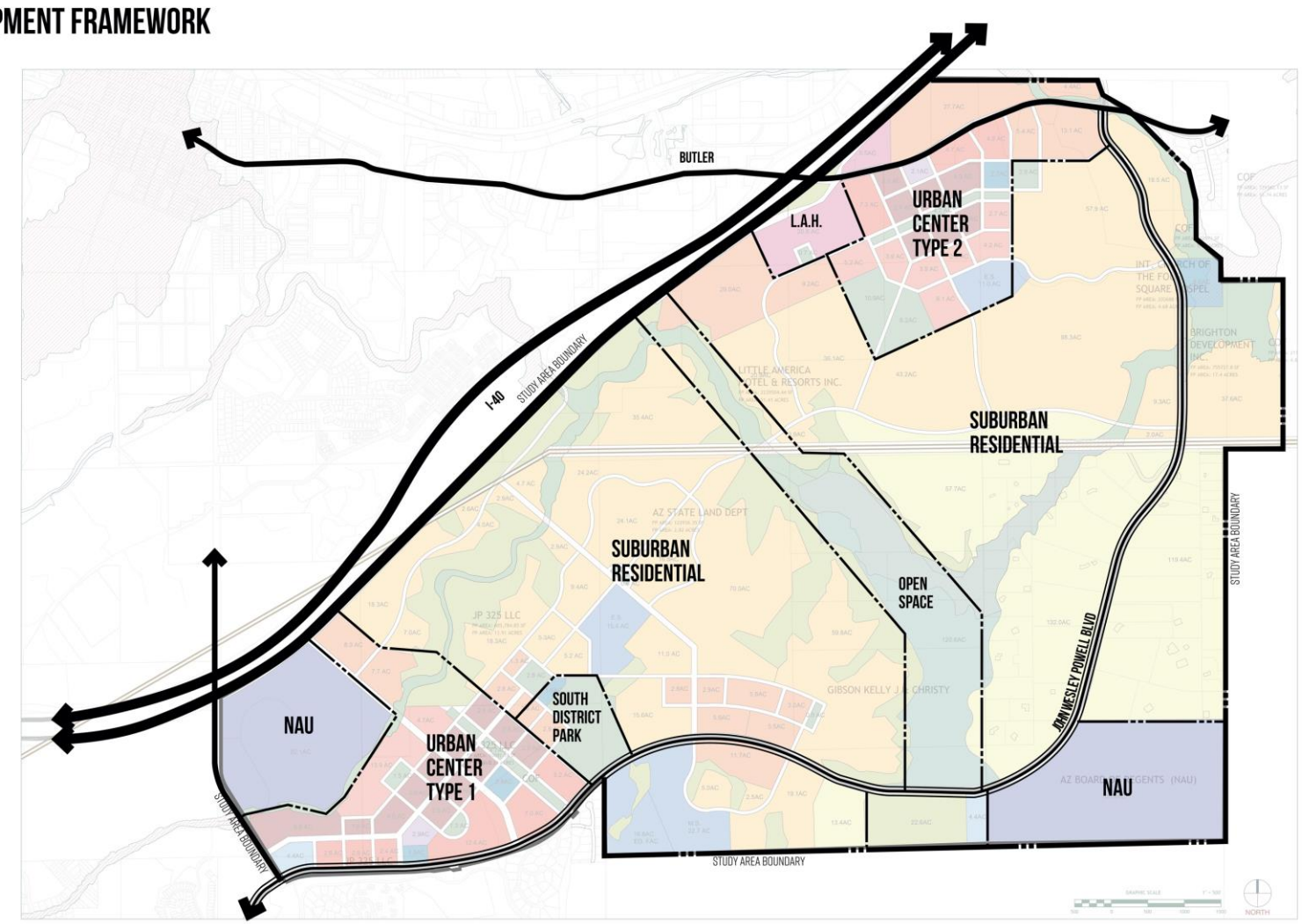
JWP Land Use Framework

- North & South District (boundary shown by blue dashed line)
  - Different Characteristics
  - Land Features & Physical Constraints
  - Area Influences
  - Activity Centers



JWP Land Use Framework

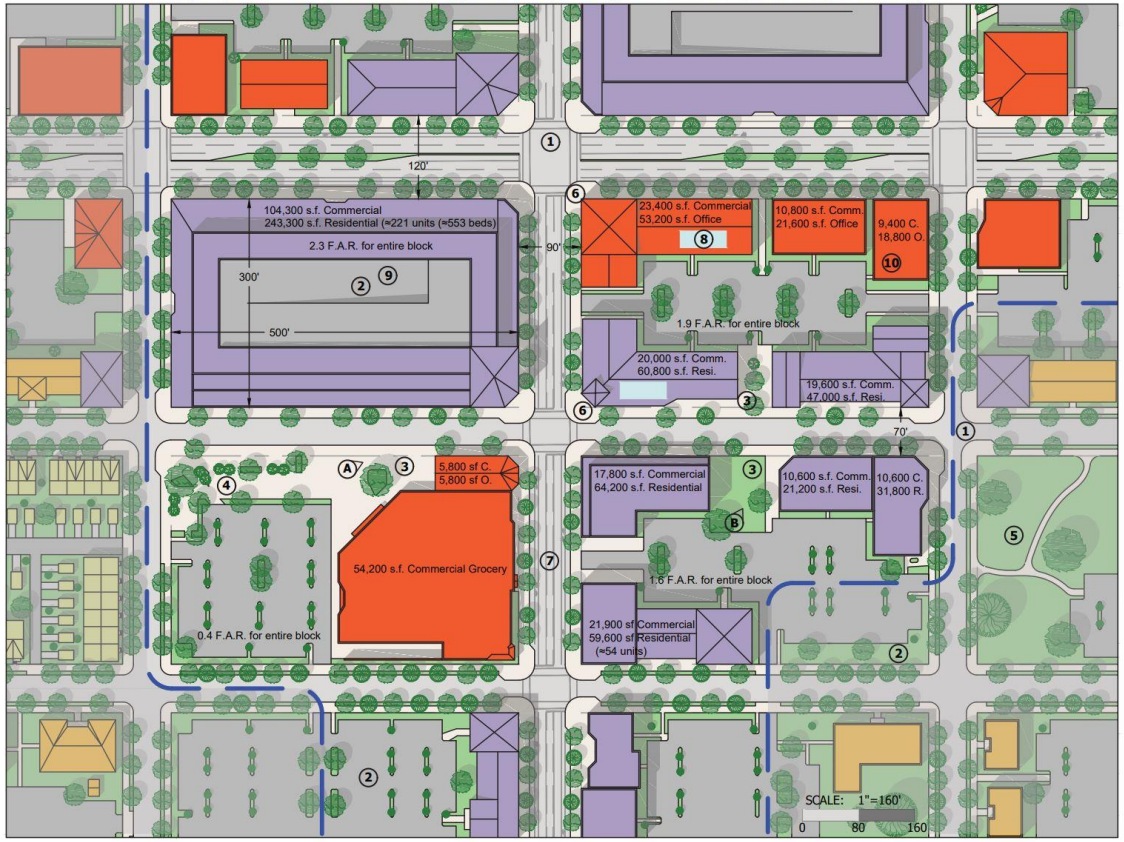
- Type 1 Urban Center
  - Serves a Broad Area
  - Pedestrian Oriented
- Type 2 Urban Center
  - Localized
  - Less Dense & Intense



Urban Center Type 1

Example from High Occupancy Housing Plan

Concept Plan 24: Plan View Illustration of High Occupancy Housing in the context of an Urban Regional Activity Center

