

## COMBINED SPECIAL MEETING/WORK SESSION AGENDA

CITY COUNCIL COMBINED SPECIAL  
MEETING/WORK SESSION  
TUESDAY  
MAY 13, 2014

COUNCIL CHAMBERS  
211 WEST ASPEN AVENUE  
6:00 P.M.

### **SPECIAL MEETING**

1. **Call to Order**
2. **Pledge of Allegiance**
3. **Roll Call**

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

MAYOR NABOURS  
VICE MAYOR EVANS  
COUNCILMEMBER BAROTZ  
COUNCILMEMBER BREWSTER

COUNCILMEMBER ORAVITS  
COUNCILMEMBER OVERTON  
COUNCILMEMBER WOODSON

4. **Consideration and Adoption of Ordinance No. 2014-10:** An ordinance of the Flagstaff City Council adopting Public Safety development fees *(Impact fees for public safety)*.

**RECOMMENDED ACTION:**

- 1) Read Ordinance No. 2014-10 by title only for the final time
- 2) City Clerk reads Ordinance No. 2014-10 by title only (if approved above)
- 3) Adopt Ordinance No. 2014-10

5. **Adjourn**

### **WORK SESSION**

1. **Call to Order**
2. **Preliminary Review of Draft Agenda for they May 20, 2014, City Council Meeting.** \*

*\* Public comment on draft agenda items may be taken under "Review of Draft Agenda Items" later in the meeting, at the discretion of the Mayor. Citizens wishing to speak on agenda items not specifically called out by the City Council for discussion under the second Review section may submit a speaker card for their items of interest to the recording clerk.*

- A. **Consideration of Proposals** : Purchase of Property For The Core Services Maintenance Facility

**3. 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.*

**4. Wildfire Preparedness Update**

**5. Update on Veterans Court**

**6. Overview of the City of Flagstaff Solid Waste Plan**

**7. Discussion of Coconino County Ordinance No. 2014 -03: Ban of Portable Communication Devices and Texting While Operating a Motor Vehicle**

**8. Review of Draft Agenda Items for the May 20, 2014, City Council Meeting.\***

*\* Public comment on draft agenda items will be taken at this time, at the discretion of the Mayor.*

**9. Public Participation**

**10. Informational Items To/From Mayor, Council, and City Manager; requests for possible future agenda items.**

**11. 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 \_\_\_\_\_, 2014.

\_\_\_\_\_  
Elizabeth A. Burke, MMC, City Clerk

## CITY OF FLAGSTAFF

### STAFF SUMMARY REPORT

**To:** The Honorable Mayor and Council  
**From:** Dan Folke, Planning Director  
**Co-Submitter:** Barbara Goodrich  
**Date:** 05/07/2014  
**Meeting Date:** 05/13/2014



#### TITLE:

**Consideration and Adoption of Ordinance No. 2014-10:** An ordinance of the Flagstaff City Council adopting Public Safety development fees (*Impact fees for public safety*).

#### RECOMMENDED ACTION:

- 1) Read Ordinance No. 2014-10 by title only for the final time
- 2) City Clerk reads Ordinance No. 2014-10 by title only (if approved above)
- 3) Adopt Ordinance No. 2014-10

#### Policy Decision or Reason for Action:

Current Arizona law requires all development fee programs be abandoned or re-established by August 1, 2014. SB 1525 provides a specific process and time line to adopt new development fees. Adoption of the attached ordinance is the final step in adopting new fees in compliance with state requirements.

#### Financial Impact:

As presented, the proposed public safety development fees will provide revenues which will fund a proportionate share of capital projects for the Fire and Police Departments necessary to provide services to new development. If impact fees are not collected, alternative revenues will need to be budgeted to maintain the current level of service or the level of service provided to the community can be decreased.

#### Connection to Council Goal:

1. Retain, expand, and diversify economic base
2. Effective governance

#### Has There Been Previous Council Decision on This:

On January 7, 2014, the City Council held a public hearing on the Land Use Assumptions (LU) and Infrastructure Improvement Plan (IIP). On February 18, 2014, the City Council adopted the LU and IIP. On April 1, 2014 the City Council held a public hearing on the proposed development fees. Council directed staff to bring back alternatives to the maximum supportable fee presented in the TischlerBise report.

On April 15, 2014, a majority of City Council gave direction to prepare an adoption ordinance with a fee that includes all of the incremental expansion components and removed all components attributed to existing debt service. The direction also including providing one fee for single family homes and removing the bedroom size differential.

First reading of the Ordinance was held on May 6, 2014.

**Options and Alternatives:**

- 1) City Council may adopt the Ordinance as presented with an anticipated effective date of August 1, 2014.
- 2) City Council may reject the proposed Ordinance and allow the impact fee program to sunset on August 1, 2014.

**Background/History:**

At the April 15, 2014 regular meeting a majority of City Council directed staff to prepare development fees that do not include the debt service components and to collect one fee for all single family homes, not a fee based on the number of bedrooms. The attached report prepared by TischlerBise, dated May 6, 2014, reflects this direction. Pages 10-13 explain the Council's policy decision and provides updated tables that calculate the proposed development fees. Tables 5 and 6 include the infrastructure components that will be funded by the adjusted fees. Public Safety fees for the Fire Department will fund a proportionate share of Fire vehicles and communications equipment. Fees to the Police Department will fund a proportionate share of Police facilities, vehicles and communications equipment. Both fees will pay for a portion of the Infrastructure Improvement Plan and Development Fee study.

**Key Considerations:**

Impact fees provide a predictable standard that all developers and builders can plan for as they consider new projects in our community. Should impact fees not be assessed, a similar financial consideration for maintaining current public safety levels may be considered. However, negotiations with each developer will occur separately which may result in an unequal and inconsistent burden due to the timing and result of each project.

**Community Benefits and Considerations:**

Impact fees assess new development their fair share of the costs to expand services that will maintain the current level of service. Alternative funding sources would be required to maintain services or a reduction in the level of service to the entire community could be considered.

**Community Involvement:**

Inform - City staff has continued to meet with interested groups and provide the latest information on impact fees. Since the April 15 meeting, staff has provided updates to the Chamber of Commerce Board of Directors and the group known as Flagstaff Professionals. An informational piece was distributed in March to a number of professional organizations and neighborhood associations.

Consult - Through the public outreach staff has received feedback on the maximum supportable fee. Staff is aware of one letter provided to City Council from the Chamber of Commerce. Public comment has been provided at Council meetings over the past four months.

Involve - Two public hearings have been held; one on the Infrastructure Improvement Plan and Land Use Assumptions, and one on the proposed Development Fees.

**Expanded Options and Alternatives:**

1. City Council may adopt the Ordinance as presented with an anticipated effective date of August 1, 2014.
2. City Council may reject the proposed Ordinance and allow the impact fee program to sunset on August 1, 2014.



---

**Attachments:**    TischlerBise Report  
                         Ord. 2014-10

**CITY OF FLAGSTAFF  
PUBLIC SAFETY DEVELOPMENT FEE STUDY  
DEVELOPMENT FEE REPORT,  
INFRASTRUCTURE IMPROVEMENTS PLAN,  
AND LAND USE ASSUMPTIONS**

Prepared for:  
*City of Flagstaff, Arizona*

May 6, 2014



**4701 Sangamore Road, Suite S240  
Bethesda, MD  
301.320.6900  
[www.tischlerbise.com](http://www.tischlerbise.com)**

[PAGE INTENTIONALLY LEFT BLANK]

## TABLE OF CONTENTS

<b>Executive Summary .....</b>	<b>5</b>
Arizona Development Fee Enabling Legislation .....	5
Necessary Public Services .....	5
Infrastructure Improvements Plan .....	6
Qualified Professionals.....	7
<b>Development Fee Report .....</b>	<b>9</b>
Calculation Methodologies .....	9
Reporting Results .....	9
Public Safety Development Fees .....	10
Comparison to Current Development Fees.....	11
Fire Facilities Development Fees .....	12
Police Facilities Development Fees.....	13
<b>Fire Facilities Infrastructure Improvements Plan .....</b>	<b>15</b>
Overview .....	15
Service Area .....	15
Proportionate Share .....	15
Functional Population .....	16
Service Units .....	17
Fire Department Calls for Service.....	17
Public Safety Communications Command Center Calls for Service .....	18
IIP for Fire Facilities .....	19
Analysis of Capacity, Usage, and Costs of Existing Public Services .....	19
Fire Facilities.....	20
Fire Fleet - Vehicles, Apparatus and Equipment.....	22
Fire Communications System - Equipment and Infrastructure .....	25
Excluded Costs .....	29
Current Use and Available Capacity .....	29
Ratio of Service Unit to Development Unit.....	30
Projected Service Units and Infrastructure Demand .....	31
Fire Facilities.....	32
Fire Apparatus.....	32
Fire Equipment.....	33
Fire Communications Infrastructure.....	33
Fire Vehicles and Communications Equipment.....	34
Fire Facilities Improvements Plan .....	35

Maximum Supportable Fire Facilities Development Fees .....	35
Fire Facilities IIP and Development Fee Study .....	35
Revenue Credit.....	35
Forecast of Revenues for Fire Facilities .....	37
Fire Facilities Cash Flow .....	37
<b>Police Facilities Infrastructure Improvements Plan .....</b>	<b>39</b>
Overview .....	39
Service Area .....	39
Proportionate Share .....	39
Functional Population .....	40
Service Units .....	41
Police Department Calls for Service .....	41
Public Safety Communications Command Center Calls for Service .....	42
IIP for Police Facilities .....	43
Analysis of Capacity, Usage, and Costs of Existing Public Services .....	43
Police Facilities .....	44
Police Vehicles .....	45
Police Communications System - Equipment and Infrastructure .....	46
Excluded Costs .....	50
Current Use and Available Capacity .....	50
Ratio of Service Unit to Development Unit .....	51
Projected Service Units and Infrastructure Demand .....	52
Police Communications Infrastructure .....	53
Police Facilities, Vehicles, and Communications Equipment.....	54
Police Facilities Improvements Plan .....	55
Maximum Supportable Police Facilities Development Fees.....	55
Police Facilities IIP and Development Fee Study .....	55
Revenue Credit.....	55
Forecast of Revenues for Police Facilities .....	57
Police Facilities Cash Flow.....	57

<b>Appendix A – Cost of Professional Services .....</b>	<b>58</b>
<b>Appendix B – Forecast of Revenues Other Than Development Fees .....</b>	<b>59</b>
<b>Appendix C – Land Use Assumptions.....</b>	<b>61</b>
Summary of Growth Indicators .....	61
Residential Development.....	63
Current Housing Unit Estimates .....	63
Current Household Size and Peak Population .....	64
Peak Population and Housing Unit Projections .....	67
Year-Round Population Estimates and Projections .....	68
Population and Residential Development Summary .....	68
Nonresidential Development .....	70
Employment Estimates and Projections .....	70
Nonresidential Square Footage Development .....	71
Nonresidential Floor Area and Employment Projections .....	72
Average Daily Vehicle Trips.....	74
Trip Rate Adjustments .....	74
Estimated Vehicle Trips in Flagstaff.....	74
Demand Indicators By Size of Detached Housing .....	75
Land Use Assumptions Summary .....	75

[PAGE INTENTIONALLY LEFT BLANK]

## EXECUTIVE SUMMARY

The City of Flagstaff has engaged TischlerBise to update its Public Safety development fees for necessary public services pursuant to Arizona Revised Statutes 9-463.05. Municipalities in Arizona may assess development fees to offset infrastructure costs to a municipality associated with providing necessary public services to a development. The development fees must be based on an Infrastructure Improvements Plan. Development fees cannot be used for, among other things: projects not included in the Infrastructure Improvements Plan, projects related to existing development, or costs related to operations and maintenance.

This Infrastructure Improvements Plan and associated update to the City of Flagstaff Public Safety development fees include the following necessary public services:

- Fire
- Police

This plan includes all necessary elements required to comply with the Arizona Revised Statute 9-463.05.

### ARIZONA DEVELOPMENT FEE ENABLING LEGISLATION

---

Arizona Revised Statute 9-463.05 (hereafter referred to as “development fee enabling legislation”) governs how development fees are calculated for municipalities in Arizona. During the state legislative session of 2011, Senate Bill 1525 (SB 1525) was introduced which significantly amended the development fee enabling legislation. The changes included:

- Amending existing development fee programs by January 1, 2012;
- Abandoning existing development fee programs by August 1, 2014;
- A new development fee program structure developed from a unified Land Use Assumptions document and Infrastructure Improvements Plan;
- New adoption procedures for the Land Use Assumptions, Infrastructure Improvements Plan, and development fees;
- New definitions, including “necessary public services” which defines what categories and types of infrastructure may be funded with development fees;
- Time limitations in development fee collections and expenditures; and
- New requirements for credits, “grandfathering” rules, and refunds.

Governor Brewer signed SB 1525 into law on April 26, 2011. This update of the City’s Public Safety development fees will comply with all of the new requirements of SB 1525.

### NECESSARY PUBLIC SERVICES

---

The City of Flagstaff currently collects development fees for the following infrastructure categories:

- Fire
- Police

Under the new requirements of the development fee enabling legislation, development fees may be used only for construction, acquisition or expansion of public facilities that are necessary public services. “Necessary public service” means any of the following categories of facilities that have a life expectancy of three or more years and that are owned and operated on behalf of the municipality:

- Water Facilities
- Wastewater Facilities



- Storm Water, Drainage, and Flood Control Facilities
- Library Facilities
- Streets Facilities
- Fire and Police Facilities
- Neighborhood Parks and Recreational Facilities
- Any facility that was financed before June 1, 2011 and that meets the following requirements:
  1. Development fees were pledged to repay debt service obligations related to the construction of the facility.
  2. After August 1, 2014, any development fees collected are used solely for the payment of principal and interest on the portion of the bonds, notes, or other debt service obligations issued before June 1, 2011 to finance construction of the facility.