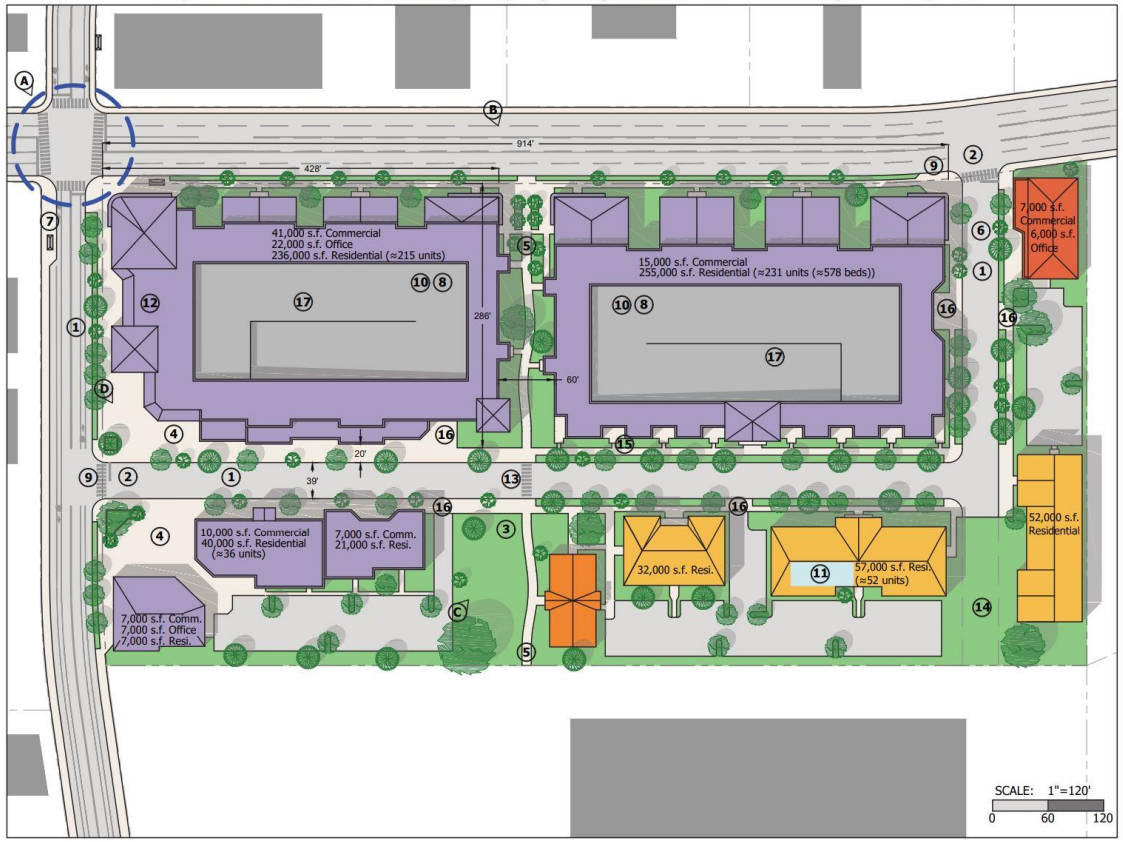


Concept Plan 25: 3D overview of Urban Regional Activity Center

Urban Center Type 2

Example from High Occupancy Housing Plan

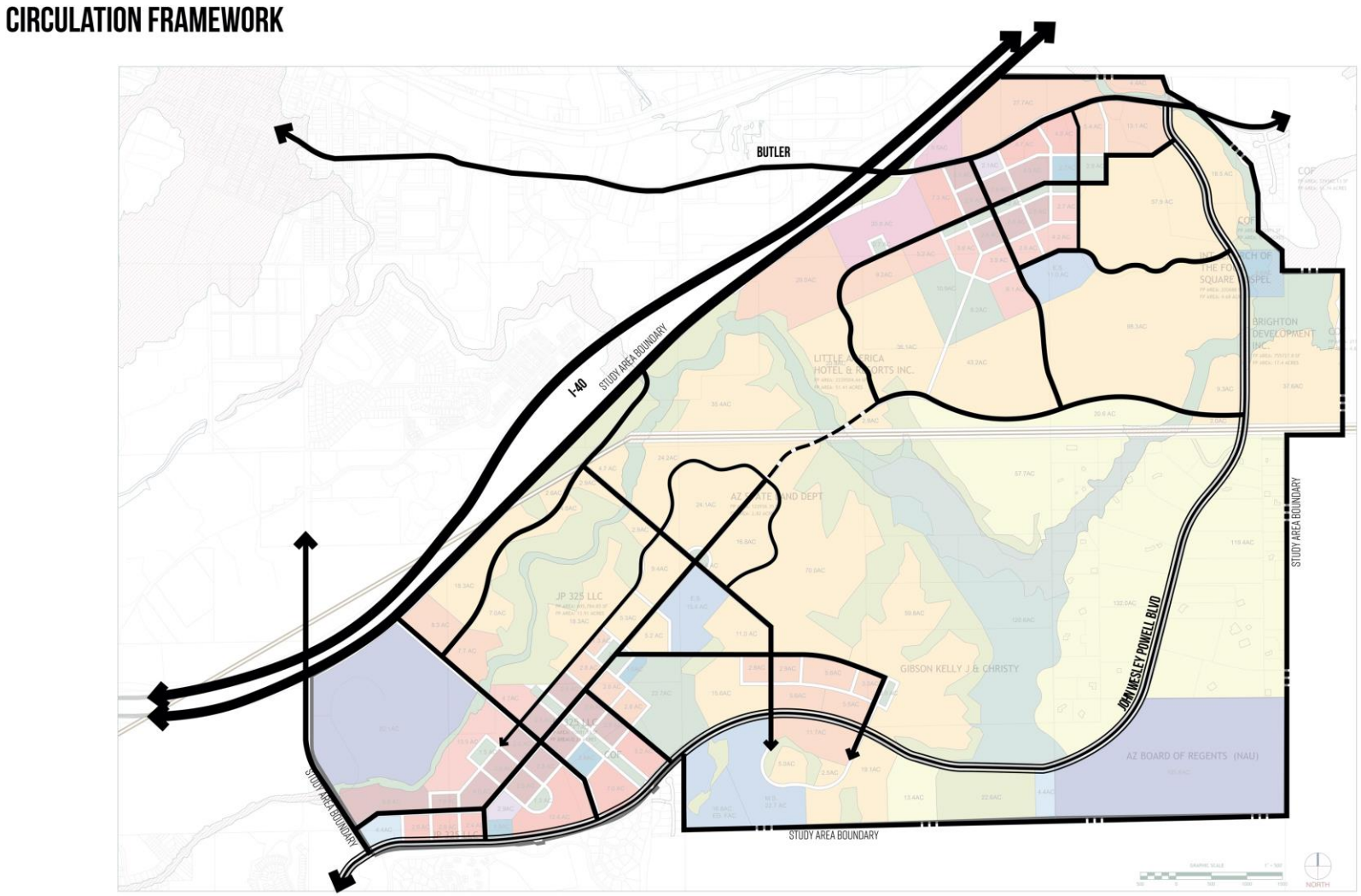
Concept Plan 13: Plan View Illustration of High Occupancy Housing in the context of a Suburban Regional Activity Center



Concept Plan 14: 3D overview of Suburban Regional Activity Center

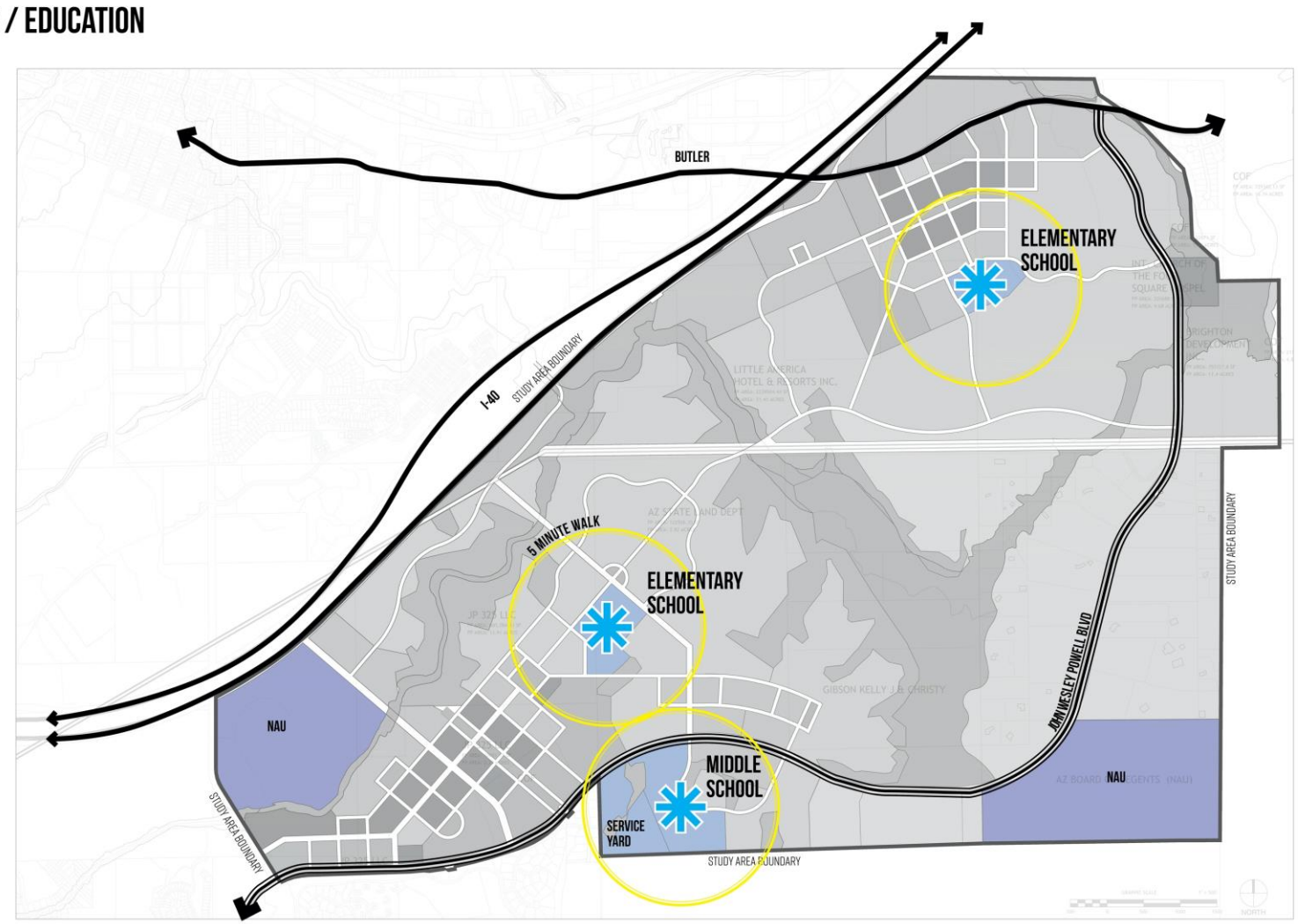
JWP Land Use Framework

- Primary Circulation
  - Arterial (JWP Blvd)
  - Major Collectors
- Not All Possible Roads Shown
- Independent of Parcel Ownership



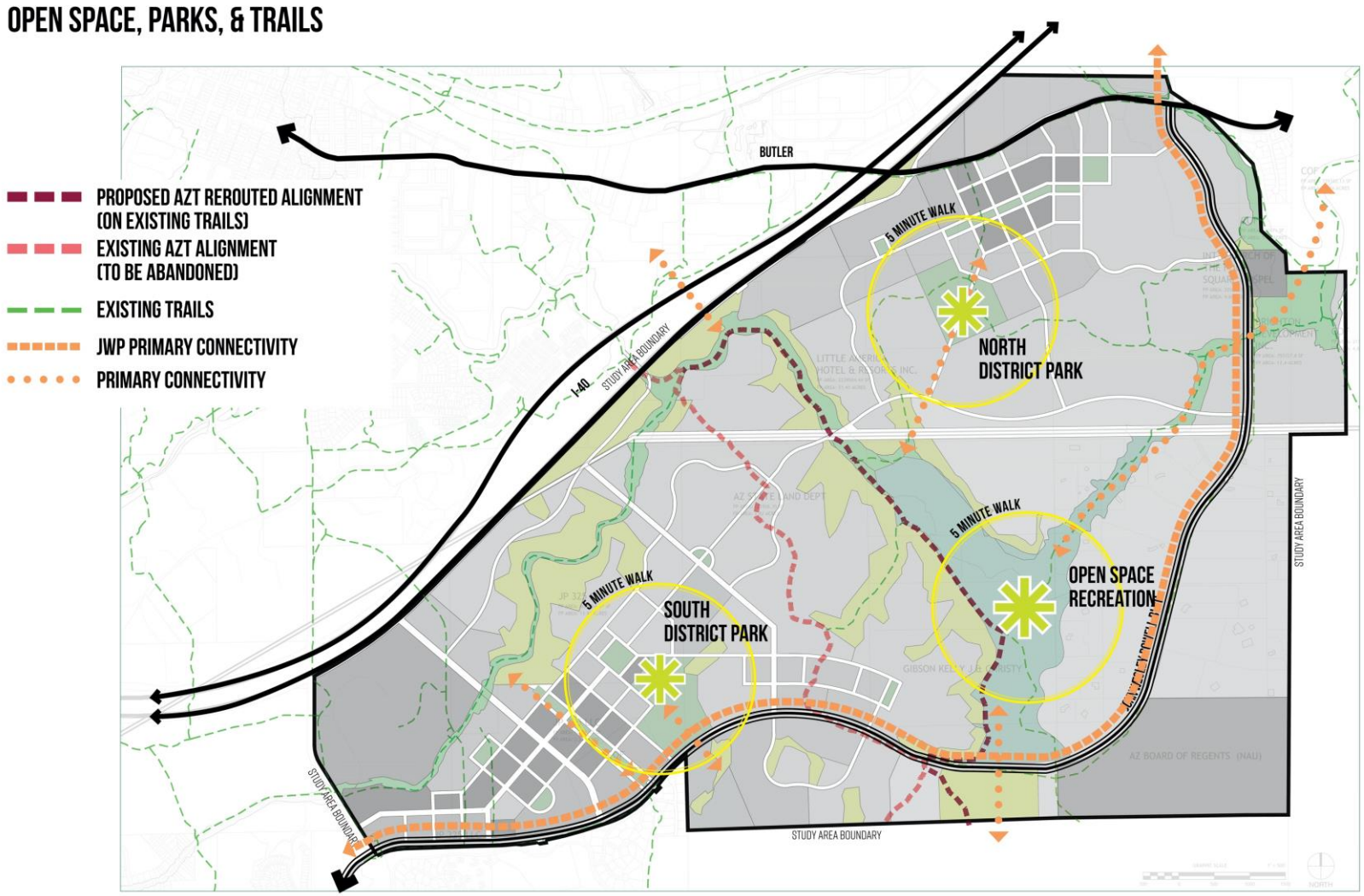
JWP Land Use Framework

- Met with FUSD
- Based on Possible Yield of Residential Units
- 2 Elementary Schools
- 1 Middle School
- Service (Bus) Yard



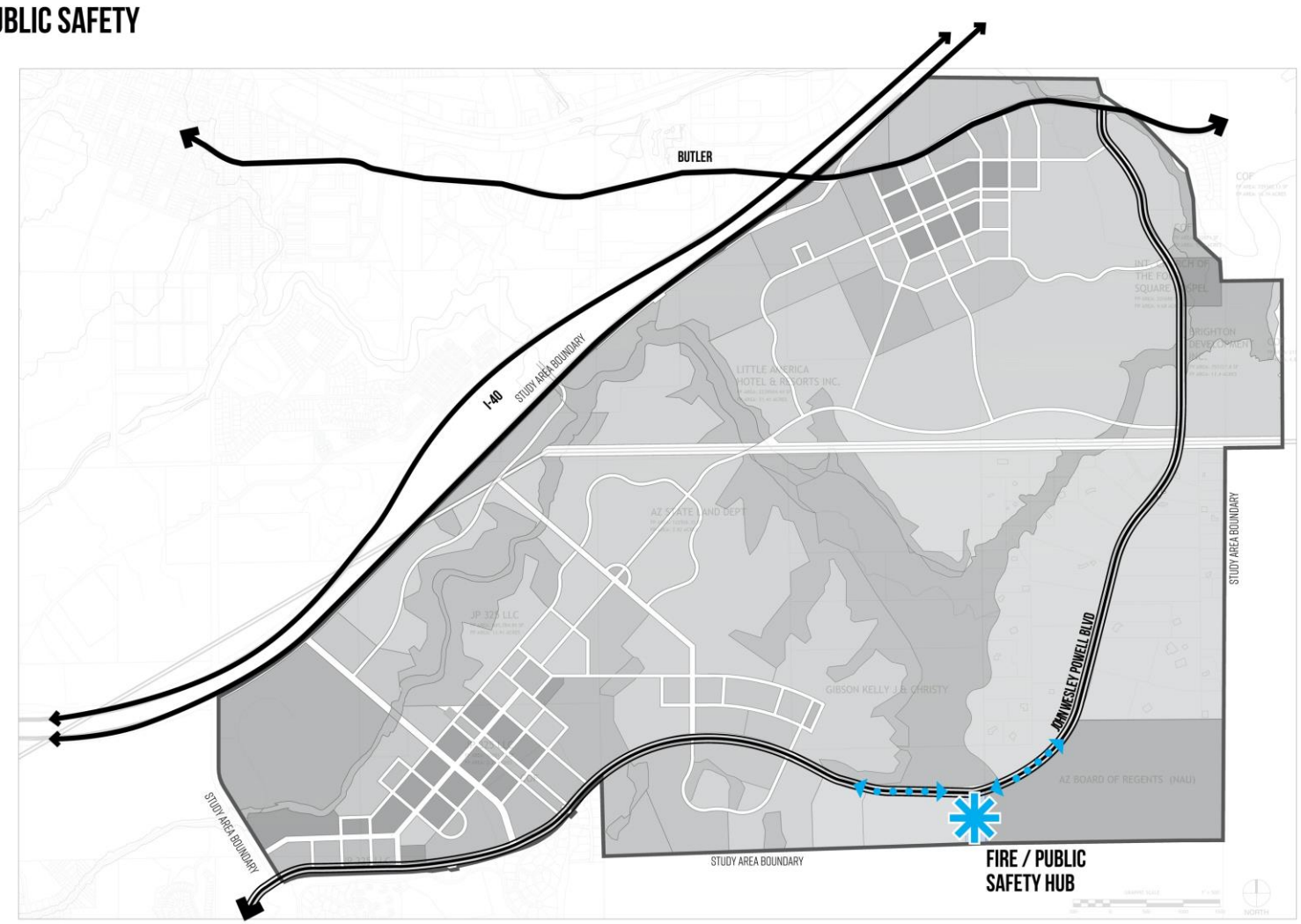
JWP Land Use Framework

- Open Space, Parks & Trails
  - Connectivity Between Land Uses and Districts
  - AZ Trail
  - Bikeways
  - Grade Separated Crossing(s)
  - Wildlife Crossing(s)



JWP Land Use Framework

- Public Safety Hub
  - Fire Station
  - Wildland Urban Interface Tactical Location
  - Other Public Safety Services TBD

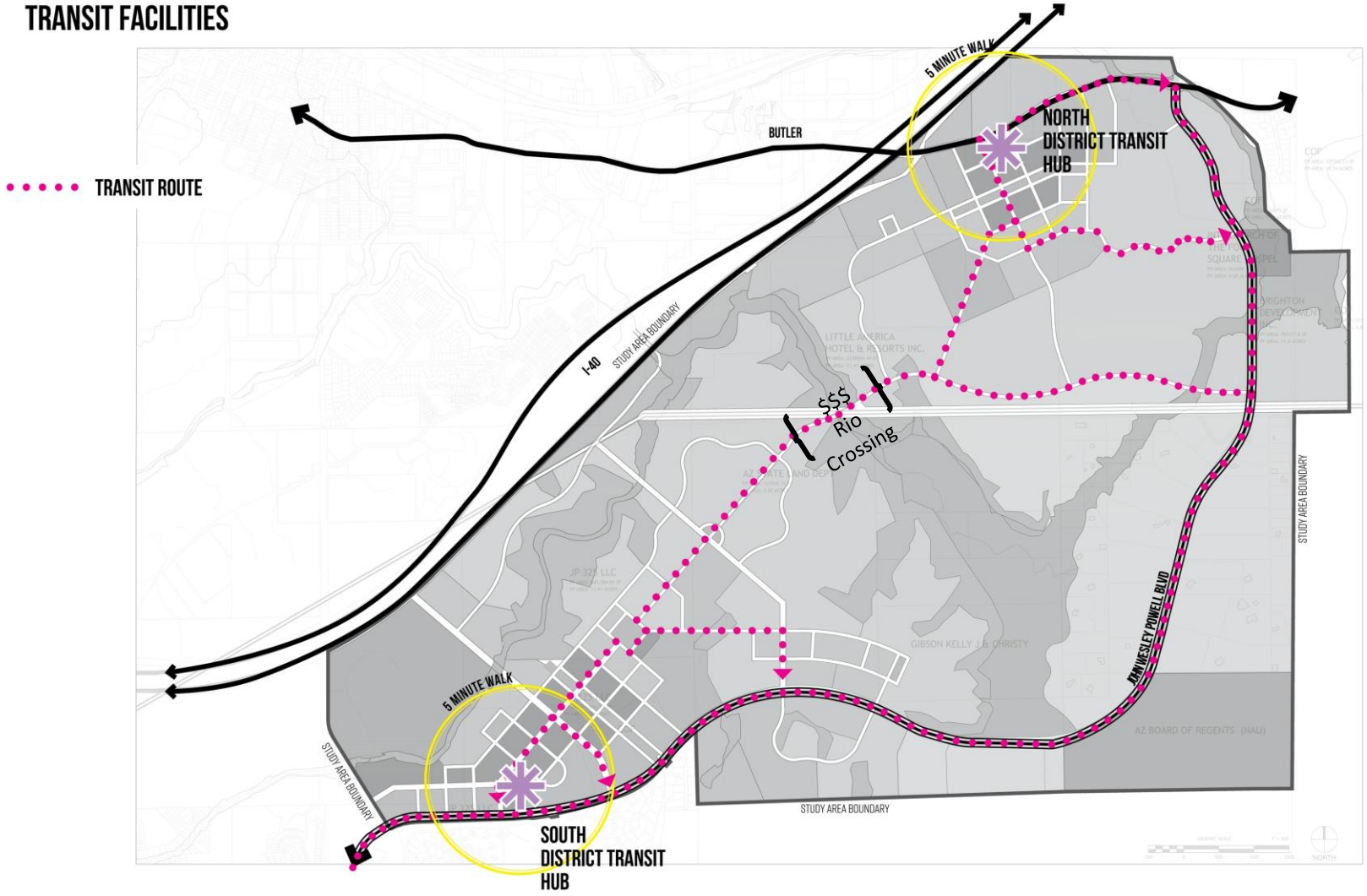


JWP Land Use Framework

- Arts & Sciences
  - Integral to Development

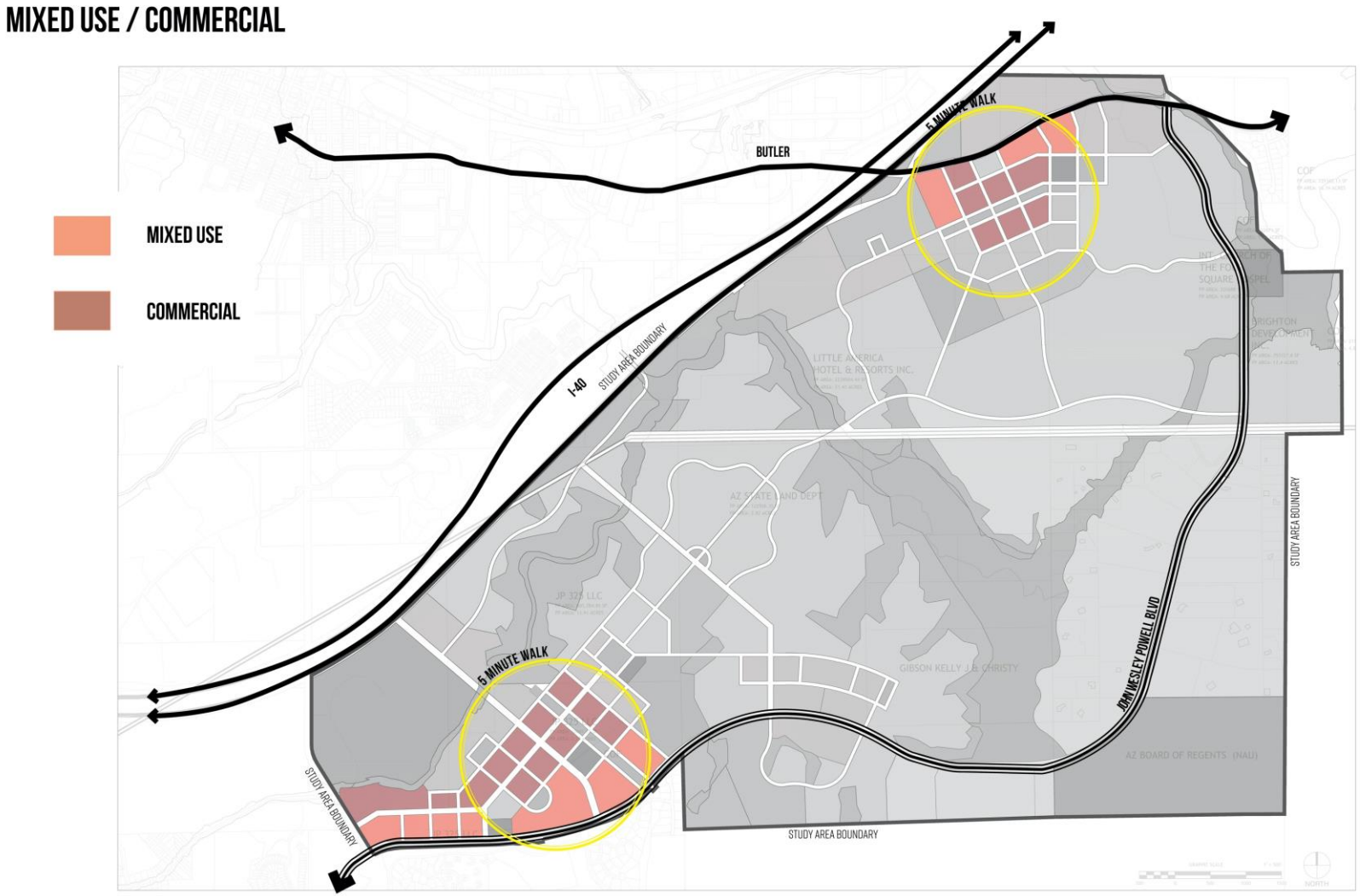
JWP Land Use Framework

- Possible Transit Routes
  - Serviceability
  - Efficiency
  - Transit Hubs at Urban Centers