### INFRASTRUCTURE IMPROVEMENTS PLAN

---

Development fees must be calculated pursuant to an Infrastructure Improvements Plan (hereafter referred to as the “IIP”). For each necessary public service that is the subject of a development fee, by law, the infrastructure improvements plan shall include the following seven elements:

*Element #1: A description of the existing necessary public services in the service area and the costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed in this state, as applicable.*

*Element #2: An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.*

*Element #3: A description of all or the parts of the necessary public services or facility expansions and their costs necessitated by and attributable to development in the service area based on the approved land use assumptions, including a forecast of the costs of infrastructure, improvements, real property, financing, engineering and architectural services, which shall be prepared by qualified professionals licensed in this state, as applicable.*

*Element #4: A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial.*

*Element #5: The total number of projected service units necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering and planning criteria.*

*Element #6: The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.*

*Element #7: A forecast of revenues generated by new service units other than development fees, which shall include estimated state-shared revenue, highway users revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes and the capital recovery portion of utility fees attributable to development based on the approved land use assumptions, and a plan to include these contributions in determining the extent of the burden imposed by the development.*

### QUALIFIED PROFESSIONALS

---

The IIP must be developed by qualified professionals using generally accepted engineering and planning practices. A qualified professional is defined as “a professional engineer, surveyor, financial analyst or planner providing services within the scope of the person’s license, education, or experience.”

TischlerBise is a fiscal, economic, and planning consulting firm specializing in the cost of growth services. Our services include development fees, fiscal impact analysis, infrastructure financing analyses, user fee/cost of service studies, capital improvement plans, and fiscal software. TischlerBise has prepared over 800 development impact fee studies over the past 30 years for local governments across the United States.

[PAGE INTENTIONALLY LEFT BLANK]

## DEVELOPMENT FEE REPORT

### CALCULATION METHODOLOGIES

Development fees for the necessary public services generated by new development must be based on the same level of service provided to existing development in the service area. There are three basic methodologies used to calculate development fees. They examine the past, present, and future status of infrastructure. The objective of evaluating these different methodologies is to determine the best measure of the demand created by new development for infrastructure capacity.

- **Cost recovery method (past)** is used in instances when a community has oversized a facility or asset in anticipation of future development. This methodology is based on the rationale that new development is repaying the community for its share of the remaining unused capacity.
- **Incremental expansion method (present)** documents the current level of service for each type of public facility. The intent is to use revenue collected to expand or provide additional facilities, as needed to accommodate new development, based on the current cost to provide capital improvements.
- **Plan-based method (future)** utilizes a community's capital improvement plan and/or other adopted plans or engineering studies to guide capital improvements needed to serve new development.

Figure 1 is a summary of the methodologies and components used to calculate the IIP and development fees.

Figure 1: Recommended Calculation Methodologies

Type of Necessary Public Services	Methodology		
	Cost Recovery (Past)	Incremental Expansion (Present)	Plan Based (Future)
Fire	<ul style="list-style-type: none"><li>• Facilities</li><li>• Apparatus</li><li>• Equipment</li><li>• Communications Infrastructure</li></ul>	<ul style="list-style-type: none"><li>• Vehicles</li><li>• Communications Equipment</li></ul>	Not Applicable
Police	<ul style="list-style-type: none"><li>• Communications Infrastructure</li></ul>	<ul style="list-style-type: none"><li>• Facilities</li><li>• Vehicles</li><li>• Communications Equipment</li></ul>	Not Applicable

### Reporting Results

Calculations throughout this Study are based on analysis conducted using Excel software. Formulas and results are discussed herein using one-and two-digit place (in most cases), which represent rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown in the Study (due to the rounding of figures shown, not in the analysis.)

## PUBLIC SAFETY DEVELOPMENT FEES

Based on the data, assumptions, and calculation methodologies in the [Land Use Assumptions](#) and Infrastructure Improvements Plans, the maximum supportable development fees are presented in the [Fire Facilities Infrastructure Improvements Plan](#), and [Police Facilities Infrastructure Improvements Plan](#) chapters, respectively.

Based on discussions with City Officials and staff, the development fees proposed for adoption, as shown in Figure 2, reflect two policy decisions regarding the City's public safety development fees presented in this Development Fee Study. The City will not:

1. Adopt a graduated fee schedule for single residential units based on the number of bedrooms per unit.
2. Collect development fees for previously made capital expansions funded through bonds.