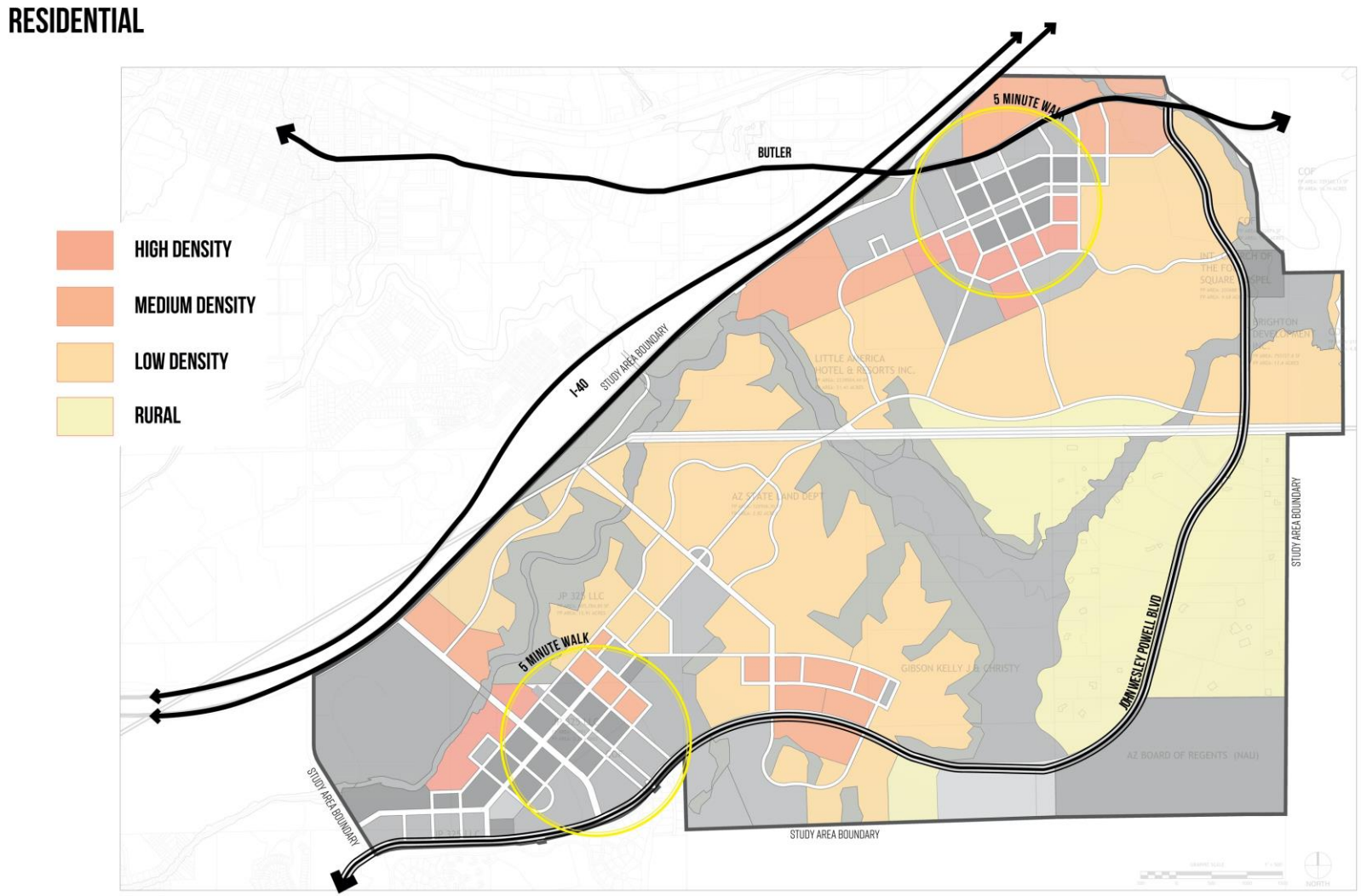
JWP Land Use Framework

- Mixed Use
  - Possible Heavier Residential
- Commercial
  - Some Residential



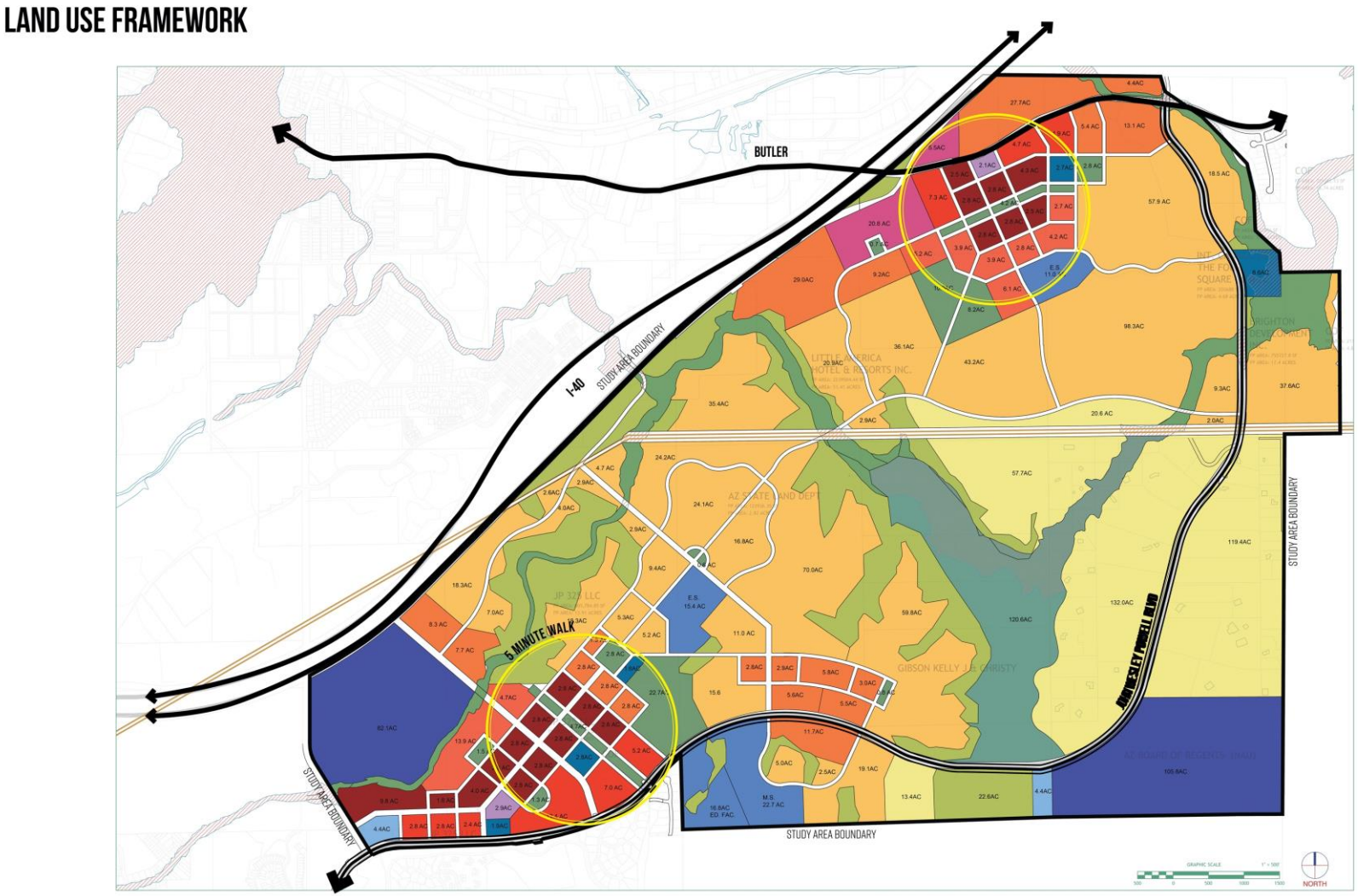
JWP Land Use Framework

- **Residential**
  - **High:** Urban Centers
    >13 DU/acre
  - **Medium:** Urban Center Edges, Along Corridor
    7-13 DU/acre
  - **Low:** Edges
    2-7 DU/acre
  - **Rural**
    <2 units/acre



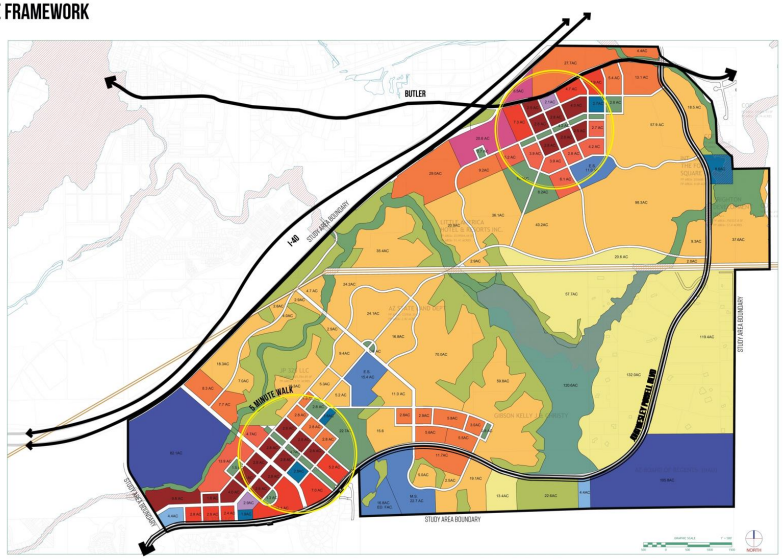
JWP Land Use Framework

- Overall Land Use Framework
  - Colors Correspond to Possible Yields
  - See Table on Following Slides



DENSITY & INTENSITY

LAND USE FRAMEWORK



TOTAL DEVELOPMENT

TOTAL DEVELOPMENT				
SYMBOL	LAND USE	TOTAL ACRES	LOW RANGE YIELD	HIGH RANGE YIELD
	MIXED USE	26.9	1,760,851 SQFT	2,934,752 SQFT
	MU RESIDENTIAL	26.9	703 UNITS	1,213 UNITS
	COMMERCIAL	46.0	3,006,609 SQFT	5,011,014 SQFT
	COMMERCIAL RESIDENTIAL	15.3	179 UNITS	400 UNITS
	COMMERCIAL - EXISTING	26.3		-
	RESIDENTIAL - HIGH DENSITY	47.4	426 UNITS	938 UNITS
	RESIDENTIAL - MEDIUM DENSITY	151.8	820 UNITS	1,230 UNITS
	RESIDENTIAL - LOW DENSITY	691.8	1,245 UNITS	3,113 UNITS
	RESIDENTIAL - RURAL	343.1	343 UNITS	343 UNITS
	SCHOOLS	65.9	- -	- -
	HIGHER EDUCATION	187.9	- -	- -
	PUBLIC SAFETY / FIRE	4.4	- -	- -
	CIVIC / CULTURAL	17.6	- -	- -
	TRANSIT	5.0	- -	- -
	PARK	61.7	- -	- -
	RECREATION / OPEN SPACE	127.0	- -	- -
	OPEN SPACE	232.8	- -	- -
	FLOODPLAIN	87.2	- -	- -
TOTAL ACRES		**2,165.0**	- -	- -
TOTAL M.U. / COMMERCIAL (NEW)		**73.0**	**4,767,460 SQFT**	**7,945,766 SQFT**
TOTAL RESIDENTIAL (HD,MD,LD,R)		**1,234.0**	**3,717 UNITS**	**7,237 UNITS**
TOTAL NON RES. DEVELOPMENT		**280.8**	- -	- -
TOTAL DEVELOPABLE (ACRES)		**1,587.8**	- -	- -
TOTAL OPEN SPACE		**508.7**	- -	- -

DENSITY & INTENSITY BY DISTRICT

TEAM FLAGSTAFF
WE MAKE THE CITY BETTER

NORTH DISTRICT

SYMBOL	LAND USE	TOTAL ACRES	LOW RANGE YIELD	HIGH RANGE YIELD
	MIXED USE	8.4	550,437 SQFT	917,395 SQFT
	MU RESIDENTIAL	8.4	220 UNITS	379 UNITS
	COMMERCIAL	15.4	1,009,258 SQFT	1,682,097 SQFT
	COMMERCIAL RESIDENTIAL	5.1	60 UNITS	134 UNITS
	COMMERCIAL - EXISTING	26.3		-
	RESIDENTIAL - HIGH DENSITY	28.8	259 UNITS	570 UNITS
	RESIDENTIAL - MEDIUM DENSITY	88.8	479 UNITS	719 UNITS
	RESIDENTIAL - LOW DENSITY	326.8	588 UNITS	1,471 UNITS
	RESIDENTIAL - RURAL	329.7	330 UNITS	330 UNITS
	SCHOOLS	11.0	- -	- -
	HIGHER EDUCATION	105.8	- -	- -
	PUBLIC SAFETY / FIRE	-	- -	- -
	CIVIC / CULTURAL	11.3	- -	- -
	TRANSIT	2.1	- -	- -
	PARK	26.7	- -	- -
	RECREATION / OPEN SPACE	127.0	- -	- -
	OPEN SPACE	27.4	- -	- -
	FLOODPLAIN	45.5	- -	- -
TOTAL ACRES		**1,194.6**	- -	- -
TOTAL M.U. / COMMERCIAL (NEW)		**23.9**	**1,559,695 SQFT**	**2,599,492 SQFT**
TOTAL RESIDENTIAL (HD,MD,LD,R)		**774.1**	**1,937 UNITS**	**3,603 UNITS**
TOTAL NON RES. DEVELOPMENT		**130.2**	- -	- -
TOTAL DEVELOPABLE (ACRES)		**928.2**	- -	- -
TOTAL OPEN SPACE		**226.6**	- -	- -