Figure 2: Proposed City of Flagstaff Public Safety Development Fees

		Fire	Police	TOTAL Development Fee
		~~~~~ Per Housing Unit ~~~~~		
<b>Residential</b>	<b>Number of Bedrooms</b>			
2+ Units	All Sizes	\$170	\$342	\$512
Single Unit	Avg	\$182	\$366	\$548
		~~ Per Square Foot of Floor Area ~~		
<b>Nonresidential</b>				
Commercial		\$0.29	\$0.59	\$0.88
Office/Institutional		\$0.11	\$0.23	\$0.34
Industrial/Flex		\$0.03	\$0.08	\$0.11

Source: TischlerBise

## COMPARISON TO CURRENT DEVELOPMENT FEES

The City of Flagstaff currently collects development fees for the following infrastructure categories:

- Fire
- Police

The City's current development fees, effective as of January 1, 2012, are shown below.

**Figure 3: City of Flagstaff Development Fees, Effective January 1, 2012**

Current Development Fee Schedule		Fire	Police	Current Development Fee
<b>Residential</b>		~~~~~ Per Housing Unit ~~~~~		
2+ Units	All Sizes	\$352	\$184	\$536
Single Unit	Avg	\$444	\$231	\$675
<b>Nonresidential [1]</b>		~~ Per Square Foot of Floor Area ~~		
Commercial		\$0.81	\$0.68	\$1.49
Office/Institutional		\$0.28	\$0.24	\$0.52
Industrial/Flex		\$0.07	\$0.06	\$0.13

Source: TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

[1] The 2012 nonresidential fees were by size thresholds, averages are shown here.

The changes between the proposed fees and the current fees are shown in the figure below. Note: the red figures in parentheses represent decreases in fee amounts.

**Figure 4: Changes Between City of Flagstaff Current and Proposed Development Fees**

		Net Change		
		Fire	Police	Development Fee
<b>Residential</b>		~~~~~ Per Housing Unit ~~~~~		
2+ Units	All Sizes	(\$182)	\$158	(\$24)
Single Unit	Avg	(\$262)	\$135	(\$127)
<b>Nonresidential</b>		~~ Per Square Foot of Floor Area ~~		
Commercial		(\$0.52)	(\$0.09)	(\$0.61)
Office/Institutional		(\$0.17)	(\$0.01)	(\$0.18)
Industrial/Flex		(\$0.04)	\$0.02	(\$0.02)

Source: TischlerBise

## FIRE FACILITIES DEVELOPMENT FEES

Figure 5 shows the proposed Fire Facilities development fee schedule, which differs from the maximum supportable development fees discussed in the [Fire Facilities Infrastructure Improvements Plan](#) chapter due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.

**Figure 5: Fire Facilities Development Fees**

<i>Fire Level Of Service and Capital Costs</i>	<i>Per Person</i>
Fire Vehicles	\$63.83
Fire Communications Equipment	\$0.63
IIP and Development Fee Study	\$1.93
<b>GROSS CAPITAL COST</b>	<b>\$66.39</b>

Revenue Credit	0%	(\$0.00)
<b>NET CAPITAL COST</b>		<b>\$66.39</b>

<i>Fire Residential Development Fee Schedule</i>			<b>Development Fee per Housing Unit</b>		
<i>Unit Type</i>	<i>Number of Bedrooms</i>	<i>Persons per Household [1]</i>	<i>Proposed Fee</i>	<i>Current Fee [2]</i>	<i>Increase (Decrease)</i>
2+ Units	All Sizes	2.57	\$170	\$352	(\$182)
Single Unit	Avg	2.75	\$182	\$444	(\$262)

[1] TischlerBise. (2013). Development Fee Land Use Assumptions

[2] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

<i>Fire Level Of Service and Capital Costs</i>	<i>Per Trip</i>
Fire Vehicles	\$19.94
Fire Communications Equipment	\$0.20
IIP and Development Fee Study	\$0.79
<b>GROSS CAPITAL COST</b>	<b>\$20.93</b>

Revenue Credit	0%	(\$0.00)
<b>NET CAPITAL COST</b>		<b>\$20.93</b>

<i>Fire Nonresidential Development Fee Schedule</i>			<b>Development Fee per Square Foot of Floor Area</b>		
<i>Nonresidential Land Use</i>	<i>Weekday Vehicle Trip Ends</i>	<i>Trip Rate Adj. Factors</i>	<i>Proposed Fee</i>	<i>Current Fee [3]</i>	<i>Increase (Decrease)</i>
	<i>(Per 1,000 sq. ft.)</i>		<i>(Per Square Foot of Floor Area)</i>		
Commercial	42.70	33%	\$0.29	\$0.81	(\$0.52)
Office/Institutional	11.03	50%	\$0.11	\$0.28	(\$0.17)
Industrial/Flex	3.82	50%	\$0.03	\$0.07	(\$0.04)

[3] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

The 2012 nonresidential fees were by size thresholds, averages are shown here.

## POLICE FACILITIES DEVELOPMENT FEES

Figure 6 shows the proposed Police Facilities development fee schedule, which differs from the maximum supportable development fees discussed in the [Police Facilities Infrastructure Improvements Plan](#) chapter due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.

**Figure 6: Police Facilities Development Fees**

<i>Police Level Of Service and Capital Costs</i>	<i>Per Person</i>
Police Facilities	\$104.19
Police Vehicles	\$24.99
Police Communications Equipment	\$2.33
IIP and Development Fee Study	\$1.82
<b>GROSS CAPITAL COST</b>	<b>\$133.33</b>

Revenue Credit	0%	(\$0.00)
<b>NET CAPITAL COST</b>		<b>\$133.33</b>

<i>Police Residential Development Fee Schedule</i>			<i>Development Fee per Housing Unit</i>		
<i>Unit Type</i>	<i>Number of Bedrooms</i>	<i>Persons per Household [1]</i>	<i>Proposed Fee</i>	<i>Current Fee [2]</i>	<i>Increase (Decrease)</i>
2+ Units	All Sizes	2.57	\$342	\$184	\$158
Single Unit	Avg	2.75	\$366	\$231	\$135

[1] TischlerBise. (2013). Development Fee Land Use Assumptions

[2] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

<i>Police Level Of Service and Capital Costs</i>	<i>Per Trip</i>
Police Facilities	\$32.55
Police Vehicles	\$7.81
Police Communications Equipment	\$0.73
IIP and Development Fee Study	\$0.75
<b>GROSS CAPITAL COST</b>	<b>\$41.84</b>

Revenue Credit	0%	(\$0.00)
<b>NET CAPITAL COST</b>		<b>\$41.84</b>

<i>Police Nonresidential Development Fee Schedule</i>			<i>Development Fee per Square Foot of Floor Area</i>		
<i>Nonresidential Land Use</i>	<i>Weekday Vehicle Trip Ends</i>	<i>Trip Rate Adj. Factors</i>	<i>Proposed Fee</i>	<i>Current Fee [3]</i>	<i>Increase (Decrease)</i>
	<i>(Per 1,000 sq. ft.)</i>		<i>(Per Square Foot of Floor Area)</i>		
Commercial	42.70	33%	\$0.59	\$0.68	(\$0.09)
Office/Institutional	11.03	50%	\$0.23	\$0.24	(\$0.01)
Industrial/Flex	3.82	50%	\$0.08	\$0.06	\$0.02

[3] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

The 2012 nonresidential fees were by size thresholds, averages are shown here.



[PAGE INTENTIONALLY LEFT BLANK]

## FIRE FACILITIES INFRASTRUCTURE IMPROVEMENTS PLAN

### OVERVIEW

---

ARS 9-463.05 (T)(7)(f) defines the facilities and assets, which can be included in the Fire Facilities IIP:

*“Fire and police facilities, including all appurtenances, equipment and vehicles. Fire and police facilities do not include a facility or portion of a facility that is used to replace services that were once provided elsewhere in the municipality, vehicles and equipment used to provide administrative services, helicopters or airplanes or a facility that is used for training police and firefighters from more than one station or substation.”*

The Fire Facilities IIP includes components for the Fire facilities, Fire fleet (vehicles/apparatus/equipment), and the Fire Department’s proportionate share of the City of Flagstaff public safety communications command center system (communications equipment and infrastructure), and the cost of preparing the Fire Facilities IIP and Development Fee Study. Cost recovery is used to calculate the IIP for the Fire facilities, apparatus, equipment, and communications infrastructure. Incremental expansion is used to calculate the Fire vehicles and communications equipment elements of the Fire IIP and Development Fees.

### SERVICE AREA

---

The City’s Fire facilities and assets serve the entire city. The service area for the Fire Facilities IIP and development fees is Citywide.

### PROPORTIONATE SHARE

---

ARS 9-463.05 (B)(3) states that the development fee shall not exceed a proportionate share of the cost of necessary public services needed to accommodate new development. The Fire IIP uses a proportionate share concept to allocate the demand between residential and nonresidential development. The demand for Fire facilities and assets in City of Flagstaff is measured by annual calls for service. Calls for service data from 2012, in combination with functional population factors (described below), were used to determine the relative demand for service from residential and nonresidential development.

## Functional Population

TischlerBise recommends functional population to allocate the cost of Fire Facilities to residential and nonresidential development. Functional population has a long history in the professional literature. Originally called activity analysis by Stuart Chapin in 1965, and incorporated into development impact fee methodology by James Nicholas in the mid-1980s, functional population has been used to equitably spread infrastructure costs between residential and nonresidential sectors. TischlerBise has refined the functional population concept by incorporating what the U.S. Census Bureau calls “daytime population.” Using jurisdiction-specific data on commuting patterns, it is now possible to account for where people live and work (i.e., spend their daily hours). As shown below, residents that do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents that work in Flagstaff are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside Flagstaff are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2010 decennial census and Longitudinal Employer-Household Dynamics data, both provided by the U.S. Census Bureau, the cost allocation for residential development is 70 percent, while nonresidential development accounts for 30 percent of the demand for Fire Facilities.

**Figure 7: City of Flagstaff Functional Population**

	<u>Demand Units in 2010</u>		<u>Demand Hours/Day</u>	<u>Person Hours</u>
<b>Residential</b>				
Population	65,870			
Residents Not Working	36,843		20	736,860
Resident Workers	29,027			
Worked in City	17,161		14	240,254
Worked Outside City	11,866		14	166,124
Residential Subtotal				<b>1,143,238 70%</b>
<b>Nonresidential</b>				
Non-working Residents	36,843		4	147,372
Jobs Located in City	34,744			
Residents Working in City	17,161		10	171,610
Non-Resident Workers (inflow commuters)	17,583		10	175,830
Nonresidential Subtotal				<b>494,812 30%</b>
TOTAL				<b>1,638,050</b>

Source: U.S. Census Bureau, 2010 Decennial Census; U.S. Census Bureau, OnTheMap 6.1.1 Application and LEHD Origin-Destination Employment Statistics

## Service Units

The Fire Facilities costs are allocated to both residential and nonresidential development based on an analysis of functional population and calls for service. For residential development, fees are calculated on a per capita basis, and then converted to an appropriate amount by type of housing unit based on persons per household.

For nonresidential development fees, TischlerBise recommends using nonresidential vehicle trips as the demand indicator for Fire Facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/flex development. Office and institutional trip rates fall between the other two categories. Because the Fire Department responds to emergency medical services calls for service this ranking of trip rates is consistent with the relative demand for Fire services from nonresidential development.

Other possible nonresidential demand indicators, such as employment or floor area, would not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Fire development fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator, Fire development fees would be too high for industrial development. More information regarding the calculation of nonresidential vehicle trips can be found in Figure 19: Fire Facilities Ratio of Service Unit to Land Use.

## Fire Department Calls for Service

The functional population allocation to residential (70%) and nonresidential (30%) development is applied to the 2012 calls for service data provided by the City of Flagstaff Fire Department to derive calls for service per service unit (i.e., population for residential development, and vehicle trips for nonresidential development). Of the Fire Department's 10,178 calls for service, 7,125 are assigned to residential development, and 3,053 are assigned to nonresidential development, based on functional population.

**Figure 8: Fire Facilities Proportionate Share**

	<b>2012</b>
<b>Total Calls for Service</b>	<b>10,178</b>

Source: City of Flagstaff, Fire Department

Land Use	Proportionate Share	Estimated Calls for Service (CFS)	2013 Service Units	CFS per Service Unit
Residential	70%	7,125	74,941 Population	0.10
Nonresidential	30%	3,053	102,819 Nonres Vehicle Trips	0.03

## Public Safety Communications Command Center Calls for Service

The City of Flagstaff shares a Public Safety Communications Command Center and associated infrastructure with Coconino County and surrounding public safety agencies. The shared command center received 71,475 calls for service from all jurisdictions in calendar year 2012. Calls for service for the City of Flagstaff Fire Department accounted for 14 percent of the total public safety calls for service received. This proportionate share factor will be used to calculate the demands placed on the *communications equipment* (e.g., portable communication radios, and stationary computer components) by the Fire Department.

Proportionate share factors for demands placed on the *communications infrastructure* (e.g., telecommunications towers for wireless network) by the Fire Department were provided by the City of Flagstaff Police Department based on use by the City's Fire, Police, and Public Works departments, and other jurisdictions. Proportionate share factors for *communications infrastructure* differ from *communications equipment* due to additional impact from Public Works. Proportionate share factors are shown below.

Figure 9: Public Safety Communications Command Center Proportionate Share<sup>1</sup>

Public Safety Agency	Calls for Service [1]	Proportionate Share for Communications	
		Equipment [1]	Infrastructure [2]
Flagstaff Police	43,304	61%	27%
Flagstaff Fire	10,178	14%	18%
Other Jurisdictions	17,993	25%	26%
Flagstaff Public Works	Not Applicable	0%	29%
<b>Total Calls Received in 2012</b>	71,475	100%	100%

[1] Proportionate share factors for Communications Equipment are based on total calls for service dispatched by the Public Safety Communications Command Center.

[2] Proportionate share factors (shown here as rounded figures) for Communications Infrastructure were provided by the City of Flagstaff Police Department. The City of Flagstaff Department of Public Works places demands on the communications infrastructure but not on the Public Safety Communications Command Center.

<sup>1</sup> The proportionate share factors by department for the *Communications Infrastructure* are shown as rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

## IIP FOR FIRE FACILITIES

---

For each necessary public service that is the subject of a development fee, ARS 9-463.05(E) requires that the IIP include seven elements. The sections below detail each of these elements. (A forecast of new revenues generated by sources other than development fees can be found in **Appendix B – Forecast of Revenues Other Than Development Fees.**)

### Analysis of Capacity, Usage, and Costs of Existing Public Services

ARS 9-463.05(E)(1) requires:

*“A description of the existing necessary public services in the service area and the costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

ARS 9-463.05(E)(2) requires:

*“An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

## Fire Facilities

### Level of Service

The City recently completed a multi-year plan to relocate and expand its Fire facilities. The current inventory of qualified Fire facilities totals 59,197 square feet, which includes excess capacity to serve future demand. The level of service (LOS) for Fire facilities is a measure of square feet per service unit. The current LOS for residential development is calculated as follows:  $(59,197 \text{ square feet} \times 70\% \text{ residential proportionate share}) / 74,941 \text{ persons} = 0.55 \text{ square feet per capita.}^2$  This calculation is repeated for nonresidential development using 2013 nonresidential vehicle trips. The results are shown in Figure 10.

**Figure 10: Level of Service – Fire Facilities**

Facility [1]	Total Square Feet	Cost/SF	Replacement Cost
Station 1	7,913	\$520	\$4,114,760
Station 2	14,631	\$352	\$5,150,112
Station 3	9,340	\$333	\$3,110,220
Station 4	5,600	\$232	\$1,299,200
Station 5	7,913	\$487	\$3,853,631
Station 6	9,000	\$337	\$3,033,000
Station 10 (Airport)	2,800	\$250	\$700,000
Current Fire Mechanic Space	2,000	\$250	\$500,000
<b>TOTAL</b>	<b>59,197</b>	<b>\$368</b>	<b>\$21,760,923</b>

Source: City of Flagstaff Fire Department

[1] Reflects non-administrative space

Service Unit	Proportionate Share	2013	2020	2023
City Population	70%	74,941	80,918	83,025
	Square Feet Per Capita	0.55	0.51	0.50
Nonresidential Vehicle Trips	30%	102,819	109,630	112,683
	Square Feet per Nonresidential Vehicle Trip	0.17	0.16	0.16

Debt was issued in 2006 and 2012 to help fund the expansion of Fire facilities. As new development utilizes its proportionate share of the available capacity of existing Fire facilities, the City plans to have it pay a proportionate share of the remaining debt, scheduled to be retired in 2020 and 2023. As shown above, if no new Fire facilities are added and development occurs at the rate shown in the [Land Use Assumptions](#), the LOS for Fire facilities will change over the next ten years. The current LOS is 0.55 square feet per capita and 0.17 square feet per nonresidential vehicle trip. By 2023, the LOS for current Fire facilities will be 0.50 and 0.16 respectively.

<sup>2</sup> Level of service is shown as a rounded figure. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

**Cost per Service unit**

Debt was issued in 2006 and 2012 to pay for the expansion of Fire facilities to the current square footage of 59,197. As new development utilizes its proportionate share of the available capacity of the Fire facilities, the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used to calculate the cost per service unit by land use. Growth share is based on projected persons and trips at the end of each bond term.

The City of Flagstaff has a fiscal year that runs July 1<sup>st</sup> through June 30<sup>th</sup>. The final payments for Fire facilities debt are due July 1<sup>st</sup>, or the start of the fiscal year. Therefore, the service units at the time of the last July payment are used to calculate the growth share by land use for each debt schedule. The final payment for the 2006 Series A debt is due July 1, 2023. TischlerBise projects the City of Flagstaff will add 8,084 persons and see an additional 9,864 nonresidential vehicle trips between July of 2013 and 2023, which equates to 9 percent of the 2023 projected combined population and nonresidential trips. The formula to calculate growth share for the 2006 Series A debt is (195,708 population and nonresidential vehicle trips in 2023 – 177,760 population and nonresidential vehicle trips in 2013) / 195,708 population and nonresidential vehicle trips in 2023 = 9 percent (*rounded*).

The cost per service unit for residential development is calculated as follows: ((9% growth share x \$10,901,463 remaining principal and interest) x 70% residential proportionate share)/8,084 net increase in persons = \$84.96 cost per capita. This calculation is repeated for each land use and each debt obligation. The results are a combined cost per service unit for Fire facilities of \$109.18 per capita, and \$38.95 per nonresidential vehicle trip.

**Figure 11: Cost Recovery – Fire Facilities**

Debt Obligation		Year of Final	Remaining Principal
Name	Year Issued	Payment	and Interest
Series A	2006	2023	\$10,901,463

Land Use	Growth Share [1]	Proportionate Share [2]	Increase 2013-2023 Service Units [3]	Cost per Service Unit
Residential	9%	70%	8,084 Population	\$84.96
Nonresidential		30%	9,864 Nonres Vehicle Trips	\$29.84

Debt Obligation		Year of Final	Remaining Principal
Name	Year Issued	Payment	and Interest
Series 2011	2012	2020	\$2,954,241

Land Use	Growth Share [1]	Proportionate Share [2]	Increase 2013-2020 Service Units [3]	Cost per Service Unit
Residential	7%	70%	5,977 Population	\$24.22
Nonresidential		30%	6,811 Nonres Vehicle Trips	\$9.11

Source: City of Flagstaff, Finance Department

[1] Share of projected population and nonresidential vehicle trips attributable to new growth

[2] TischlerBise. (2013). Functional Population

[3] TischlerBise. (2013). Development Fee Land Use Assumptions

Land Use	Combined Cost per Service Unit
Residential	<b>\$109.18</b>
Nonresidential	<b>\$38.95</b>



## Fire Fleet - Vehicles, Apparatus and Equipment

### Level of Service

The City plans to maintain the current LOS for Fire vehicles, apparatus, and equipment. The City currently has a 37-unit fleet of Fire vehicles, apparatus, and equipment. Based on the proportionate share analysis discussed above, residential development creates 70 percent of the demand for the Fire fleet, with nonresidential development accounting for 30 percent of the demand. The current LOS for residential development is calculated as follows:  $((37 \text{ units} \times 70\% \text{ proportionate share}) / (74,941 \text{ persons} / 1,000)) = 0.35 \text{ vehicles per 1,000 persons}$ . This calculation is repeated for nonresidential development resulting in a LOS of 0.11 vehicles per 1,000 nonresidential vehicle trips.

**Figure 12: Level of Service Fire Fleet - Vehicles, Apparatus, and Equipment**

Type	Description	Units in Service	Unit Price [1]	Replacement Cost
Vehicle	Ladder Apparatus	1	\$895,034	\$895,034
Vehicle	Rescue - Heavy	1	\$560,867	\$560,867
Vehicle	TYPE 1 Engine	1	\$448,478	\$448,478
Vehicle	Pumper Apparatus	4	\$394,641	\$1,578,564
Vehicle	Type 1 Pumper	1	\$359,539	\$359,539
Vehicle	TYPE 3 Wildlands	3	\$358,000	\$1,074,000
Vehicle	Water Tender	2	\$270,000	\$540,000
Vehicle	HAZMAT Truck	1	\$251,392	\$251,392
Vehicle	Rescue - Medic	1	\$244,247	\$244,247
Vehicle	TYPE 6 Engine	2	\$130,000	\$260,000
Vehicle	TYPE 6 Brush Truck	2	\$130,000	\$260,000
Vehicle	Rescue - Light	1	\$43,220	\$43,220
Vehicle	Light Duty Vehicle	9	\$26,139	\$235,253
Vehicle	Heavy Duty Vehicle	3	\$24,657	\$73,972
Vehicle	Trailers	2	\$4,586	\$9,171
Apparatus	Aerial Truck (quint ladder)	1	\$800,000	\$800,000
Apparatus	Pumper Truck	1	\$359,539	\$359,539
Equipment	SCBA Equipment	1	\$220,358	\$220,358
Total Fleet		37	\$221,990	\$8,213,633

Source: City of Flagstaff Fire Department

[1] Reflects the unit cost at year of purchase adjusted for inflation to Feb 2013 CPI

Land Use	Proportionate Share	2013 Service Units	Vehicles, Apparatus and Equipment Per 1,000 Service Units
Residential	70%	74,941 Population	0.35
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.11

### Cost per Service unit

The cost per service unit for the incremental expansion of Fire vehicles is calculated in Figure 13. *The cost per service unit of Fire apparatus, and for Fire equipment are each calculated separately.* The City of Flagstaff debt financed the purchase of large Fire apparatus--an Aerial Truck and Pumper Truck--and Fire equipment for use in the entire service area. As new development utilizes its proportionate share of the available capacity of these apparatus and equipment units the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used to calculate the cost per service unit for Fire apparatus, and for Fire equipment (explained below). The cost per service unit for Fire vehicles is calculated using an incremental expansion methodology.

### Vehicles

To calculate the cost per service unit for the 34 units of Fire vehicles, the replacement costs for the apparatus and equipment were subtracted from the total replacement cost of the Fire fleet for an adjusted value of \$6,833,736 for the Fire vehicles. The current cost of Fire vehicles per service unit for residential development is calculated as follows: ((34 vehicle units X 70% proportionate share) / (74,941 persons/1,000)) = 0.32 level of service X \$200,992 average cost per vehicle = \$63.83 cost per capita. This calculation is repeated for nonresidential development and results in a cost per service unit of \$19.94.

**Figure 13: Incremental Expansion – Fire Vehicles**

Type	Description	Units in Service	Unit Price [1]	Replacement Cost
Vehicle	Ladder Apparatus	1	\$895,034	\$895,034
Vehicle	Rescue - Heavy	1	\$560,867	\$560,867
Vehicle	TYPE 1 Engine	1	\$448,478	\$448,478
Vehicle	Pumper Apparatus	4	\$394,641	\$1,578,564
Vehicle	Type 1 Pumper	1	\$359,539	\$359,539
Vehicle	TYPE 3 Wildlands	3	\$358,000	\$1,074,000
Vehicle	Water Tender	2	\$270,000	\$540,000
Vehicle	HAZMAT Truck	1	\$251,392	\$251,392
Vehicle	Rescue - Medic	1	\$244,247	\$244,247
Vehicle	TYPE 6 Engine	2	\$130,000	\$260,000
Vehicle	TYPE 6 Brush Truck	2	\$130,000	\$260,000
Vehicle	Rescue - Light	1	\$43,220	\$43,220
Vehicle	Light Duty Vehicle	9	\$26,139	\$235,253
Vehicle	Heavy Duty Vehicle	3	\$24,657	\$73,972
Vehicle	Trailers	2	\$4,586	\$9,171
Apparatus	Aerial Truck (quint ladder)	1	\$800,000	\$800,000
Apparatus	Pumper Truck	1	\$359,539	\$359,539
Equipment	SCBA Equipment	1	\$220,358	\$220,358
	Total Fleet	37	\$221,990	\$8,213,633
	Total for Fire Vehicles	34	\$200,992	\$6,833,736

Source: City of Flagstaff Fire Department

[1] Reflects the unit cost at year of purchase adjusted for inflation to Feb 2013 CPI

Land Use	Proportionate Share	2013 Service Units	Vehicles Per 1,000 Service Units	Cost per Service Unit
Residential	70%	74,941 Population	0.32	<b>\$63.83</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.10	<b>\$19.94</b>

### Apparatus

The cost per service unit for the Fire apparatus (using the cost recovery methodology) is calculated using a growth share based on projected persons and nonresidential vehicle trips at the time of the last payment, July 1, 2019. Of the projected 188,870 combined population and nonresidential vehicle trips in 2019, 11,110 (6 percent) are attributable to new growth between 2013 and 2019. The formula to calculate growth share is as follows:  $(188,870 \text{ population and nonresidential vehicle trips in 2019} - 177,760 \text{ population and nonresidential vehicle trips in 2013}) / 188,870 \text{ population and nonresidential vehicle trips in 2019} = 6 \text{ percent (rounded)}$

The Fire apparatus cost per service unit for residential development is calculated as follows:  $((6\% \text{ growth share} \times \$289,122 \text{ remaining principal and interest}) \times 70\% \text{ residential proportionate share}) / 5,293 \text{ net increase in persons} = \$2.29 \text{ cost per capita}$ . This calculation is repeated for nonresidential development and results in a cost per service unit of \$0.89.

**Figure 14: Cost Recovery – Fire Apparatus**

Debt Obligation		Year of Final	Remaining Principal
Name	Year Issued	Payment	and Interest
Fire Vehicles	2010	2019	\$289,122

Land Use	Growth Share [1]	Proportionate Share [2]	Increase 2013-2019 Service Units [3]	Cost per Service Unit
Residential	6%	70%	5,293 Population	<b>\$2.29</b>
Nonresidential		30%	5,817 Nonres Vehicle Trips	<b>\$0.89</b>

Source: City of Flagstaff, Finance Department

[1] Share of projected population and nonresidential vehicle trips attributable to new growth

[2] TischlerBise. (2013). Functional Population

[3] TischlerBise. (2013). Development Fee Land Use Assumptions

### Equipment

The cost per service unit for the Fire equipment (using the cost recovery methodology) is calculated using a growth share based on projected persons and trips at the time of the last payment, July 1, 2023. Of the projected 195,708 combined population and nonresidential vehicle trips in 2023, 17,948 (9 percent) are attributable to new growth between 2013 and 2023. The formula to calculate growth share is as follows:  $(195,708 \text{ population and nonresidential vehicle trips in 2023} - 177,760 \text{ population and nonresidential vehicle trips in 2013}) / 195,708 \text{ population and nonresidential vehicle trips in 2023} = 9 \text{ percent (rounded)}$ .

The Fire equipment cost per service unit for residential development is calculated as follows:  $((9\% \text{ growth share} \times \$169,414 \text{ remaining principal and interest}) \times 70\% \text{ residential proportionate share}) / 8,084 \text{ net increase in persons} = \$1.32 \text{ cost per capita}$ . This calculation is repeated for nonresidential development and results in a cost per service unit of \$0.46.

**Figure 15: Cost Recovery – Fire Equipment**

Debt Obligation		Year of Final	Remaining Principal
Name	Year Issued	Payment	and Interest
SCBA Equipment	2006	2023	\$169,414

Land Use	Growth Share [1]	Proportionate Share [2]	Increase 2013-2023 Service Units [3]	Cost per Service Unit
Residential	9%	70%	8,084 Population	<b>\$1.32</b>
Nonresidential		30%	9,864 Nonres Vehicle Trips	<b>\$0.46</b>

Source: City of Flagstaff, Finance Department

[1] Share of projected population and nonresidential vehicle trips attributable to new growth

[2] TischlerBise. (2013). Functional Population

[3] TischlerBise. (2013). Development Fee Land Use Assumptions

### Fire Communications System - Equipment and Infrastructure

The City of Flagstaff maintains an inventory of portable and stationary communications equipment, and the communications infrastructure associated with the shared Public Safety Communications Command Center system. The shared center dispatches calls for the City of Flagstaff, Coconino County and surrounding public safety agencies, as well as providing communications infrastructure for the City of Flagstaff Department of Public Works. Each agency places differing levels of demand on the system. As discussed above, annual calls for service were used to calculate the share of the components allocated to the City of Flagstaff Fire Department; and functional population factors were used to calculate the demands placed on the system by residential and nonresidential land uses in the service area.

### **Level of Service**

There are two types of communications equipment associated with the shared system; first is the portable equipment assigned to staff and vehicles, and second is the computer equipment necessary to dispatch and track calls for service. Communications infrastructure includes the telecommunications towers for the wireless network.

Of the equipment and infrastructure that constitute the City of Flagstaff shared system, the City of Flagstaff Fire Department makes use of 51 components. Portable components used by the Fire Department are allocated to the Fire Department at 100 percent. Dispatch communications components like the computer system's server are allocated based on demand on the system generated by the Fire Department (14%), as determined by calls for service (see the Proportionate Share section above).

Demand placed on the *communications infrastructure* by the Fire Department was determined by the City of Flagstaff. According to the City, the Fire Department generates 18.41 percent of the total demand for the *communications infrastructure*. The remaining demand on the *communications infrastructure* is generated by the Flagstaff Police and Public Works Departments as well as from other jurisdictions.

As shown in Figure 16, these proportionate share factors are used to adjust the count of components to reflect only the share of the total 51 components used by the Fire Department. The Fire Department uses 100 percent of the 6 *portable communications* components, 14 percent of the 44 *dispatch communications* components, and 18.41 percent of the *communications infrastructure*. These shares equate to 12.34 units of communications equipment and infrastructure used by the Fire Department.

The communications equipment and infrastructure LOS for residential development is calculated as follows:  $(12.34 \text{ pieces of equipment} \times 70\% \text{ proportionate share}) / (74,941 \text{ person} / 1,000) = 0.12 \text{ pieces of equipment per } 1,000 \text{ persons}$ . This calculation is repeated for nonresidential development resulting in a LOS of 0.04 pieces of equipment per 1,000 nonresidential vehicle trips.

**Figure 16: Level of Service Fire Communications System - Equipment and Infrastructure**

Communications System Equipment and Infrastructure	Units in Service	Fire Dept. Share of Units [1]	Units Used by Fire Dept.	Average Cost per Unit	Replacement Cost [2]
Equipment - Portable Communications	6	100.00%	6.00	\$5,733	\$34,400
Equipment - Dispatch Communications	44	14.00%	6.16	\$5,366	\$33,055
Infrastructure - Tower and Network [3]	1	18.41%	0.18	\$3,952,287	\$727,616
<b>TOTAL</b>	51		12.34	\$82,800	\$795,071

Source: City of Flagstaff Police Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Replacement cost is the Fire Department's share of Total Units multiplied by cost per unit.

[3] City of Flagstaff. (2012). Communications Infrastructure proportionate share

Land Use	Proportionate Share	2013 Service Units	Equipment & Infrastructure per 1,000 Service Units
Residential	70%	74,941 Population	0.12
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.04