SOUTH DISTRICT

SYMBOL	LAND USE	TOTAL ACRES	LOW RANGE YIELD	HIGH RANGE YIELD
	MIXED USE	18.5	1,210,414 SQFT	2,017,356 SQFT
	MU RESIDENTIAL	18.5	483 UNITS	834 UNITS
	COMMERCIAL	30.6	1,997,346 SQFT	3,328,910 SQFT
	COMMERCIAL RESIDENTIAL	10.2	119 UNITS	266 UNITS
	COMMERCIAL - EXISTING	-		-
	RESIDENTIAL - HIGH DENSITY	18.6	167 UNITS	367 UNITS
	RESIDENTIAL - MEDIUM DENSITY	63.0	340 UNITS	511 UNITS
	RESIDENTIAL - LOW DENSITY	365.0	657 UNITS	1,642 UNITS
	RESIDENTIAL - RURAL	13.4	13 UNITS	13 UNITS
	SCHOOLS	54.9	- -	- -
	HIGHER EDUCATION	82.1	- -	- -
	PUBLIC SAFETY / FIRE	4.4	- -	- -
	CIVIC / CULTURAL	6.3	- -	- -
	TRANSIT	2.9	- -	- -
	PARK	34.9	- -	- -
	RECREATION / OPEN SPACE	-	- -	- -
	OPEN SPACE	205.5	- -	- -
	FLOODPLAIN	41.7	- -	- -
TOTAL ACRES		**970.5**	- -	- -
TOTAL M.U. / COMMERCIAL (NEW)		**49.1**	**3,207,759 SQFT**	**5,346,266 SQFT**
TOTAL RESIDENTIAL (HD,MD,LD,R)		**459.9**	**1,780 UNITS**	**3,633 UNITS**
TOTAL NON RES. DEVELOPMENT		**150.6**	- -	- -
TOTAL DEVELOPABLE (ACRES)		**659.6**	- -	- -
TOTAL OPEN SPACE		**282.1**	- -	- -

J.W. Powell Specific Plan Study

NEXT STEPS

- **COMPLETE Phase 1 Late Spring 2021**
  - Conduct Focused Public Involvement
  - Refine Land Use Framework
  - Complete 30% Design of Roadway & Utilities
  - Prepare Construction Cost Estimate for Infrastructure
- **BEGIN Phase 2 Early Summer 2021**
  - Broad Public Engagement Opportunities
  - Tailored Conversations with Property Owners
  - Evaluate need for Regional Plan Changes as Amendment or 2024 Update
  - Further Discussion of Collector Network and Connectivity

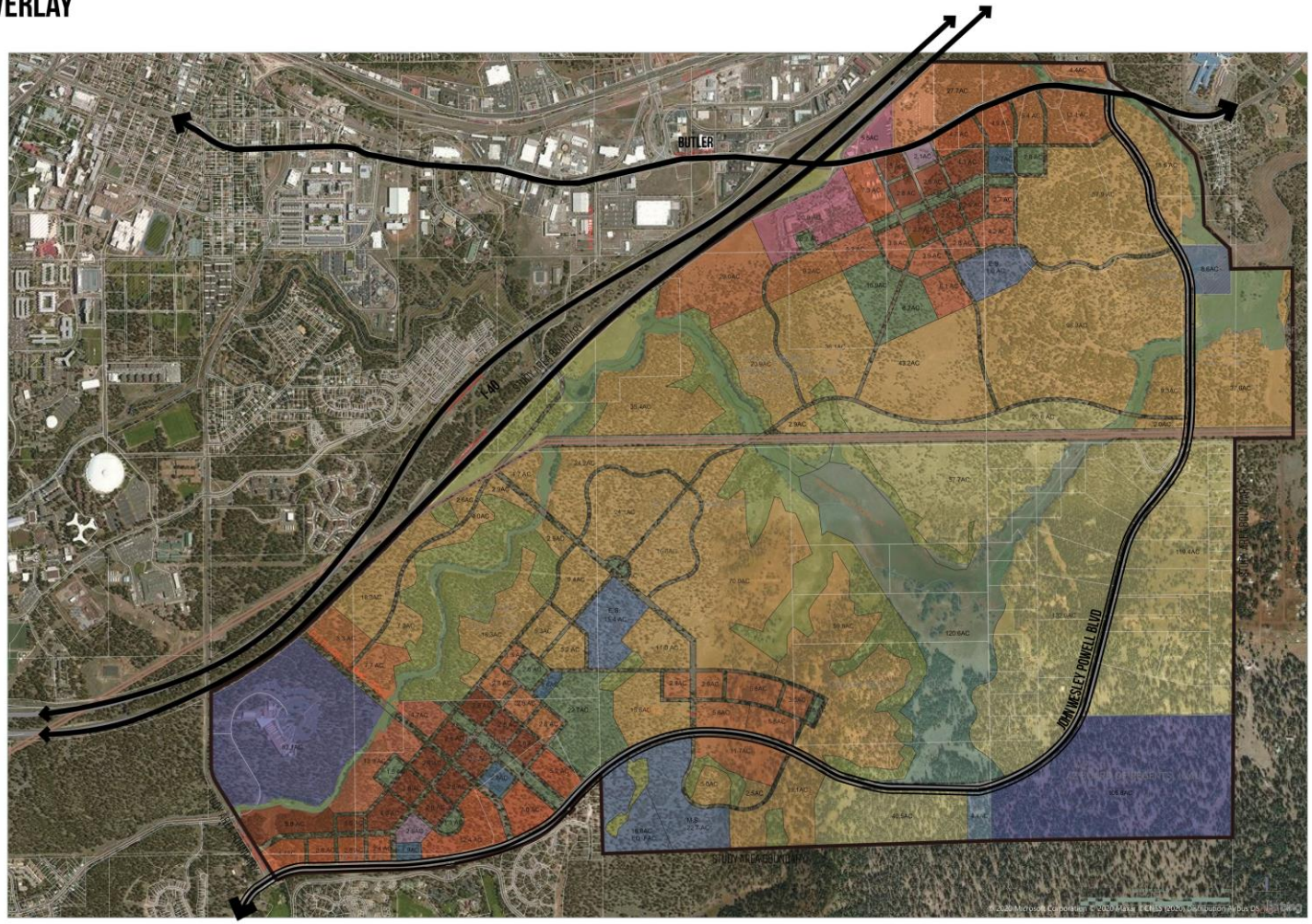
J.W. Powell Specific Plan Study

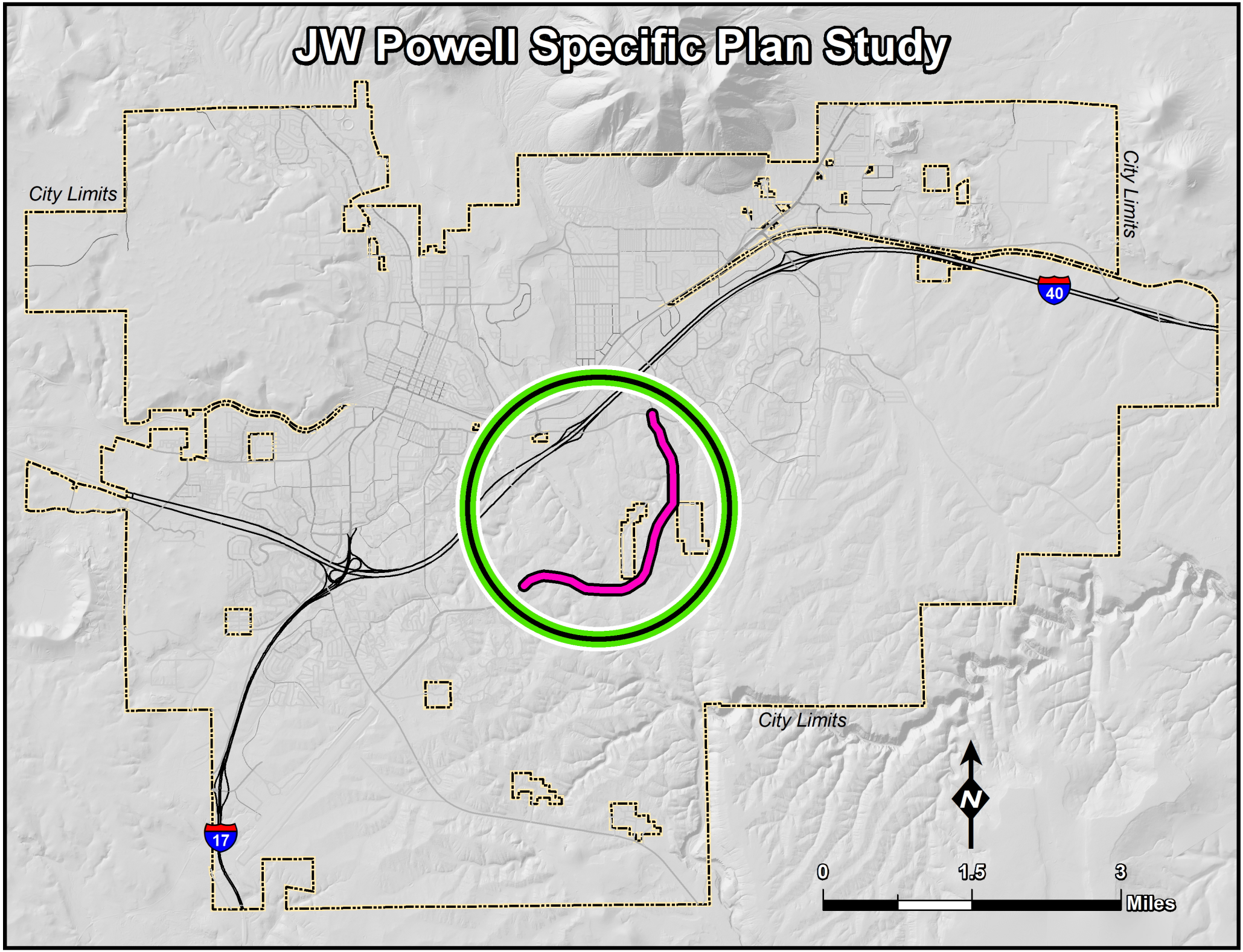
COMMENTS & QUESTIONS

David Pedersen
Project Manager
Capital Improvements
dpedersen@flagstaffaz.gov
Office :: 928.213.2677
Cell :: 928.607.2515

Sara Dechter, AICP
Comprehensive Planning Manager
sdechter@flagstaffaz.gov
928-213-2631

AERIAL OVERLAY




JW Powell Specific Plan Study
City Limits
City Limits
City Limits
40
17
N
0
1.5
3
Miles

CITY OF FLAGSTAFF

STAFF SUMMARY REPORT

To:	The Honorable Mayor and Council
From:	Trevor Henry, Project Manager
Date:	10/13/2020
Meeting Date:	10/27/2020

TITLE

Rio de Flag Flood Control Project Update

STAFF RECOMMENDED ACTION:

Facilitate Council discussion with an update on the project.

EXECUTIVE SUMMARY:

- The project plans are in the review process through the US Army Corps of Engineers. Completion of the project design is anticipated for the fall, 2020.
- The US Army Corps Engineers is anticipating a contract award of Phase I in 2021.
- The US Army Corps of Engineers is working to establish critical schedule information.
- The City continues to work on all matters of Real Estate that relate to the project and to meet requirements as set forth by the US Army Corps of Engineers.
- Staff is working on visual project simulations for the following sections of the project; including the Flood Wall, Composite Channel, Open Channel (Clay Wash), and Open Channel (Lower Reach). This information will be released to the public (via the project web page) and presented at the October 27th Council meeting update.
- The US Army Corps of Engineers, BNSF, and the City met on October 6th to foster discussions regarding critical project matters.
- Staff met on October 1st with residents adjacent to the Flood Wall section to discuss the project scope and field measure the improvements next to adjacent parcels.

**** A PowerPoint presentation will be submitted at a later date. ****

INFORMATION:

Connection to Key Community Priorities, Objectives, Council Goal, Regional Plan and/or Team Flagstaff Strategic Plan:

Sustainable, Innovative Infrastructure

Utilize existing long-range plan(s) that identify the community's future infrastructure needs and all associated costs

Environmental Stewardship

Actively manage and protect all environmental and natural resources

Council Goal 2017 – 2019 - Transportation and Other Public Infrastructure

Deliver quality community assets and continue to advocate and implement a highly performing multi-modal transportation system.

Council Goal 2017 – 2019 - Environmental and Natural Resources
Actively manage and protect all environmental and natural resources

Regional Plan – Policy WR 5
Manage watersheds and stormwater to address flooding concerns, water quality, environmental protections, and rainwater harvesting.

Team Flagstaff Strategic Plan – Priority 3
Deliver outstanding services through a healthy environment, resources, and infrastructure.

Has There Been Previous Council Decision on This:
The Rio de Flag project has been before various City Councils for updates within the last 16 years. Council has acted on executing the Project Cooperation Agreement between the City and the U.S. Army Corps of Engineers (2004) approving concurrent fiscal year budgets and consulting design service contracts.

City Council considered the Stormwater Fee increase as presented by staff on November 20, 2018.

City Council award of a professional services contract with Beta Public Relations, LLC on March 19, 2019, for a Public Outreach Campaign.