### **Cost per Service unit**

The costs per service unit for the Fire *communications equipment* and *communications infrastructure* are calculated separately.

- **Communications Infrastructure:** The City of Flagstaff debt financed the expansion of the public safety *communications infrastructure* in 2011. As new development utilizes its proportionate share of the available capacity of the expanded system the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used to calculate the cost per service unit for Fire *communications infrastructure* (shown in Figure 18).
- **Communications Equipment:** The cost per service unit for Fire *communications equipment* is calculated using an incremental expansion methodology.

### **Communications Equipment**

To calculate the cost per service unit for Fire communications equipment the replacement costs are calculated for each component by multiplying the per unit cost by the share of units allocated to the Fire Department. Next, the replacement value for just the *communications equipment* was calculated resulting in a value of \$67,455 for the Fire *communications equipment* alone. (*Communications infrastructure* is calculated and shown separately). The current cost of Fire *communications equipment* per service unit for residential development is calculated as follows: (\$67,455 replacement value X 70% proportionate share)/74,941 persons = \$0.63 per capita. This calculation is repeated for nonresidential development and results in a cost per service unit of \$0.20.

**Figure 17: Incremental Expansion – Communications Equipment**

Communications System Equipment and Infrastructure	Units in Service	Fire Dept. Share of Units [1]	Units Used by Fire Dept.	Average Cost per Unit	Replacement Cost [2]
Equipment - Portable Communications	6	100.00%	6.00	\$5,733	\$34,400
Equipment - Dispatch Communications	44	14.00%	6.16	\$5,366	\$33,055
Infrastructure - Tower and Network [3]	1	18.41%	0.18	\$3,952,287	\$727,616
<b>TOTAL</b>	<b>51</b>		<b>12.34</b>	<b>\$82,800</b>	<b>\$795,071</b>
<b>Total for Communications Equipment</b>	<b>50</b>		<b>12.16</b>	<b>\$5,547</b>	<b>\$67,455</b>

Source: City of Flagstaff Police Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Replacement cost is the Fire Department's share of Total Units multiplied by cost per unit.

[3] City of Flagstaff. (2012). Communications Infrastructure proportionate share

Land Use	Proportionate Share	2013 Service Units	Equipment per 1,000 Service Units	Cost per Service Unit
Residential	70%	74,941 Population	0.11	<b>\$0.63</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.04	<b>\$0.20</b>

### *Communications Infrastructure*

Debt was issued in 2011 to pay for the expansion of the Public Safety Communications Command Center infrastructure. As new development utilizes its proportionate share of the available capacity of the *communications infrastructure*, the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used, and the growth share is based on projected persons and trips at the end of the bond term.

The City's Fire, Police, and Public Works Departments use the *communications infrastructure*, along with surrounding public safety agencies. According to the City of Flagstaff, the Fire Department generates 18.41 percent of total demand on the infrastructure.

The City of Flagstaff has a fiscal year that runs July 1<sup>st</sup> through June 30<sup>th</sup>. The final payment for the *communications infrastructure* debt is due July 1<sup>st</sup>, or the start of the fiscal year. Therefore, the service units at the time of the last July payment are used to calculate the growth share by land use. TischlerBise projects the City of Flagstaff will add 6,670 persons and see an additional 7,811 nonresidential vehicle trips between July of 2013 and 2021, which equates to 8 percent of the 2021 projected combined population and nonresidential trips. The formula to calculate growth share is as follows:  $(192,241 \text{ population and nonresidential vehicle trips in 2021} - 177,760 \text{ population and nonresidential vehicle trips in 2013}) / 192,241 \text{ population and nonresidential vehicle trips in 2021} = 8 \text{ percent (rounded)}$ .

The cost per service unit for residential development is calculated as follows:  $(\$3,658,398 \text{ remaining principal and interest} \times 18.41\% \text{ Fire proportionate share} \times 8\% \text{ growth share} \times 70\% \text{ residential proportionate share}) / 6,670 \text{ net increase in persons} = \$5.65 \text{ cost per capita}$ . This calculation is repeated for nonresidential development and results in a cost per nonresidential vehicle trip of \$2.07.

**Figure 18: Cost Recovery – Fire Communications Infrastructure**

Debt Obligation		Year of Final Payment	Remaining Principal and Interest
Name	Year Issued		
Communications Equipment	2011	2021	\$3,658,398

Land Use	Portion Attributable to Fire Dept. [1]	Growth Share [2]	Proportionate Share [3]	Increase 2013-2021 Service Units [4]	Cost per Service Unit
Residential	18.41%	8%	70%	6,670 Population	<b>\$5.65</b>
Nonresidential			30%	7,811 Nonres Vehicle Trips	<b>\$2.07</b>

Source: City of Flagstaff, Finance Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Share of projected population and nonresidential vehicle trips attributable to new growth

[3] TischlerBise. (2013). Functional Population

[4] TischlerBise. (2013). Development Fee Land Use Assumptions

### **Excluded Costs**

Development fees in Flagstaff exclude costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City of Flagstaff Capital Improvement Plan addresses the cost of these excluded items.

### **Current Use and Available Capacity**

According to City staff, Fire facilities, apparatus, equipment, and communications infrastructure have surplus capacity to serve growth; therefore, a cost recovery methodology was used to calculate the growth share of future principal and interest payments. Fire vehicles and communications equipment are fully utilized; therefore, there is no available capacity for future development.



## RATIO OF SERVICE UNIT TO DEVELOPMENT UNIT

ARS 9-463.05(E)(4) requires:

*“A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial.”*

Shown in the table below are the ratios of a service unit (i.e., persons and nonresidential vehicle trips) to various types of land uses for residential and nonresidential development. The residential development table displays the *Persons per Household* factors for single family and multifamily homes.

For nonresidential development, average daily vehicle trips are used for the Fire Facilities IIP as a measure of demand by land use. TischlerBise recommends using nonresidential vehicle trips as the best demand indicator for Fire Facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/flex development. Office and institutional trip rates fall between the other two categories. Because the Fire Department responds to emergency medical calls for service this ranking of trip rates is consistent with the relative demand for Fire services from nonresidential development.

Other possible nonresidential demand indicators, such as employment or floor area, would not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Fire Facilities development fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator Fire Facilities development fees would be too high for industrial development.

**Figure 19: Fire Facilities Ratio of Service Unit to Land Use**

Residential Development	
Land Use	Persons per Household [1]
Single Unit	2.75
2+ Unit	2.57

[1] TischlerBise. (2013).

Development Fee Land Use Assumptions

Nonresidential Development			
Land Use	Weekday Trip	Trip	Vehicle Trips (a X b)
	Ends [2] (a)	Adjustment [3] (b)	
Commercial KSF	42.70	33%	14.09
Office/Institutional KSF	11.03	50%	5.52
Industrial/Flex KSF	3.82	50%	1.91

[2] Institute of Transportation Engineers. (2012). Trip Generation Manual 9th Edition

[3] Average adjustment used to count every trip only once, at the point of final destination.

Vehicle trips are estimated using average weekday vehicle trips ends from the reference book Trip Generation published by the Institute of Transportation Engineers (ITE 9<sup>th</sup> Edition 2012). A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway).

Trip generation rates are adjusted to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor of 50 percent is applied to the office/institutional, and industrial/flex categories. The commercial/retail category has a trip factor of less than 50 percent because this type of development attracts vehicles as they pass-by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For the average shopping center, the ITE data indicates that 34 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66 percent of attraction trips have the commercial site as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor of 66 percent is multiplied by 50 percent to calculate a trip adjustment factor for commercial land use of 33 percent.

#### PROJECTED SERVICE UNITS AND INFRASTRUCTURE DEMAND

---

ARS 9-463.05(E)(3) requires:

*“A description of all or the parts of the necessary public services or facility expansions and their costs necessitated by and attributable to development in the service area based on the approved land use assumptions, including a forecast of the costs of infrastructure, improvements, real property, financing, engineering and architectural services, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

ARS 9-463.05(E)(5) requires:

*“The total number of projected service units necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering and planning criteria.”*

ARS 9-463.05(E)(6) requires:

*“The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.”*

## Fire Facilities

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Fire Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Fire facilities fee to pay down the debt incurred to expand the Fire facilities with the capacity to absorb growth. Over the course of the next five years, the City of Flagstaff is projected to add an additional 4,617 persons, and see an additional 4,818 nonresidential vehicle trips. As shown in Figure 20, projected development between 2013 and 2018 will generate demand for the remaining Fire facilities capacity.

**Figure 20: Projected Demand for Fire Facilities**

		Existing Fire Facilities = 59,197 SF					
		Residential		Nonresidential		Demand for	Remaining
		Population	2018 LOS	Vehicle Trips	2018 LOS	Facility SF	Capacity
Base Yr	2013	74,941	0.52	102,819	0.16	55,997	3,200
1	2014	76,931	0.52	103,771	0.16	57,191	2,006
2	2015	77,576	0.52	104,726	0.16	57,684	1,513
3	2016	78,228	0.52	105,688	0.16	58,183	1,014
4	2017	78,889	0.52	106,662	0.16	58,688	509
5	2018	79,558	0.52	107,637	0.16	59,197	0

## Fire Apparatus

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Fire Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Fire apparatus fee to pay down the debt incurred to purchase the large apparatus. Over the remaining period of the debt obligation, the City of Flagstaff is projected to add an additional 5,293 persons, and see an additional 5,817 nonresidential vehicle trips. As shown in Figure 21, projected development between 2013 and 2019 will generate demand for the remaining capacity of the Fire apparatus.

**Figure 21: Projected Demand for Fire Apparatus**

		Existing Fire Apparatus = 2 Units					
		Residential		Nonresidential		Demand for	Remaining
		Population	2019 LOS	Vehicle Trips	2019 LOS	Apparatus	Capacity
Base Yr	2013	74,941	0.00002	102,819	0.00001	1.88	0.12
1	2014	76,931	0.00002	103,771	0.00001	1.92	0.08
2	2015	77,576	0.00002	104,726	0.00001	1.93	0.07
3	2016	78,228	0.00002	105,688	0.00001	1.95	0.05
4	2017	78,889	0.00002	106,662	0.00001	1.97	0.03
5	2018	79,558	0.00002	107,637	0.00001	1.98	0.02
6	2019	80,234	0.00002	108,636	0.00001	2.00	0.00

## Fire Equipment

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Fire Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Fire equipment fee to pay down the debt incurred to purchase the Fire equipment. Over the remaining period of the debt obligation, the City of Flagstaff is projected to add an additional 8,084 persons, and see an additional 9,864 nonresidential vehicle trips. As shown in Figure 22, projected development between 2013 and 2023 will generate demand for the remaining capacity of the Fire equipment.

**Figure 22: Projected Demand for Fire Equipment**

		Existing Fire Equipment = 1 Unit					
		Residential		Nonresidential		Demand for Equipment	Remaining Capacity
		Population	2023 LOS	Vehicle Trips	2023 LOS		
Base Yr	2013	74,941	0.00001	102,819	0.000003	0.91	0.09
1	2014	76,931	0.00001	103,771	0.000003	0.92	0.08
2	2015	77,576	0.00001	104,726	0.000003	0.93	0.07
3	2016	78,228	0.00001	105,688	0.000003	0.94	0.06
4	2017	78,889	0.00001	106,662	0.000003	0.95	0.05
5	2018	79,558	0.00001	107,637	0.000003	0.96	0.04
6	2019	80,234	0.00001	108,636	0.000003	0.97	0.03
7	2020	80,918	0.00001	109,630	0.000003	0.97	0.03
8	2021	81,611	0.00001	110,630	0.000003	0.98	0.02
9	2022	82,314	0.00001	111,652	0.000003	0.99	0.01
10	2023	83,025	0.00001	112,683	0.000003	1.00	0.00

## Fire Communications Infrastructure

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Fire Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Fire *communications infrastructure* fee to pay down the debt incurred to improve the network and add a telecommunications tower, to ensure the shared Public Safety Communications Command Center would have sufficient capacity to serve growth. Over the remaining period of the debt obligation, the City of Flagstaff is projected to add an additional 6,670 persons, and see an additional 7,811 nonresidential vehicle trips. As shown in Figure 23, projected development between 2013 and 2021 will generate demand for the remaining portion of *communications infrastructure* that is attributable to the Flagstaff Fire Department.

**Figure 23: Projected Demand for Fire Communications Infrastructure**

		Existing Fire Communications Infrastructure = 18.41% of 1 System Unit					
		Residential		Nonresidential		Demand for      Remaining Units                  Capacity	
		Service Units	2021 LOS per 1,000	Service Units	2021 LOS per 1,000		
		Population	Service Units	Vehicle Trips	Service Units		
Base Yr	2013	74,941	0.002	102,819	0.0005	0.17	0.014
1	2014	76,931	0.002	103,771	0.0005	0.17	0.011
2	2015	77,576	0.002	104,726	0.0005	0.17	0.009
3	2016	78,228	0.002	105,688	0.0005	0.18	0.008
4	2017	78,889	0.002	106,662	0.0005	0.18	0.006
5	2018	79,558	0.002	107,637	0.0005	0.18	0.005
6	2019	80,234	0.002	108,636	0.0005	0.18	0.003
7	2020	80,918	0.002	109,630	0.0005	0.18	0.002
8	2021	81,611	0.002	110,630	0.0005	0.18	0.000

## Fire Vehicles and Communications Equipment

As shown in Figure 24 TischlerBise projects an additional 8,084 persons and 9,864 trips over the next ten years. The City of Flagstaff Fire Department expects to expand the fleet of Fire vehicles incrementally to serve growth at the current level of service, which equates to a demand for four new vehicles in the next ten years. Incremental investments in Communications equipment will be made by the Fire Department to maintain the current level of service, which equates to a demand for one new unit in the next ten years. The incremental demand to serve growth is shown in Figure 24 below.

The ten-year totals of the projected demand for the Fire vehicles, and the Fire Department's share of the communications equipment is multiplied by the respective costs per average unit to determine the total cost to incrementally expand capacity for each category to accommodate the projected demand over the next ten years. For example, the projected development over the next ten years requires adding four vehicles. This is multiplied by the average cost of \$200,992 per average vehicle to calculate a total ten-year cost of \$803,968. This calculation is repeated for each category. See Figure 24 for additional details.

**Figure 24: Projected Demand for Fire Vehicles and Communications Equipment**

		Service Units		Vehicles	Comm. Equip.
				per 1,000 Service Units	
Res LOS		Persons		0.32	0.11
Nonres LOS		Nonresidential Vehicle Trips		0.10	0.04
		Average Cost per Unit		\$200,992	\$5,547

		Projected Service Units		Projected Demand (Rounded)	
		Persons	Nonres Trips	Vehicles (units)	Comm. Equip. (units)
Base	2013	74,941	102,819	34	12
1	2014	76,931	103,771	35	12
2	2015	77,576	104,726	35	13
3	2016	78,228	105,688	35	13