City Council considered and approved Change Order No. 13 to the design contract for Shephard-Wesnitzer, Inc. for added work necessary to take the project design to completion.

Staff has provided project updates with public outreach efforts to various City Commissions including Friends of the Rio community group.

Council provided direction on a photo simulation of the project scope for phases I and II.

Attachments: Vicinity Map
Presentation

Rio de Flag Flood Control Project

Project Area

COMPLETED
Thorpe Bridge

PHASE 2

Upper Rio de Flag Reach

Highway 180

Lower Rio de Flag Reach

Clay Avenue
Wash Reach

PHASE 1

Route 66

Butler Avenue

Butler Tunnel
COMPLETED

COMPLETED
Clay Avenue Wash
Detention Basin

Route 66

Milton Road

40

40

Rio de Flag
Flood Control Project

Clay Avenue Wash Detention Basin	Constructed 2009
Butler Tunnel	Constructed 2010
Thorpe Bridge	Constructed 2012
Lower Rio de Flag Reach	
Upper Rio de Flag Reach	
Clay Avenue Wash Reach	

100-Year Rio de Flag Floodplain

- Closed Channel
- Composite Channel
- Open Channel

N

0 0.125 0.25 0.5 Miles

CAPITAL IMPROVEMENTS
CITY OF FLAGSTAFF

Floodplain Disclaimer:

The 100-year floodplain shown on this map was digitized by City of Flagstaff based on a US Army Corps of Engineers (USACE) Map dated October 15, 1999. The floodplain shape shown on this map is a general representation of the extent of a 100-year flood event and should not be used for legal, engineering or planning purposes.

Map Source:
City of Flagstaff GIS, October 17, 2017
Imagery Base Map Source: ESRI

Wave Image Source:
Vecteezy.com


City of
Flagstaff
Rio de Flag Flood Control
Project Update October 27, 2020
CITY OF FLAGSTAFF
ARIZONA
ESTABLISHED 1882
TEAM FLAGSTAFF
WE MAKE THE
CITY BETTER

Project Update

- US Army Corps of Engineers
- Project Design
- Real Estate
- BNSF Railway
- Public Involvement

USACE

Project Construction – Phase I

- US Army Corps – Agency Technical Review Submittal
  - US Army Corps – Internal review for Agency Technical Review
  - Next Submittal to be released upon final US Army Corps review

Project Schedule

- US Army Corps & City of Flagstaff continue to establish critical schedule information
- Contract Award - 2021

Project Team Meeting

- City, US Army Corps, BNSF Project Leadership Meeting – October 6th

Project Design

USACE and their Design Consultant

- Agency Technical – Backcheck submittal comments reconciled by US Army Corps
- Next submittal - October
- Project Design Completion – December 2020

City Utility and Franchise Utility Designs

- Public Utility design – ADOT re-submittal made on October 16, 2020
- Stakeholder's Utility Relocations – ADOT and BNSF

Real Estate

City's consultant (SWI) submitted Segment Map and Tract Register on 9/23 to Army Corps for review and approval.

- Deliverables have gone through 4 revisions based on Army Corps guidance: 9/25, 10/1, and 10/14.
- SWI, Tetra Tech (construction design firm), Army Corps and COF involved in reviewing latest submission to ensure the segment maps properly identify every ROW needed for project.

Completion of Segment Map and Tract Register allows real estate acquisition schedule to proceed to the Appraisal process.

BNSF Railway

Project Coordination with BNSF

- Project design is reviewed and comments have been provided to the Army Corps.
- October 6 meeting with BNSF and the Army Corps.
  - BNSF provided general mitigation measures for the project.
    - Property acquisition
    - Impacts to existing facilities
    - Maintain access to siding tracks during construction
    - Undercrossing protection during construction
    - Utility relocations
  - Follow-up meeting to gain more detail the first week of November.

Public Involvement

Upper Reach site walk with Navajo Drive property owners – Flood Wall section

- Occurred on October 1
- The project team showed the residents where the wall is located and how high the wall is proposed to be.

Development of Project Exhibits

- Illustrate completed improvements and landscaping for all reaches.
- Virtual Meeting Room.

UPPER REACH - FLOODWALL
IMPROVEMENTS AREA

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - FLOODWALL

TYPICAL IMPROVEMENTS SECTION

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - FLOODWALL

EXISTING CONDITIONS - VIEW SOUTH FROM WEST FLAGSTAFF LITTLE LEAGUE PARK

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - FLOODWALL

PROPOSED CONDITIONS - VIEW SOUTH FROM WEST FLAGSTAFF LITTLE LEAGUE PARK

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - FLOODWALL

EXISTING CONDITIONS - VIEW NORTH FROM EXISTING FUTS TRAIL

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - FLOODWALL

PROPOSED CONDITIONS - VIEW NORTH FROM EXISTING FUTS TRAIL

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - FLOODWALL

EXISTING CONDITIONS - VIEW NORTH FROM THORPE ROAD BRIDGE

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - FLOODWALL

PROPOSED CONDITIONS - VIEW NORTH FROM THORPE ROAD BRIDGE

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - COMPOSITE CHANNEL

IMPROVEMENTS AREA

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - COMPOSITE CHANNEL

TYPICAL IMPROVEMENTS SECTION 1

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - COMPOSITE CHANNEL

TYPICAL IMPROVEMENTS SECTION 2

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - COMPOSITE CHANNEL

EXISTING CONDITIONS - VIEW NORTH TOWARDS BONITO STREET

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - COMPOSITE CHANNEL

PROPOSED CONDITIONS - VIEW NORTH TOWARDS BONITO STREET

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - COMPOSITE CHANNEL

EXISTING CONDITIONS - VIEW SOUTH ADJACENT TO PUBLIC LIBRARY

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

UPPER REACH - COMPOSITE CHANNEL

EXISTING CONDITIONS - VIEW SOUTH ADJACENT TO PUBLIC LIBRARY

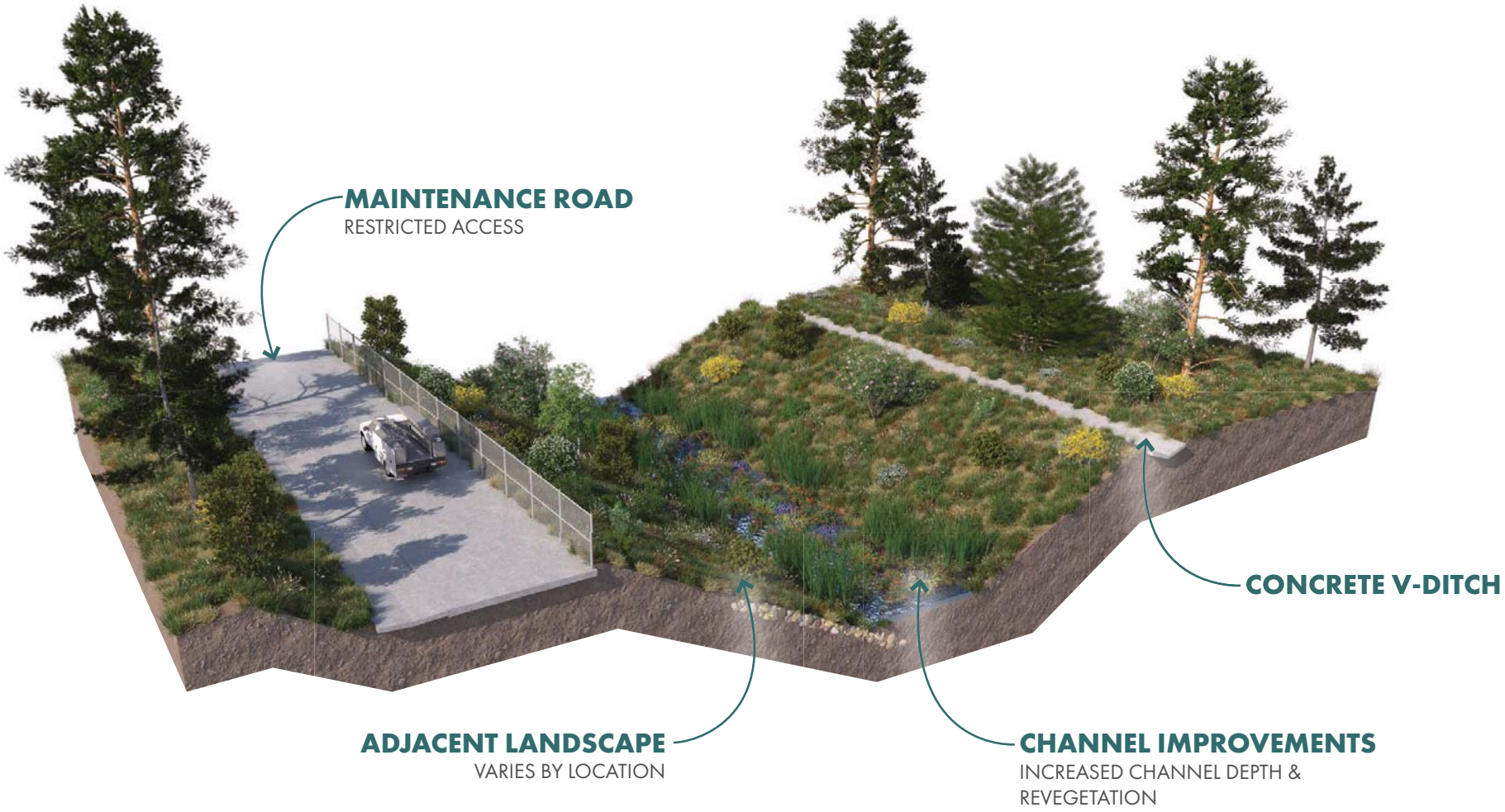
Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

LOWER REACH
IMPROVEMENTS AREA

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding



LOWER REACH

TYPICAL IMPROVEMENTS SECTION

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

LOWER REACH

EXISTING CONDITIONS - VIEW NORTHWEST

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

LOWER REACH

PROPOSED CONDITIONS - VIEW NORTHWEST

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

LOWER REACH

EXISTING CONDITIONS - VIEW EAST

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

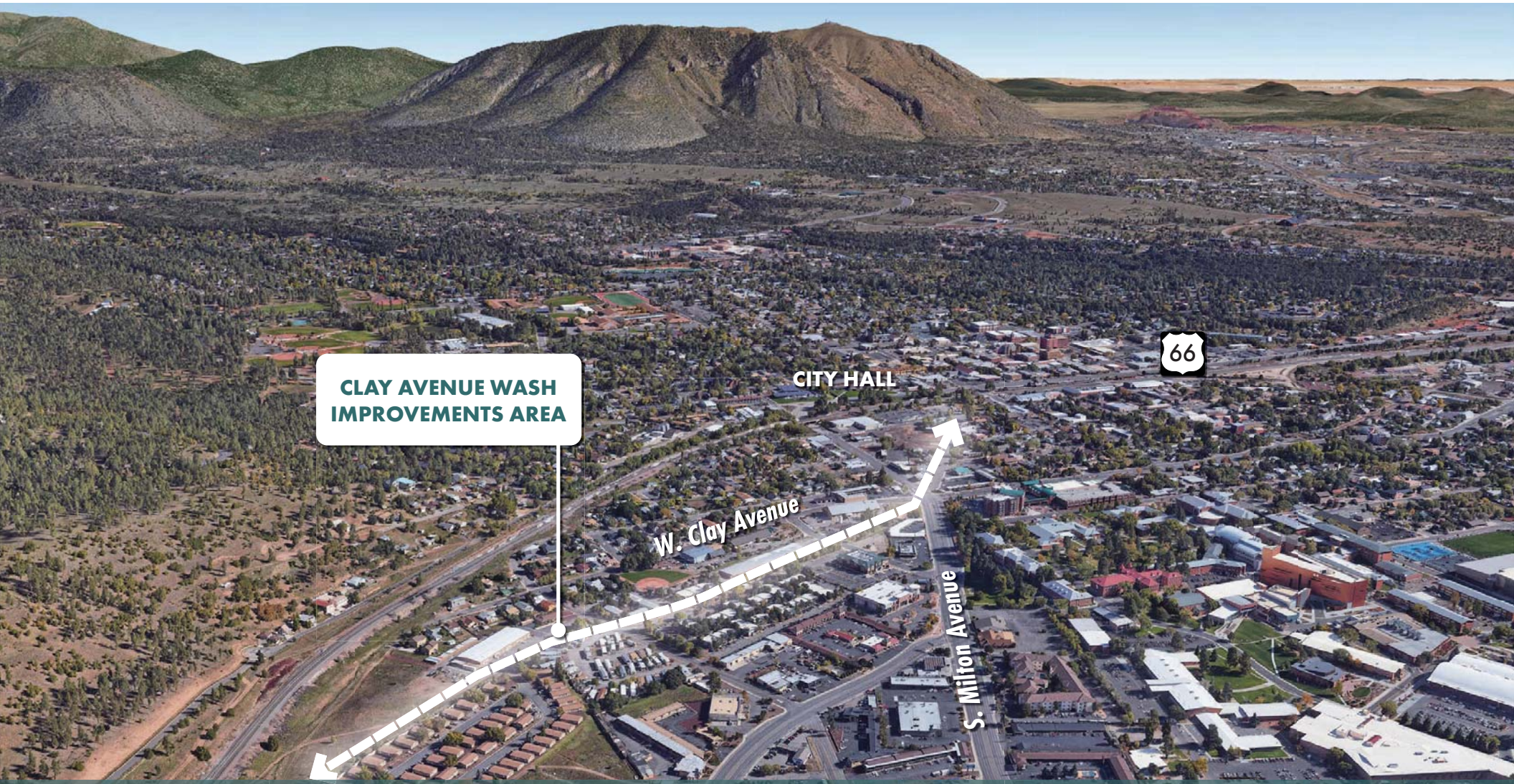
NORRIS DESIGN
Planning | Landscape Architecture | Branding