4	2017	78,889	106,662	36	13
5	2018	79,558	107,637	36	13
6	2019	80,234	108,636	36	13
7	2020	80,918	109,630	37	13
8	2021	81,611	110,630	37	13
9	2022	82,314	111,652	37	13
10	2023	83,025	112,683	38	13
<b>Ten-Year Total</b>		<b>8,084</b>	<b>9,864</b>	<b>4</b>	<b>1</b>
Cost of Fire Vehicles				\$803,968	
Cost of Fire Communications Equipment				\$5,547	

## Fire Facilities Improvements Plan

Lastly, the 10-year plan for necessary Fire Facilities improvements and expansions identified by City of Flagstaff are listed in Figure 25. The figure below reflects new purchases and does not include debt service costs associated with Fire facilities, apparatus, equipment, and communications infrastructure.

Figure 25: Necessary Fire Facilities Expansions

<b>Improvements</b>	<b>10-Year Plan</b>
Projects	
Incremental Expansion of Vehicles	\$803,968
Incremental Expansion of Communications Equipment	\$5,547
<b>TOTAL</b>	<b>\$809,515</b>

## MAXIMUM SUPPORTABLE FIRE FACILITIES DEVELOPMENT FEES

The maximum supportable development fees by land use for Fire Facilities are shown in Figure 26 on the following page. **The maximum supportable fees differ from the proposed Fire Facilities development fees presented in the [Development Fee Report](#) due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.**

### Fire Facilities IIP and Development Fee Study

Included in the Fire Facilities *per service unit cost* is the cost to prepare the Fire Facilities IIP and Development Fee Study. See **Appendix A – Cost of Professional Services** for the detailed calculations.

### Revenue Credit

Included in the maximum supportable development fees is a *Revenue Credit* of 0 percent. The unadjusted Fire Facilities development fees per development unit would not generate more revenue over the next ten years, based on the approved [Land Use Assumptions](#), than the identified growth-related necessary expenditures of \$2,096,648 (necessary facilities expansion plus the IIP and Development Fee Study cost). To ensure that no more fee revenue is collected than the City plans to spend, the potential gross cost per service unit is reduced by the revenue credit to calculate the net capital cost per service unit. Based on the gross capital costs per service unit, the projected development fee revenue would equal \$1,513,051. See Figure 26 and Figure 27 for additional detail. Therefore, no revenue credit adjustment is necessary for the Fire Facilities development fees.

**Figure 26: Maximum Supportable Fire Facilities Development Fees<sup>3</sup>**

<i>Fire Level Of Service and Capital Costs</i>		<i>Per Person</i>
Fire Facilities - Debt Service		\$109.18
Fire Vehicles		\$63.83
Fire Apparatus - Debt Service		\$2.29
Fire Equipment - Debt Service		\$1.32
Fire Communications Equipment		\$0.63
Fire Communications Infrastructure - Debt Service		\$5.65
IIP and Development Fee Study		\$1.93
<b>GROSS CAPITAL COST</b>		<b>\$184.83</b>
<b>Revenue Credit</b>	<b>0%</b>	<b>(\$0.00)</b>
<b>NET CAPITAL COST</b>		<b>\$184.83</b>

<i>Fire Residential Development Fee Schedule</i>			<b>Development Fee per Housing Unit</b>		
<i>Unit Type</i>	<i>Number of Bedrooms</i>	<i>Persons per Household [1]</i>	<i>Proposed Fee</i>	<i>Current Fee [2]</i>	<i>Increase (Decrease)</i>
2+ Units	All Sizes	2.57	\$474	\$352	\$122
Single Unit	0-3	2.62	\$484	\$444	\$40
Single Unit	4+	3.29	\$607	\$444	\$163
<i>Single Unit</i>	<i>Avg</i>	<i>2.75</i>	<i>\$508</i>	<i>\$444</i>	<i>\$64</i>

[1] TischlerBise. (2013). Development Fee Land Use Assumptions

[2] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

<i>Fire Level Of Service and Capital Costs</i>		<i>Per Trip</i>
Fire Facilities - Debt Service		\$38.95
Fire Vehicles		\$19.94
Fire Apparatus - Debt Service		\$0.89
Fire Equipment - Debt Service		\$0.46
Fire Communications Equipment		\$0.20
Fire Communications Infrastructure - Debt Service		\$2.07
IIP and Development Fee Study		\$0.79
<b>GROSS CAPITAL COST</b>		<b>\$63.30</b>
<b>Revenue Credit</b>	<b>0%</b>	<b>(\$0.00)</b>
<b>NET CAPITAL COST</b>		<b>\$63.30</b>

<i>Fire Nonresidential Development Fee Schedule</i>			<b>Development Fee per Square Foot of Floor Area</b>		
<i>Nonresidential Land Use</i>	<i>Weekday Vehicle Trip Ends</i>	<i>Trip Rate Adj. Factors</i>	<i>Proposed Fee</i>	<i>Current Fee [3]</i>	<i>Increase (Decrease)</i>
	<i>(Per 1,000 sq. ft.)</i>		<i>(Per Square Foot of Floor Area)</i>		
Commercial	42.70	33%	\$0.89	\$0.81	\$0.08
Office/Institutional	11.03	50%	\$0.34	\$0.28	\$0.06
Industrial/Flex	3.82	50%	\$0.12	\$0.07	\$0.05

[3] TischlerBise. (28Nov11). January 1, 2012 Interim Development Fees

The 2012 nonresidential fees were by size thresholds, averages are shown here.

<sup>3</sup> The maximum supportable fees differ from the proposed Fire Facilities development fees presented in the Development Fee Report due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.

## FORECAST OF REVENUES FOR FIRE FACILITIES

**Appendix B – Forecast of Revenues Other Than Development Fees** contains the forecast of revenues required by Arizona’s enabling legislation.

### Fire Facilities Cash Flow

Revenue projections shown below assume implementation of the maximum supportable Fire Facilities development fees and that development over the next ten years is consistent with the approved [Land Use Assumptions](#) described in Appendix C. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the development fee revenue. The deficit shown in the revenue projection below represents the portion of necessary investments that will not be recouped through Fire Facilities development fee revenue.

**Figure 27: Projected Revenue for Fire Facilities**

#### *Ten-Year Growth-Related Costs for Fire Facilities*

Fire Facilities - Debt Service*	\$ 1,187,929
Fire Vehicles	\$ 803,968
Fire Apparatus - Debt Service*	\$ 17,347
Fire Equipment - Debt Service*	\$ 15,247
Fire Communications Equipment	\$ 5,547
Fire Communications Infrastructure - Debt Service*	\$ 53,881
IIP and Development Fee Study	\$ 12,729
<b>TOTAL</b>	<b>\$ 2,096,648</b>

[1] Debt Service costs shown above represent only the growth share of each debt obligation.

		<i>per Housing Unit</i>		<i>Per Square Foot of Floor Area</i>		
		<i>Single Unit</i>	<i>2+ Units</i>	<i>Commercial</i>	<i>Office</i>	<i>Industrial</i>
		<b>\$508</b>	<b>\$474</b>	<b>\$0.89</b>	<b>\$0.34</b>	<b>\$0.12</b>
		<i>Housing Units Added</i>		<i>Square Feet Added (1,000)</i>		
Base	2013	16,833	10,324	4,195	6,084	5,316
Year 1	2014	16,942	10,391	4,234	6,139	5,370
Year 2	2015	17,052	10,458	4,273	6,193	5,424
Year 3	2016	17,162	10,526	4,313	6,248	5,478
Year 4	2017	17,273	10,594	4,353	6,303	5,532
Year 5	2018	17,385	10,662	4,393	6,359	5,588
Year 6	2019	17,497	10,731	4,434	6,416	5,643
Year 7	2020	17,610	10,800	4,474	6,473	5,700
Year 8	2021	17,724	10,870	4,515	6,530	5,757
Year 9	2022	17,839	10,940	4,557	6,588	5,815
Year 10	2023	17,954	11,011	4,599	6,648	5,873
<i>Ten-Yr Increase</i>		1,121	687	404	564	557
Projected Fees =>		\$569,468	\$325,638	\$359,560	\$191,598	\$66,787
<b>Total Projected Revenues</b>		<b>\$1,513,051</b>				
Cumulative Net Surplus/(Deficit)		<b>(\$583,597)</b>				



[PAGE INTENTIONALLY LEFT BLANK]

## POLICE FACILITIES INFRASTRUCTURE IMPROVEMENTS PLAN

### OVERVIEW

---

ARS 9-463.05 (T)(7)(f) defines the facilities and assets, which can be included in the Police Facilities IIP:

*“Fire and police facilities, including all appurtenances, equipment and vehicles. Fire and police facilities do not include a facility or portion of a facility that is used to replace services that were once provided elsewhere in the municipality, vehicles and equipment used to provide administrative services, helicopters or airplanes or a facility that is used for training police and firefighters from more than one station or substation.”*

The Police Facilities IIP includes components for the Police facilities, vehicles, the Police Department’s proportionate share of the City of Flagstaff public safety communications command center system (equipment and infrastructure), and the cost of preparing the Police Facilities IIP and Development Fee Study. Cost recovery is used to calculate the IIP for Police communications infrastructure. Incremental expansion is used to calculate the Police facilities, vehicles, and communications equipment elements of the Police Facilities IIP and Development Fees.

### SERVICE AREA

---

The City of Flagstaff Police Department provides service to the entire city. The service area for the Police Facilities IIP and development fees is Citywide.

### PROPORTIONATE SHARE

---

ARS 9-463.05 (B)(3) states that the development fee shall not exceed a proportionate share of the cost of necessary public services needed to accommodate new development. The Police IIP uses a functional population concept to allocate the demand between residential and nonresidential development. The demand for Police facilities and assets in the City of Flagstaff is measured by annual calls for service. Calls for service data from 2012, in combination with functional population factors (described below), were used to determine the relative demand for service from residential and nonresidential development.

## Functional Population

TischlerBise recommends functional population to allocate the cost of Police Facilities to residential and nonresidential development. Functional population has a long history in the professional literature. Originally called activity analysis by Stuart Chapin in 1965, and incorporated into development impact fee methodology by James Nicholas in the mid-1980s, functional population has been used to equitably spread infrastructure costs between residential and nonresidential sectors. TischlerBise has refined the functional population concept by incorporating what the U.S. Census Bureau calls “daytime population.” Using jurisdiction-specific data on commuting patterns, it is now possible to account for where people live and work (i.e., spend their daily hours). As shown below, residents that do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents that work in Flagstaff are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside Flagstaff are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2010 decennial census and Longitudinal Employer-Household Dynamics data, both provided by the U.S. Census Bureau, the cost allocation for residential development is 70 percent, while nonresidential development accounts for 30 percent of the demand for Police Facilities.

Figure 28: City of Flagstaff Functional Population

	<u>Demand Units in 2010</u>		<u>Demand Hours/Day</u>	<u>Person Hours</u>
<b>Residential</b>				
Population	65,870			
Residents Not Working	36,843		20	736,860
Resident Workers	29,027			
Worked in City	17,161		14	240,254
Worked Outside City	11,866		14	166,124
Residential Subtotal				1,143,238 <b>70%</b>
<b>Nonresidential</b>				
Non-working Residents	36,843		4	147,372
Jobs Located in City	34,744			
Residents Working in City	17,161		10	171,610
Non-Resident Workers (inflow commuters)	17,583		10	175,830
Nonresidential Subtotal				494,812 <b>30%</b>
TOTAL				1,638,050

Source: U.S. Census Bureau, 2010 Decennial Census; U.S. Census Bureau, OnTheMap 6.1.1 Application and LEHD Origin-Destination Employment Statistics

## Service Units

Different demand indicators for residential and nonresidential development are used to calculate the Police Facilities IIP. Residential development fees are calculated based on resident population, and then converted to an appropriate amount by type of housing unit based on persons per household.

For nonresidential development fees, TischlerBise recommends using nonresidential vehicle trips as the demand indicator for Police Facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/flex development. Office and institutional trip rates fall between the other two categories. This ranking of trip rates is consistent with the relative demand for Police services from nonresidential development.

Other possible nonresidential demand indicators, such as employment or floor area, would not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Police development fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator Police development fees would be too high for industrial development. More information regarding the calculation of nonresidential vehicle trips can be found in Figure 36: Police Facilities Ratio of Service Unit to Land Use.

## Police Department Calls for Service

The functional population allocation to residential and nonresidential development is applied to the 2012 calls for service data provided by the City of Flagstaff Police Department to derive calls for service per service unit (i.e. population for residential development, and vehicle trips for nonresidential development). Of the Police Department's 43,304 calls for service, 70 percent or 30,313 represent demand from residential development, and 30 percent or 12,991 represent demand from nonresidential development.

**Figure 29: Police Proportionate Share**

	<b>2012</b>
<b>Total Calls for Service</b>	<b>43,304</b>

Source: City of Flagstaff, Police Department

Land Use	Proportionate Share	Estimated Calls for Service (CFS)	2013 Service Units	CFS per Service Unit
Residential	70%	30,313	74,941 Population	0.40
Nonresidential	30%	12,991	102,819 Nonres Vehicle Trips	0.13

## Public Safety Communications Command Center Calls for Service

City of Flagstaff shares a public safety command center and associated infrastructure with Coconino County and surrounding public safety agencies. The shared command center received 71,475 calls for service from all jurisdictions in calendar year 2012. Calls for service for the City of Flagstaff Police Department accounted for 61 percent of the total public safety calls for service received. This proportionate share factor will be used to calculate the demands placed on the *communications equipment* (e.g., portable communication radios, and stationary computer components) by the Police Department.

Proportionate share factors for demands placed on the *communications infrastructure* (e.g., telecommunications towers for wireless network) by the Police Department were provided by the City of Flagstaff Police Department based on use by the City's Fire, Police, and Public Works departments, and other jurisdictions. Proportionate share factors for *communications infrastructure* differ from *communications equipment* due to additional impact from Public Works. Proportionate share factors are shown below.

Figure 30: Public Safety Communications Command Center Proportionate Share<sup>4</sup>

Public Safety Agency	Calls for Service [1]	Proportionate Share for Communications	
		Equipment [1]	Infrastructure [2]
Flagstaff Police	43,304	61%	27%
Flagstaff Fire	10,178	14%	18%
Other Jurisdictions	17,993	25%	26%
Flagstaff Public Works	Not Applicable	0%	29%
<b>Total Calls Received in 2012</b>	71,475	100%	100%

[1] Proportionate share factors for Communications Equipment are based on total calls for service dispatched by the Public Safety Communications Command Center.

[2] Proportionate share factors (shown here as rounded figures) for Communications Infrastructure were provided by the City of Flagstaff Police Department. The City of Flagstaff Department of Public Works places demands on the communications infrastructure but not on the Public Safety Communications Command Center.

<sup>4</sup> The proportionate share factors by department for the *Communications Infrastructure* are shown as rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

## IIP FOR POLICE FACILITIES

---

For each necessary public service that is the subject of a development fee, ARS 9-463.05(E) requires that the IIP include seven elements. The sections below detail each of these elements. (A forecast of new revenues generated by sources other than development fees can be found in **Appendix B – Forecast of Revenues Other Than Development Fees.**)

### Analysis of Capacity, Usage, and Costs of Existing Public Services

ARS 9-463.05(E)(1) requires:

*“A description of the existing necessary public services in the service area and the costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

ARS 9-463.05(E)(2) requires:

*“An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