LOWER REACH

EXISTING CONDITIONS - VIEW EAST

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

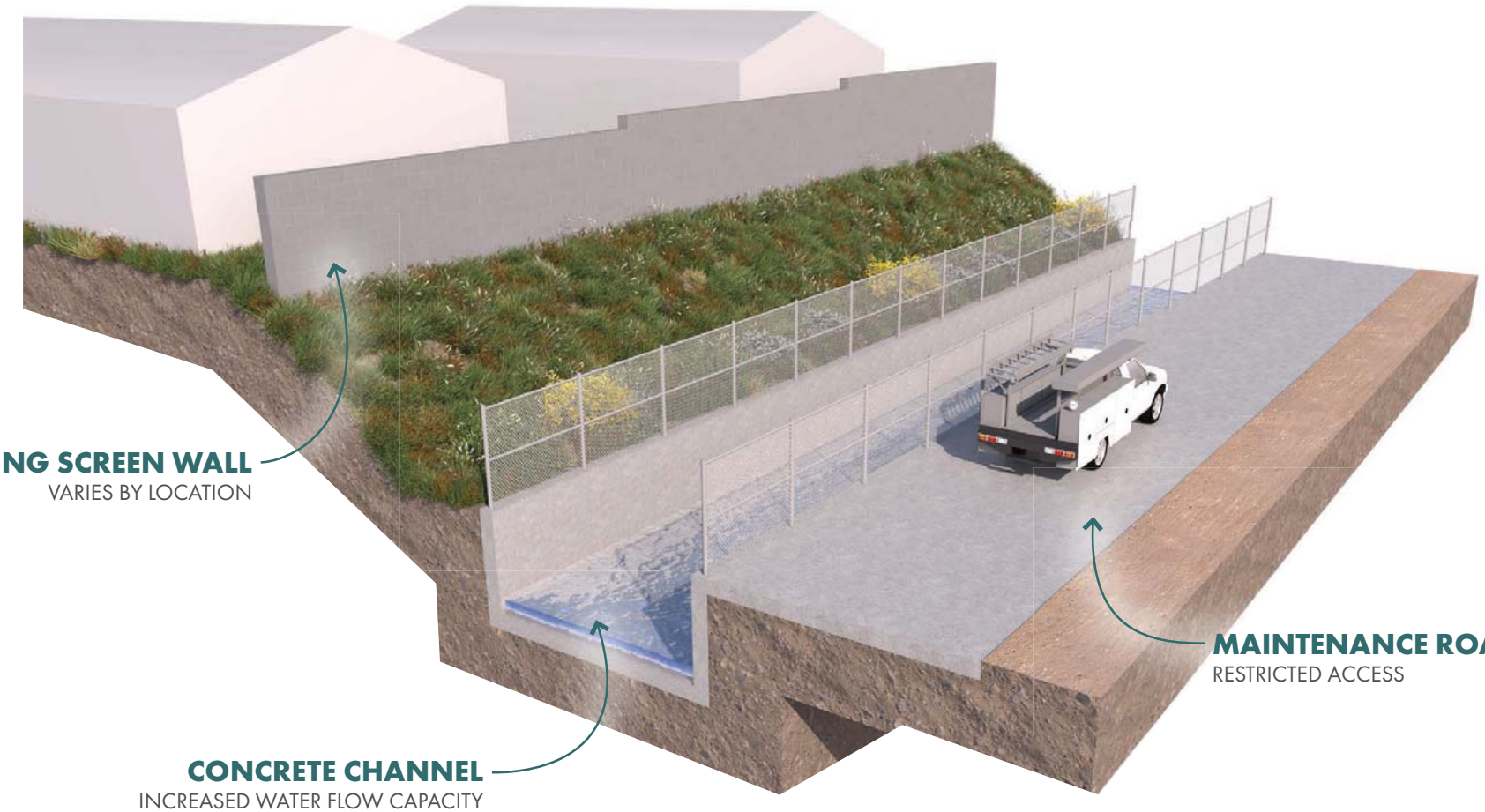
NORRIS DESIGN
Planning | Landscape Architecture | Branding



CLAY AVENUE WASH
IMPROVEMENTS AREA

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding



CLAY AVENUE WASH

TYPICAL IMPROVEMENTS SECTION

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

CLAY AVENUE WASH

EXISTING CONDITIONS - VIEW WEST

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

CLAY AVENUE WASH

PROPOSED CONDITIONS - VIEW WEST

Rio de Flag Flood Control Project
City of Flagstaff, AZ - October 27, 2020

NORRIS DESIGN
Planning | Landscape Architecture | Branding

City Contact Information

- **Trevor Henry, Project Manager**

  928-213-2684

  thenry@flagstaffaz.gov

- **Christine Cameron, Project Manager**

  928-213-2682

  ccameron@flagstaffaz.gov

- **Rio de Flag Flood Control Project web site:**

  https://www.flagstaff.az.gov/4189/Rio-De-Flag-Flood-Control

CITY OF FLAGSTAFF

STAFF SUMMARY REPORT

To:	The Honorable Mayor and Council
From:	Dan Symer, Zoning Code Manager
Date:	10/09/2020
Meeting Date:	10/27/2020

TITLE

Discussion about changing the zoning code to allow required commercial areas of mixed-use developments that are vacant to be converted to dwelling units in exchange for permanent, affordable housing

STAFF RECOMMENDED ACTION:

Discussion and possible direction

EXECUTIVE SUMMARY:

In November 2011, the City Council adopted the Zoning Code regulations that incentivize the mixed-use land use by allowing unlimited residential density with commercial areas as part of mixed-use development. The commercial areas of a few of these developments where the property owners have exercised the incentive remain unoccupied. To allow the required commercial areas to be utilized for residential purposes, such as to convert the area into residential dwelling units in exchange for permanent, affordable housing (hereafter referred to as the “Concept”), would require an amendment to the Zoning Code.

In order to understand the potential land use impacts of implementing the Concept and to provide the City Council with sufficient information, a thorough analysis is recommended to evaluate the implications of the Concept. Depending on the method that is intended to implement the Concept and the information obtained through the analysis, it may be determined that a Major Plan Amendment to the Regional Plan or an amendment to the Specific Plans is necessary to modify the existing goals and policies or incorporate new ones. If an amendment to the Regional Plan or a Specific Plan is needed, it will need to be completed prior to the associated amendment to the Zoning Code

INFORMATION:

In November 2011, the City Council adopted the current Zoning Code regulations pertaining to the mixed-use land use for properties with commercial-zone designations. Moreover, mixed-use land use was incorporated into some of the transect zones. To incentivize this use, the Zoning Code regulations allow unlimited residential density with commercial areas as part of mixed-use development. This incentive is intended to assist in implementing the Regional Plan’s goals and policies to achieve a balanced and diverse mix of land uses (commercial, employment, institutional and residential) that are within close proximity to each other. [1] Furthermore, the regulations are intended to incentivize the reinvestment and infill development of under-utilized and vacant parcels and the reuse of vacant commercial buildings. [2]

Several developments have utilized the mixed-use incentives to achieve considerably greater densities

than those typically allowed for a multiple-family development in the non-transect and transect zones. These Mixed-use High Occupancy Housing Developments (MHOHD) include the following:

- Aspen Place: 71 dwelling units per acre
- Fremont Station: 38 dwelling units per acre
- The Hub[3] (The Jack): 87 dwelling units per acre
- The Standard: 52 dwelling units per acre
- Uncommon: 87 dwelling units per acre

Without using the applicable transect zones (the Hub) or incorporating residential dwellings with the commercial area as part of a commercial zone mixed-use development, each development listed above would have been limited to 29 dwelling units per acre with the issuance of a Conditional Use Permit for a Planned Residential Development.

The Aspen Place has had its commercial area successfully occupied, and the Uncommon is under construction. The three remaining developments (Fremont Station, The Hub and The Standard) have never had their associated commercial space occupied. If a property owner of one of the three referenced developments desires to convert the vacant commercial area into residential dwellings, irrespective of affordability, the Zoning Code does not allow it. Only one property owner (The Standard) has contacted staff to query whether they can convert their commercial area into residential dwellings.

To allow the Concept, an amendment to the Zoning Code is required. It should be noted that an amendment to implement the Concept would need to be uniformly applied and cannot be restricted to the existing developments. Therefore, it will need to be available to new developments. Without the required commercial area, the above-referenced developments would be considered High Occupancy Housing Developments (HOHD).

The Regional Plan supports increased densities within activity centers and adjacent to corridors streets, including a variety of housing types.[4] The proposed Concept can serve as a way to alleviate and utilize the vacant commercial areas of mixed-use developments and further implement the Regional Plan's and the Incentive Policy for Affordable Housing's policies and objectives. However, other Regional Plan policies need to be considered as well.[5] Specifically, the Regional Plan's goals and policies that encourage residential uses to be located above and behind commercial uses in mixed-use developments and adjacent to corridor streets.[6] Each of the above-referenced developments are adjacent to commercial corridor streets.

Please be advised that multiple-family developments with densities of 29 dwelling units per acre and less are currently allowed on commercial-zoned properties adjacent to corridor streets with the issuance of a Conditional Use Permit and adherence to the Planned Residential Development standards, but HOHD developments are not. This allowance is a remanent of the 2011 zoning code that was adopted prior to the adoption of the Regional Plan, and there is not a requirement to locate residential uses above and behind commercial uses in these developments.

If the City Council seeks to amend the Zoning Code to implement the Concept, there are several questions and considerations that need to be evaluated. A few of the major considerations include the following:

- What is the appropriate quantity and diversity of affordable housing necessary to offset the unlimited density that mixed-use developments are allowed?
- What are the impacts on the Regional Plan's and Specific Plan's goals and policies of allowing HOHDs on commercially zoned properties adjacent to commercial corridor streets?
- Will the allowance of HOHDs adjacent to vital commercial corridors streets (Milton Road, Route 66, Butler Avenue, Fourth Street, etc.) perpetuate converting prime commercially zoned property to residential-only uses?
- What are the immediate and long-term effects of achieving a mix of land uses that maintains the

commercial zones' integrity and viability to achieve other land use planning goals, policies and objectives intended to ensure the economic prosperity of the existing commercial areas and promote new commercial investment?

To answer these questions and provide a thorough analysis for the City Council to consider, a much broader land use, market and real estate analysis are recommended to understand the potential impacts of implementing the Concept. The approximate cost of the analysis would be between $40,000–60,000. This cost estimate is contingent upon the study's information and depth.

Depending on the method used and an analysis of the above questions, the Concept's implementation may negatively affect the Regional Plan's fundamental basis of the corridor and activity center goals and policies. It is possible that upon review of the associated impacts, a Major Plan Amendment to the Regional Plan or an amendment to the Specific Plans may be necessary to modify the existing goals and policies or incorporate new ones. If an amendment to the Regional Plan or a Specific Plan is needed, it will need to be completed prior to the associated amendment to the Zoning Code.