## Police Facilities

### **Level of Service and Cost per Service unit**

The City plans to maintain the level of service (LOS) for Police facilities that it provides to existing development. Thus, the incremental expansion methodology is used to calculate this component of the Police IIP. The City currently has 46,672 square feet of qualified Police facilities. Based on the proportionate share analysis discussed above, residential development creates 70 percent of the demand for Police facilities, with nonresidential development accounting for 30 percent of the demand. The current LOS for residential development is calculated as follows: (46,672 square feet X 70% residential proportionate share)/74,941 persons = 0.44 square feet per capita. This calculation is repeated for nonresidential development resulting in a LOS of 0.14 square feet per nonresidential vehicle trip.

The cost per service unit is the product of square feet per service unit and the average cost per square foot. The cost per service unit for residential development is calculated as follows: 0.44 square feet per capita X \$239 average cost per square foot = \$104.19 cost per person.<sup>5</sup> This calculation is repeated for nonresidential development resulting in a cost of \$32.55 per nonresidential vehicle trip.

**Figure 31: Incremental Expansion – Police Facilities**

Facility	Total Square Feet	Cost per Square Foot	Replacement Cost [2]
LEAF Facility (City Police share) [1]	32,148	\$252	\$8,104,898
Police Share of Coconino Facility	8,000	\$252	\$2,016,896
Southside Substation	64	\$252	\$16,135
Sunnyside Substation	400	\$252	\$100,845
Garage/Warehouse (Win Oil leased)	3,500	\$252	\$882,392
Purchased "Pod" Storage Space	2,560	\$5	\$12,000
<b>TOTAL</b>	<b>46,672</b>	<b>\$239</b>	<b>11,133,166</b>

Source: City of Flagstaff, Police Department

[1] Reflects non-administrative space

[2] 2007 values adjusted for inflation to Feb 2013 CPI

Land Use	Proportionate Share	2013 Service Units	Square Feet per Service Unit	Cost per Service Unit
Residential	70%	74,941 Population	0.44	<b>\$104.19</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.14	<b>\$32.55</b>

<sup>5</sup> Level of service is shown as a rounded figure. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)

## Police Vehicles

The City plans to maintain the LOS for Police vehicles that it provides to existing development. Thus, the incremental expansion methodology is used to calculate this component of the Police Facilities IIP. The City currently has a fleet of 78 Police vehicles. Based on the proportionate share analysis, residential development creates 70 percent of the demand for police vehicles, with nonresidential development accounting for 30 percent of the demand. The current LOS for residential development is calculated as follows:  $(78 \text{ vehicles} \times 70\% \text{ proportionate share}) / (74,941 \text{ persons} / 1,000) = 0.73 \text{ vehicles per } 1,000 \text{ persons}$ . This calculation is repeated for nonresidential development resulting in a LOS of 0.23 vehicles per 1,000 nonresidential vehicle trips.

The cost per service unit is the product of LOS and the average cost per unit. The cost per service unit for residential development is calculated as follows:  $(0.73 \text{ LOS} / 1,000) \times \$34,300 \text{ average cost per unit} = \$24.99 \text{ cost per service unit}$ .<sup>6</sup> This calculation is repeated for nonresidential development resulting in a cost of \$7.81 per nonresidential vehicle trip.

**Figure 32: Incremental Expansion – Police Vehicles**

Type of Vehicle	Units in Service	Unit Price [1]	Replacement Cost
Patrol Sedan	32	\$38,054	\$1,217,741
Patrol Motorcycle	4	\$16,157	\$64,629
Patrol Motorcycle Trainer	3	\$11,480	\$34,440
Patrol Utility Vehicle	2	\$38,905	\$77,810
Patrol 4x4 Pickup Truck	1	\$28,594	\$28,594
Prisoner Transport Van	1	\$44,220	\$44,220
Patrol Surveillance Van	1	\$162,210	\$162,210
Bomb Squad Response Vehicle	1	\$176,028	\$176,028
Bomb Squad Trailer	1	\$85,038	\$85,038
Mobile Command Post	1	\$60,377	\$60,377
Radar/Sign Board Trailer	3	\$25,511	\$76,534
Full Service Sedan [2]	23	\$21,259	\$488,967
Graffiti Eradication Van	1	\$31,995	\$31,995
Street Crimes Task Force Vehicle	2	\$36,779	\$73,558
Utility Trailer	1	\$3,720	\$3,720
Animal Control 4x4 Pickup Truck	1	\$51,916	\$51,916
<b>TOTAL</b>	<b>78</b>	<b>\$34,300</b>	<b>\$2,677,776</b>

Source: City of Flagstaff, Police Department

[1] Includes all pieces of equipment to place the vehicle in service; Adjusted for Inflation Feb 2013 CPI

[2] Reflects updated inventory to remove vehicles used for administrative services

Land Use	Proportionate Share	2013 Service Units	Vehicles per 1,000 Service Units	Cost per Service Unit
Residential	70%	74,941 Population	0.73	<b>\$24.99</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.23	<b>\$7.81</b>

<sup>6</sup> Level of service is shown as a rounded figure. However, the analysis itself uses figures carried to their ultimate decimal places; therefore the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown here (due to the rounding of figures shown, not in the analysis.)



## Police Communications System - Equipment and Infrastructure

The City of Flagstaff maintains an inventory of communications equipment and infrastructure associated with the Public Safety Communications Command Center. The shared center dispatches calls for the City of Flagstaff, Coconino County and surrounding public safety agencies, as well as providing communications infrastructure for the City of Flagstaff Department of Public Works. Each agency places differing levels of demand on the system. As discussed above, annual calls for service were used to calculate the share of the components allocated to the City of Flagstaff Police Department; and functional population factors were used to calculate the demands placed on the system by residential and nonresidential land uses in the service area.

### **Level of Service**

There are two types of communications equipment associated with the shared system; first is the portable equipment assigned to staff and vehicles, and second is the computer equipment necessary to dispatch and track calls for service. Communications infrastructure includes the telecommunications towers for the wireless network.

Of the communication equipment and infrastructure that constitute the City of Flagstaff shared system, the City of Flagstaff Police Department makes use of 72 components. Portable components used by the Police Department are allocated to the Police Department at 100 percent. Dispatch communications components like the computer system's server are allocated based on demand on the system generated by the Police Department, and determined by calls for service (see the **Public Safety Communications Command Center Calls for Service** section above).

Demand placed on the *communications infrastructure* by the Police Department was determined by the City of Flagstaff. According to the City, the Police Department generates 26.53 percent of the total demand for the *communications infrastructure*. The remaining demand on the *communications infrastructure* is generated by the Flagstaff Fire and Public Works Departments as well as from other jurisdictions.

As shown in Figure 33, these proportionate share factors are used to adjust the count of components to reflect only the share of the total 72 components used by the Police Department. The Police Department uses 100 percent of the 27 *portable communications* components, 61 percent (26.84 units) of the 44 *dispatch communications* components, and 26.53 percent of the *communications infrastructure*. These shares equate to 54.11 units of communications equipment and infrastructure used by the Police Department.

The communications equipment and infrastructure LOS for residential development is calculated as follows:  $(54.11 \text{ pieces of equipment} \times 70\% \text{ proportionate share}) / (74,941 / 1,000) = 0.51 \text{ pieces of equipment per 1,000 persons}$ . This calculation is repeated for nonresidential development resulting in a LOS of 0.16 pieces of equipment per 1,000 nonresidential vehicle trips.

**Figure 33: Level of Service Police Communications System - Equipment and Infrastructure**

Communications Equipment and Infrastructure	Units in Service	Police Dept. Share of Units [1]	Units Used by Police Dept.	Average Cost per Unit	Replacement Cost [2]
Equipment - Portable Communications	27	100.00%	27.00	\$3,900	\$105,300
Equipment - Dispatch Communications	44	61.00%	26.84	\$5,366	\$144,026
Infrastructure - Tower and Network [3]	1	26.53%	0.27	\$3,952,287	\$1,048,542
<b>TOTAL</b>	<b>72</b>		<b>54.11</b>	<b>\$59,635</b>	<b>\$1,297,868</b>

Source: City of Flagstaff Police Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Replacement cost is the Police Department's share of Total Units multiplied by cost per unit.

[3] City of Flagstaff. (2012). Communications Infrastructure proportionate share

Land Use	Proportionate Share	2013 Service Units	Equipment & Infrastructure per 1,000 Service Units
Residential	70%	74,941 Population	0.51
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.16

### **Cost per Service unit**

The costs per service unit for the Police *communications equipment* and *communications infrastructure* are calculated separately.

- **Communications Infrastructure:** The City of Flagstaff debt financed the expansion of the public safety *communications infrastructure* in 2011. As new development utilizes its proportionate share of the available capacity of the expanded system the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used to calculate the cost per service unit for Police *communications infrastructure* (shown in Figure 35).
- **Communications Equipment:** The cost per service unit for Police *communications equipment* is calculated using an incremental expansion methodology.

### **Communications Equipment**

To calculate the cost per service unit for Police *communications equipment*, first the replacement costs are calculated for each component by multiplying the per unit cost by the share of units allocated to the Police Department. Next, the replacement value for just the *communications equipment* was calculated resulting in a value of \$249,326 for the Police *communications equipment* alone. (*Communications infrastructure* is calculated and shown separately). The current cost of Police *communications equipment* per service unit for residential development is calculated as follows: (\$249,326 X 70% proportionate share)/74,941 persons = \$2.33 per capita. This calculation is repeated for nonresidential development and results in a cost per service unit of \$0.73.

**Figure 34: Incremental Expansion –Communications Equipment**

Communications Equipment and Infrastructure	Units in Service	Police Dept. Share of Units [1]	Units Used by Police Dept.	Average Cost per Unit	Replacement Cost [2]
Equipment - Portable Communications	27	100.00%	27.00	\$3,900	\$105,300
Equipment - Dispatch Communications	44	61.00%	26.84	\$5,366	\$144,026
Infrastructure - Tower and Network [3]	1	26.53%	0.27	\$3,952,287	\$1,048,542
<b>TOTAL</b>	<b>72</b>		<b>54.11</b>	<b>\$59,635</b>	<b>\$1,297,868</b>
<b>Total for Communications Equipment</b>	<b>71</b>		<b>53.84</b>	<b>\$4,631</b>	<b>\$249,326</b>

Source: City of Flagstaff Police Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Replacement cost is the Police Department's share of Total Units multiplied by cost per unit.

[3] City of Flagstaff. (2012). *Communications Infrastructure proportionate share*

Land Use	Proportionate Share	2013 Service Units	Equipment per 1,000 Service Units	Cost per Service Unit
Residential	70%	74,941 Population	0.50	<b>\$2.33</b>
Nonresidential	30%	102,819 Nonres Vehicle Trips	0.16	<b>\$0.73</b>

### *Communications Infrastructure*

The City of Flagstaff issued debt in 2011 to pay for *communications infrastructure* improvements. As new development utilizes its proportionate share of the available capacity of the *communications infrastructure*, the City plans to have new development pay for its share of the remaining debt. Thus, the cost recovery methodology is used, and the growth share is based on projected persons and nonresidential vehicle trips at the end of the bond term.

The City's Police, Fire, and Public Works Departments use the *communications infrastructure*, along with surrounding public safety agencies. According to the City of Flagstaff, the Police Department generates 26.53 percent of total demand on the infrastructure.

The City of Flagstaff has a fiscal year that runs July 1<sup>st</sup> through June 30<sup>th</sup>. The final payments for debt obligation are due July 1<sup>st</sup>, or the start of the fiscal year. Therefore, the service units at the time of the last payment, July 1, 2021, are used to calculate the growth share by land use. TischlerBise projects the City of Flagstaff will add 6,670 persons and see an additional 7,811 nonresidential vehicle trips between July of 2013 and 2021, which equates to 8 percent of the 2021 projected combined population and nonresidential trips. The formula to calculate growth share is as follows:  $192,241 \text{ population and nonresidential vehicle trips in 2021} - 177,760 \text{ population and nonresidential vehicle trips in 2013} / 192,241 \text{ population and nonresidential vehicle trips in 2021} = 8 \text{ percent (rounded)}$ .

The cost per service unit for residential development is calculated as follows:  $(\$3,658,398 \text{ remaining principal and interest} \times 26.53\% \text{ Police proportionate share} \times 8\% \text{ growth share} \times 70\% \text{ residential proportionate share}) / 6,670 \text{ net increase in persons} = \$8.15 \text{ cost per capita}$ . This calculation is repeated nonresidential and results in a cost per nonresidential vehicle trip of \$2.98.

**Figure 35: Cost Recovery – Police Communications Infrastructure**

Debt Obligation		Year of Final	Remaining Principal
Year Issued	Name	Payment	and Interest
2011	Communications Equipment	2021	\$3,658,398

Source: City of Flagstaff, Finance Department

Land Use	Portion Attributable to Police Dept. [1]	Growth Share [2]	Proportionate Share [3]	Increase 2013-2021 Service Units [4]	Cost per Service Unit
Residential	26.53%	8%	70%	6,670 Population	<b>\$8.15</b>
Nonresidential			30%	7,811 Nonres Vehicle Trips	<b>\$2.98</b>

Source: City of Flagstaff, Finance Department

[1] City of Flagstaff Public Safety Communications Command Center

[2] Share of projected population and nonresidential vehicle trips attributable to new growth

[3] TischlerBise. (2013). Functional Population

[4] TischlerBise. (2013). Development Fee Land Use Assumptions

### **Excluded Costs**

Development fees in Flagstaff exclude costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards. The City of Flagstaff Capital Improvement Plan addresses the cost of these excluded items.

### **Current Use and Available Capacity**

According to City staff, Police communications infrastructure has surplus capacity to serve growth; therefore, a cost recovery methodology was used to calculate the growth share of future principal and interest payments. Police facilities, vehicles, and communications equipment are fully utilized; therefore, there is no available capacity for future development.

## RATIO OF SERVICE UNIT TO DEVELOPMENT UNIT

ARS 9-463.05(E)(4) requires:

*“A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial.”*

Figure 36 displays the ratio of a service unit (i.e., persons and nonresidential vehicle trips) to various types of land uses for residential and nonresidential development. The residential development table displays the *Persons per Household* factors for single family and multifamily homes.

For nonresidential development, average daily vehicle trips are used for the Police Facilities IIP as a measure of demand by land use. TischlerBise recommends using nonresidential vehicle trips as the best demand indicator for Police Facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial developments, such as shopping centers, and lowest for industrial/flex development. Office and institutional trip rates fall between the other two categories.

Other possible nonresidential demand indicators, such as employment or floor area, would not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, Police Facilities development fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses. If floor area were used as the demand indicator Police Facilities development fees would be too high for industrial development.