The above-referenced analysis expense is in addition to the cost to amend the Zoning Code and the Regional Plan. The amount to comply with the minimum code requirements to amend the Zoning Code is anticipated to be between $1,500 and $3,500. If a Regional Plan amendment is required, the anticipated cost is between $4,000 and $6,000. The Zoning Code and Regional Plan cost estimates assume that no other items are being amended with the process.

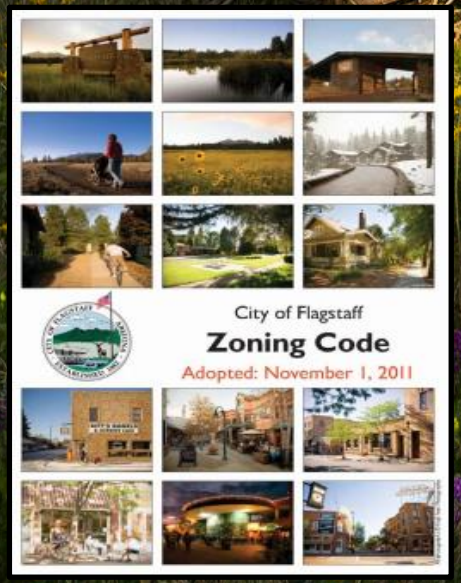
The above-referenced land use, market, and real estate analysis is typically beneficial as part of the Regional Plan adoption process, which is anticipated to begin in 2022. Furthermore, the analysis would be valuable to assist with additional amendments to the Zoning Code that are necessary to implement the Regional Plan goals and policies related to incorporating low-impact employment uses in zones that contain activity centers and Downtown. [7] Additionally, the information would be beneficial to the Economic Vitality staff so that they may better understand, market, and adjust for the utilization of the commercial zones in the current and future land use and economic conditions.

Notes:

1. The applicable Regional Plan goals and policies include the Regional Plan Policy (RPP) LU.1.7., RPP LU.5.5., Regional Plan Goal (RPG) LU.6., RPP LU.6.3., RPP LU.18.2., RPP LU.18.7. and RPP LU.18.13.
2. The applicable Regional Plan goals and policies include the RPP LU.1.3., RPP LU.1.7., RPP LU.10.5. and RPP NH.3.4.
3. The Hub (The Jack) is zoned T4 Neighborhood 1 (T4N.1) and T5 Main Street (T5). The total property size and dwelling units are utilized in density calculations.
4. The applicable Regional Plan policy is RPP LU.10.6
5. The applicable Regional Plan policy is RPP NH.3.5.
6. The applicable Regional Plan policies include the RPP LU.10.6., RPP LU.13.5. and RPP LU.18.12.
7. The applicable Regional Plan policies include the RPP LU.6.2., RPP LU.13.7. and RPG LU.18.

Attachments: Presentation

Converting Commercial areas of Mixed-use Developments to Affordable Housing



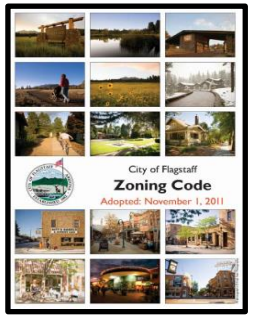
TEAM FLAGSTAFF
WE MAKE THE CITY BETTER

Dan Symer, AICP
Zoning Code Manager

Converting Commercial areas of Mixed-use Developments to Affordable Housing

Council Discussion

- **A discussion on whether to amend the Zoning Code to allow required commercial areas of mixed-use developments that are vacant to be converted to dwelling units in exchange for permanent, affordable housing**

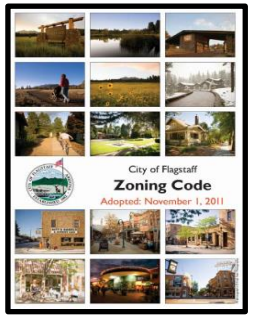


Converting Commercial areas of Mixed-use Developments to Affordable Housing

Background

Mixed-use developments are:

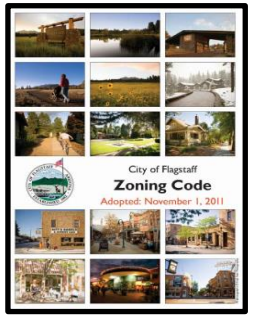
- **Allowed to have unlimited density**
- **There is no minimum commercial area requirement**
- **Encouraged in activity centers and adjacent to corridor street**
- **Residential is required to be above or behind the commercial area**



Converting Commercial areas of Mixed-use Developments to Affordable Housing

TEAM FLAGSTAFF
WE MAKE THE CITY BETTER

Background



- **Mixed-use developments are:**
  - **Aspen Place: 71 dwelling units per acre**
  - **Fremont Station: 38 dwelling units per acre**
  - **The Hub (The Jack): 87 dwelling units per acre**
  - **The Standard: 52 dwelling units per acre**
  - **Uncommon: 87 dwelling units per acre**

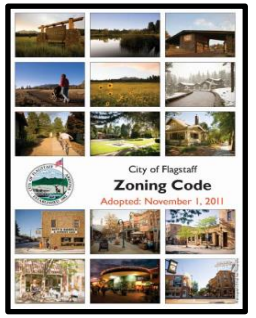
- **Multiple-family Developments are limited to 29 dwelling units per acre**

Converting Commercial areas of Mixed-use Developments to Affordable Housing

TEAM FLAGSTAFF
WE MAKE THE CITY BETTER

Considerations

- **What is the appropriate quantity and diversity of affordable housing necessary to offset the unlimited density that mixed-use developments are allowed?**
- **What are the impacts on the Regional Plan's and Specific Plan's goals and policies of allowing HOHDs on commercially zoned properties adjacent to commercial corridor streets?**
- **Will the allowance of HOHDs adjacent to vital commercial corridors streets (Milton Road, Route 66, Butler Avenue, Fourth Street, etc.) perpetuate converting prime commercially zoned property to residential-only uses?**
- **What are the immediate and long-term effects of achieving a mix of land uses that maintains the commercial zones' integrity and viability to achieve other land use planning goals, policies and objectives intended to ensure the economic prosperity of the existing commercial areas and promote new commercial investment?**

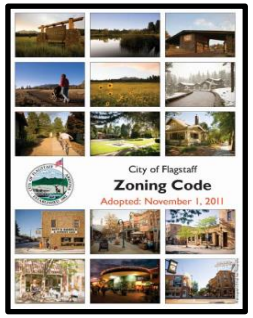


Converting Commercial areas of Mixed-use Developments to Affordable Housing

Council Discussion

- **A discussion on whether to amend the Zoning Code to allow required commercial areas of mixed-use developments that are vacant to be converted to dwelling units in exchange for permanent, affordable housing**

- **Other items that City Council would what staff to consider as part of the analysis**



12.

CITY OF FLAGSTAFF

STAFF SUMMARY REPORT

To:	The Honorable Mayor and Council
From:	Steve Camp, Regulatory Compliance Section Manager
Co-Submitter:	Ryan Roberts, PE Acting Director
Date:	10/12/2020
Meeting Date:	10/27/2020

TITLE:

Review of current process for all Reclaimed Water agreements and their renewal

DESIRED OUTCOME:

Review of current process for all Reclaimed Water agreements and their renewal and discussion to change that process so that all agreements and their renewals come before the City Council for approval. Seek direction from Council for possible revision to City Code regarding approval of all Reclaimed Water Agreements.

EXECUTIVE SUMMARY:

In February 2001, the Arizona Department of Environmental Quality (ADEQ) updated its Reclaimed Water Rules. Among the many changes was the creation of a requirement for a City to maintain a contractual agreement with each reclaimed water end user (aka Reclaimed Water Agreement). In July 2002, City Council adopted Ordinance No. 2002-07 that amended Title 7 of the City of Flagstaff Water and Wastewater Code to require reclaimed water agreements between the City and end-users. Additionally, the Ordinance established this as an administrative process with the Utilities Director (now Water Services Director) authorized to execute Reclaimed Water Service Agreements under the review of the City Attorney's Office and updated City Code language to be in compliance with a recent change in State law.

Councilmember Whelan presented a Future Agenda Item Request, which received the requisite support of the Council to advance the item on the Working Calendar. At this point, Staff is seeking further direction from the Council.

INFORMATION:

The City has a Type 3 Recycled Water general permit to distribute reclaimed water to end-users. One of the requirements of the permit is to maintain an end-user agreement with each end user of reclaimed water. Monitoring parameters for the Recycled Water Permit is conducted in accordance with the Aquifer Protection Permits for the Rio de Flag Water Reclamation Plant (WRP) and Wildcat Hill WRP.

The City of Flagstaff has three (3) new types of reclaimed water-related agreements between the City and end-users, Reclaimed Water Agreements, Reimbursement Agreements, and Conversion Agreements.

End-User Agreements are required by State Rule to distribute reclaimed water to end-users under the City's Recycled Water General Permit. Under State Rules, the agreements are required to stipulate any end-user responsibilities for the requirements specified under to meet the conditions of the permit. These responsibilities include signage requirements; and liner and nitrogen management if reclaimed water does not meet Class A+ or B+ quality.

In July 2002, City Council adopted Ordinance No. 2002-07 that among other things created three (3) new types of reclaimed water-related agreements between the City and end-users; Reclaimed Water Agreements, Reimbursement Agreements, and Conversion Agreements. City Code states the following:

"Reclaimed Water Agreements: A written agreement between the reclaimed water end-user and the City for connection to an existing public reclaimed water pipeline, approved and executed in the name of the Water Services Director.

Reimbursement Agreement for Reclaimed Water: A written agreement between the reclaimed water end-user and the City for reimbursement of the user's costs incurred in providing for the extension of, and connection to, a public reclaimed water pipeline, approved by the City Council and executed in the name of the City by the Mayor.

Conversion Agreement for Reclaimed Water: A written agreement between the City and the reclaimed water end-user for reimbursement of the City's costs incurred in converting the user's potable water system to a reclaimed water system, by the extension of, and connection to, a public reclaimed water pipeline, approved by the City Council and executed in the name of the City by the Mayor."

There are no time frames listed in City Code or in State Rule for the length of the agreements. Agreements can be any length of time as agreed upon by the City and the End-User. The City has generally used the 5-year general permit term as a guide and typically issues agreements for a 5-year term, but that is not always the case. Please note that the agreements and the permit term do not typically match.

Attachments: Reclaim Agreements


Reclaimed
Water
Agreements
Regulatory Compliance
CITY OF FLAGSTAFF
ARIZONA
ESTABLISHED 1882
TEAM FLAGSTAFF
WE MAKE THE
CITY BETTER

Discussion Highlights

- Reclaim Water and Agreement History
- Permit Requirements
- Why Agreements?
- Additional City Stipulations

Reclaim Water History

History

- ADEQ Created 5 classes of reclaimed water:
  - A+, A, B+, B, C
  - We produce Class A+, Treatment for nitrogen removal, filtration and disinfection.
- ADEQ created three types of recycled general permits to distribute reclaim water
  - Type 1 – Gray Water Reuse
  - Type 2 – Direct Reuse
  - Type 3 – Reclaim Water Agent

Reclaim Water Permit

Current

- City of Flagstaff has a Type 3 Recycled Water General Permit
  - Allows us to distribute reclaim water to end users.
  - City submits Annual Report to ADEQ
  - City is required to maintain a contractual agreement with the end user.
  - City required to conduct enforcement of customer's compliance with State rules.

Why End User Agreements?

- Arizona Administrative Code
  - Required for each End User of Reclaimed Water
  - Signage
  - Liner requirements – Not required for Class A+
  - Nitrogen management – Not required for Class A+

- City Code
  - Reclaim Water Agreement between each end user.

Additional City Stipulations

- Water Services added additional stipulations in agreements to effectively manage system
  - Agreed upon amount for each end user's consumption so staff can properly anticipate demand
  - 24-hour notification to end user for disruption in service
  - Termination clause

Summary of Reclaim Agreements

- Required by Type 3 permit for each End User
- Currently executed by Water Services Director and End user, signed by City Attorney and City Clerk
- Used by Water Services to help manage system and meet demand


Questions?
Steve Camp
Regulatory Compliance Manager
Water Services
CITY OF FLAGSTAFF
ARIZONA
ESTABLISHED 1882
TEAM FLAGSTAFF
WE MAKE THE
CITY BETTER