**Figure 36: Police Facilities Ratio of Service Unit to Land Use**

Residential Development	
Land Use	Persons per Household [1]
Single Unit	2.75
2+ Unit	2.57

[1] TischlerBise. (2013).  
Development Fee Land Use Assumptions

Nonresidential Development			
Land Use	Weekday Trip	Trip	
	Ends [2] (a)	Adjustment [3] (b)	Vehicle Trips (a X b)
Commercial KSF	42.70	33%	14.09
Office/Institutional KSF	11.03	50%	5.52
Industrial/Flex KSF	3.82	50%	1.91

[2] Institute of Transportation Engineers. (2012). Trip Generation Manual 9th Edition

[3] Average adjustment used to count every trip only once, at the point of final destination.

Vehicle trips are estimated using average weekday vehicle trips ends from the reference book Trip Generation published by the Institute of Transportation Engineers (ITE 9<sup>th</sup> Edition 2012). A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway).

Trip generation rates are adjusted to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor of 50 percent is applied to the office/institutional, and industrial/flex categories. The commercial/retail category has a trip factor of less than 50 percent because this type of development attracts vehicles as they pass-by on arterial and collector roads. For an average size shopping center, the ITE (2012) indicates that on average 34 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66 percent of attraction trips have the shopping center as their primary destination, of which half (33%) are trip ends.

### PROJECTED SERVICE UNITS AND INFRASTRUCTURE DEMAND

---

ARS 9-463.05(E)(3) requires:

*“A description of all or the parts of the necessary public services or facility expansions and their costs necessitated by and attributable to development in the service area based on the approved land use assumptions, including a forecast of the costs of infrastructure, improvements, real property, financing, engineering and architectural services, which shall be prepared by qualified professionals licensed in this state, as applicable.”*

ARS 9-463.05(E)(5) requires:

*“The total number of projected service units necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering and planning criteria.”*

ARS 9-463.05(E)(6) requires:

*“The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.”*

## Police Communications Infrastructure

The development fee enabling legislation requires all development fees to be reevaluated every five years. For the five-year period of this Police Facilities IIP and Development Fee Study, the City of Flagstaff will collect a Police *communications infrastructure* fee to pay down the debt incurred to improve the network and add a telecommunications tower, to ensure the shared Public Safety Communications Command Center would have sufficient capacity to serve growth. Over the remaining period of the debt obligation, the City of Flagstaff is projected to add an additional 6,670 persons, and see an additional 7,811 nonresidential vehicle trips. As shown in Figure 37, projected development between 2013 and 2021 will generate demand for the remaining portion of *communications infrastructure* that is attributable to the Flagstaff Police Department.

**Figure 37: Projected Demand for Police Communications Infrastructure**

Existing Police Communications Infrastructure = 26.53% of 1 System Unit							
		Residential		Nonresidential		Demand for Units	Remaining Capacity
		Service Units	2021 LOS per 1,000	Service Units	2021 LOS per 1,000		
		Population	Service Units	Vehicle Trips	Service Units		
Base Yr	2013	74,941	0.002	102,819	0.001	0.24	0.021
1	2014	76,931	0.002	103,771	0.001	0.25	0.016
2	2015	77,576	0.002	104,726	0.001	0.25	0.013
3	2016	78,228	0.002	105,688	0.001	0.25	0.011
4	2017	78,889	0.002	106,662	0.001	0.26	0.009
5	2018	79,558	0.002	107,637	0.001	0.26	0.007
6	2019	80,234	0.002	108,636	0.001	0.26	0.005
7	2020	80,918	0.002	109,630	0.001	0.26	0.002
8	2021	81,611	0.002	110,630	0.001	0.27	0.000



## Police Facilities, Vehicles, and Communications Equipment

TischlerBise projects an additional 8,084 persons and 9,864 trips over the next ten years. This new development will demand approximately 4,867 additional square feet of Police facilities. The City of Flagstaff Police Department will need to expand its fleet of Police vehicles incrementally by eight units to maintain the current level of service, and add five units of *communications equipment*.

The ten-year totals of the projected demand for each existing Police category is multiplied by the respective costs per unit to determine the total cost of each category to accommodate the projected demand over the next ten years. For example, the projected development over the next ten years requires eight additional Police vehicles. This is multiplied by the average cost of \$34,300 per vehicle to calculate the total ten-year cost for Police vehicles to be \$274,400. This calculation was repeated for each Police Component. See Figure 38 for additional details.

**Figure 38: Projected Demand for Police Facilities, Vehicles, and Communications Equipment**

	Service Units	Facilities	Vehicles	Comm. Equip.
		per Service Unit	per 1,000 Service Units	
Res LOS	Persons	0.44	0.73	0.50
Nonres LOS	Nonresidential Vehicle Trips	0.14	0.23	0.16
	Average Cost per Unit	\$239	\$34,300	\$4,631

				Projected Demand (Rounded)		
		Projected Service Units		Facilities	Vehicles	Comm. Equip.
		Persons	Nonres Trips	(sq. ft.)	(units)	(units)
Base	2013	74,941	102,819	46,672	78	54
1	2014	76,931	103,771	47,669	80	55
2	2015	77,576	104,726	48,080	80	55
3	2016	78,228	105,688	48,496	81	56
4	2017	78,889	106,662	48,916	82	56
5	2018	79,558	107,637	49,341	82	57
6	2019	80,234	108,636	49,772	83	57
7	2020	80,918	109,630	50,205	84	58
8	2021	81,611	110,630	50,643	85	58
9	2022	82,314	111,652	51,089	85	59
10	2023	83,025	112,683	51,539	86	59
<b>Ten-Year Total</b>		<b>8,084</b>	<b>9,864</b>	<b>4,867</b>	<b>8</b>	<b>5</b>
Cost of Police Facilities				\$1,163,213		
Cost of Police Vehicles				\$274,400		
Cost of Police Communications Equipment				\$23,155		

## Police Facilities Improvements Plan

Lastly, the 10-year plan for necessary Police Facilities improvements and expansions identified by the City of Flagstaff are listed in the figure below. The figure below reflects new purchases and does not include debt service costs associated with Police communications infrastructure.

Figure 39: Necessary Police Facilities Expansions

<b>Improvements</b>		<b>10-Year Plan</b>
Projects		
	Facilities	
	Emergency Operations Center	\$140,910
	Incremental Expansion of Police Facilities	\$1,022,303
	Incremental Expansion of Vehicles	\$274,400
	Incremental Expansion of Communications Equipment	\$23,155
	<b>TOTAL</b>	<b>\$1,460,768</b>

## MAXIMUM SUPPORTABLE POLICE FACILITIES DEVELOPMENT FEES

The maximum supportable development fees by land use for Police Facilities are shown in Figure 40 on the following page. **The maximum supportable fees differ from the proposed Police Facilities development fees presented in the Development Fee Report due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.**

## Police Facilities IIP and Development Fee Study

Included in the Police Facilities *per service unit cost* is the cost to prepare the Police Facilities IIP and Development Fee Study. See **Appendix A – Cost of Professional Services** for the detailed calculations.

## Revenue Credit

Included in the maximum supportable development fees is a *Revenue Credit* of 0 percent. The unadjusted Police Facilities development fees per development unit would not generate more revenue over the next ten years, based on the approved Land Use Assumptions, than the identified growth-related necessary expenditures of \$1,550,395 (existing debt service, necessary expansions, plus the IIP and Development Fee Study cost). To ensure that no more fee revenue is collected than the City plans to spend, the potential gross cost per service unit is reduced by the revenue credit to calculate the net capital cost per service unit. Based on the gross capital costs per service unit, the projected development fee revenue would equal \$1,125,690. See Figure 40 and Figure 41 for additional detail. Therefore, no revenue credit adjustment is necessary for the Police Facilities development fees.

**Figure 40: Maximum Supportable Police Facilities Development Fees<sup>7</sup>**

<i>Police Level Of Service and Capital Costs</i>	<i>Per Person</i>
Police Facilities	\$104.19
Police Vehicles	\$24.99
Police Communications Equipment	\$2.33
Police Communications Infrastructure - Debt Services	\$8.15
IIP and Development Fee Study	\$1.82
<b>GROSS CAPITAL COST</b>	<b>\$141.48</b>

<b>Revenue Credit</b>	<b>0%</b>	<b>(\$0.00)</b>
<b>NET CAPITAL COST</b>		<b>\$141.48</b>

<i>Police Residential Development Fee Schedule</i>			<b>Development Fee per Housing Unit</b>		
<i>Unit Type</i>	<i>Number of Bedrooms</i>	<i>Persons per Household [1]</i>	<i>Proposed Fee</i>	<i>Current Fee [2]</i>	<i>Increase (Decrease)</i>
2+ Units	All Sizes	2.57	\$362	\$184	\$178
Single Unit	0-3	2.62	\$370	\$231	\$139
Single Unit	4+	3.29	\$464	\$231	\$233
<i>Single Unit</i>	<i>Avg</i>	<i>2.75</i>	<i>\$388</i>	<i>\$231</i>	<i>\$157</i>

[1] TischlerBise. (2013). Development Fee Land Use Assumptions

[2] TischlerBise. (28Nov11). *January 1, 2012 Interim Development Fees*

<i>Police Level Of Service and Capital Costs</i>	<i>Per Trip</i>
Police Facilities	\$32.55
Police Vehicles	\$7.81
Police Communications Equipment	\$0.73
Police Communications Infrastructure - Debt Services	\$2.98
IIP and Development Fee Study	\$0.75
<b>GROSS CAPITAL COST</b>	<b>\$44.82</b>

<b>Revenue Credit</b>	<b>0%</b>	<b>(\$0.00)</b>
<b>NET CAPITAL COST</b>		<b>\$44.82</b>

<i>Police Nonresidential Development Fee Schedule</i>			<b>Development Fee per Square Foot of Floor Area</b>		
<i>Nonresidential Land Use</i>	<i>Weekday Vehicle Trip Ends</i>	<i>Trip Rate Adj. Factors</i>	<i>Proposed Fee</i>	<i>Current Fee [3]</i>	<i>Increase (Decrease)</i>
	<i>(Per 1,000 sq. ft.)</i>		<i>(Per Square Foot of Floor Area)</i>		
Commercial	42.70	33%	\$0.63	\$0.68	(\$0.05)
Office/Institutional	11.03	50%	\$0.25	\$0.24	\$0.01
Industrial/Flex	3.82	50%	\$0.09	\$0.06	\$0.03

[3] TischlerBise. (28Nov11). *January 1, 2012 Interim Development Fees*

The 2012 nonresidential fees were by size thresholds, averages are shown here.

<sup>7</sup> The maximum supportable fees differ from the proposed Police Facilities development fees presented in the Development Fee Report due to the policy decisions not to adopt a graduated fee schedule for single residential units, and not to collect development fees for previously made capital expansions funded through bonds.

## FORECAST OF REVENUES FOR POLICE FACILITIES

Appendix B – Forecast of Revenues Other Than Development Fees contains the forecast of revenues required by Arizona’s enabling legislation.

### Police Facilities Cash Flow

Revenue projections shown below assume implementation of the maximum supportable Police Facilities development fees and that development over the next ten years is consistent with the [Land Use Assumptions](#) described in Appendix C. To the extent the rate of development either accelerates or slows down, there will be a corresponding change in the development fee revenue. The deficit shown in the revenue projection below represents the portion of necessary investments that will not be recouped through Police Facilities development fee revenue.

**Figure 41: Projected Revenue for Police Facilities**

#### Ten-Year Growth-Related Costs for Police Facilities

Police Facilities	\$1,163,213
Police Vehicles	\$274,400
Police Communications Equipment	\$23,155
Police Communications Infrastructure - Debt Service*	\$77,646
IIP and Development Fee Study	\$11,981
<b>TOTAL</b>	<b>\$1,550,395</b>

[1] Debt Service cost shown above represents only the growth share of the debt obligation.

		Per Housing Unit		Per Square Foot of Floor Area		
		Single Unit	2+ Units	Commercial	Office	Industrial
		\$388	\$362	\$0.63	\$0.25	\$0.09
Year		Housing Units Added		Square Feet Added (1,000)		
Base	2013	16,833	10,324	4,195	6,084	5,316
Year 1	2014	16,942	10,391	4,234	6,139	5,370
Year 2	2015	17,052	10,458	4,273	6,193	5,424
Year 3	2016	17,162	10,526	4,313	6,248	5,478
Year 4	2017	17,273	10,594	4,353	6,303	5,532
Year 5	2018	17,385	10,662	4,393	6,359	5,588
Year 6	2019	17,497	10,731	4,434	6,416	5,643
Year 7	2020	17,610	10,800	4,474	6,473	5,700
Year 8	2021	17,724	10,870	4,515	6,530	5,757
Year 9	2022	17,839	10,940	4,557	6,588	5,815
Year 10	2023	17,954	11,011	4,599	6,648	5,873
Ten-Yr Increase		1,121	687	404	564	557
Projected Fees =>		\$434,948	\$248,694	\$255,127	\$139,281	\$47,640
<b>Total Projected Revenues</b>		<b>\$1,125,690</b>				
Cumulative Net Surplus/(Deficit)		<b>(\$424,705)</b>				

## APPENDIX A – COST OF PROFESSIONAL SERVICES

The table below displays each section of the Public Safety IIP and Development Fee Study. Each necessary public service is assigned a cost, followed by the proportionate share factors used to allocate the cost to residential and nonresidential land uses. Next, the figure displays the change in service units between 2013 and 2018, and finally the cost per service unit. (Because development fees are updated at least every five years, the cost is assessed against the service units for only 5 years.)

**Figure A42: IIP and Development Fee Study**

### Fire Development Fee Report

Land Use		Residential	Nonresidential
Proportionate Share		70%	30%
Fire Consultant Fee	\$12,729	\$8,910	\$3,819

Service Unit		Person	Vehicle Trip
Increase in Service Units	2013-2018	4,617	4,818
Cost per Service Unit		\$1.93	\$0.79

### Police Development Fee Report

Land Use		Residential	Nonresidential
Proportionate Share		70%	30%
Police Consultant Fee	\$11,981	\$8,387	\$3,594

Service Unit		Person	Vehicle Trip
Increase in Service Units	2013-2018	4,617	4,818
Cost per Service Unit		\$1.82	\$0.75

Source: TischlerBise. (2012). Development Fee Land Use Assumptions

## APPENDIX B – FORECAST OF REVENUES OTHER THAN DEVELOPMENT FEES

ARS 9-463.05(E)(7) requires:

*“A forecast of revenues generated by new service units other than development fees, which shall include estimated state-shared revenue, highway users revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes and the capital recovery portion of utility fees attributable to development based on the approved land use assumptions, and a plan to include these contributions in determining the extent of the burden imposed by the development as required in subsection B, paragraph 12 of this section.”*

ARS 9-463.05(B)(12) states,

*“The municipality shall forecast the contribution to be made in the future in cash or by taxes, fees, assessments or other sources of revenue derived from the property owner towards the capital costs of the necessary public service covered by the development fee and shall include these contributions in determining the extent of the burden imposed by the development. Beginning August 1, 2014, for purposes of calculating the required offset to development fees pursuant to this subsection, if a municipality imposes a construction contracting or similar excise tax rate in excess of the percentage amount of the transaction privilege tax rate imposed on the majority of other transaction privilege tax classifications, the entire excess portion of the construction contracting or similar excise tax shall be treated as a contribution to the capital costs of necessary public services provided to development for which development fees are assessed, unless the excess portion was already taken into account for such purpose pursuant to this subsection.”*

The City of Flagstaff does not have a higher than normal construction excise tax rate, so the required offset described above is not applicable. The required forecast of non-development fee revenue that might be used for growth-related capital costs is shown in below. There are no General Fund revenues used for growth-related capital expenditures. The City of Flagstaff allocates the Secondary Property Tax revenue to a Debt Service fund. These funds are available for capital investments; however, **the City of Flagstaff directs revenue from the Secondary Property Tax to non-development fee eligible capital needs.** The forecast of revenue to be generated from the Secondary Property Tax was calculated by the City, and is shown in Figure B43.

**Figure B43: Five-Year Revenue Projection, Secondary Property Tax**

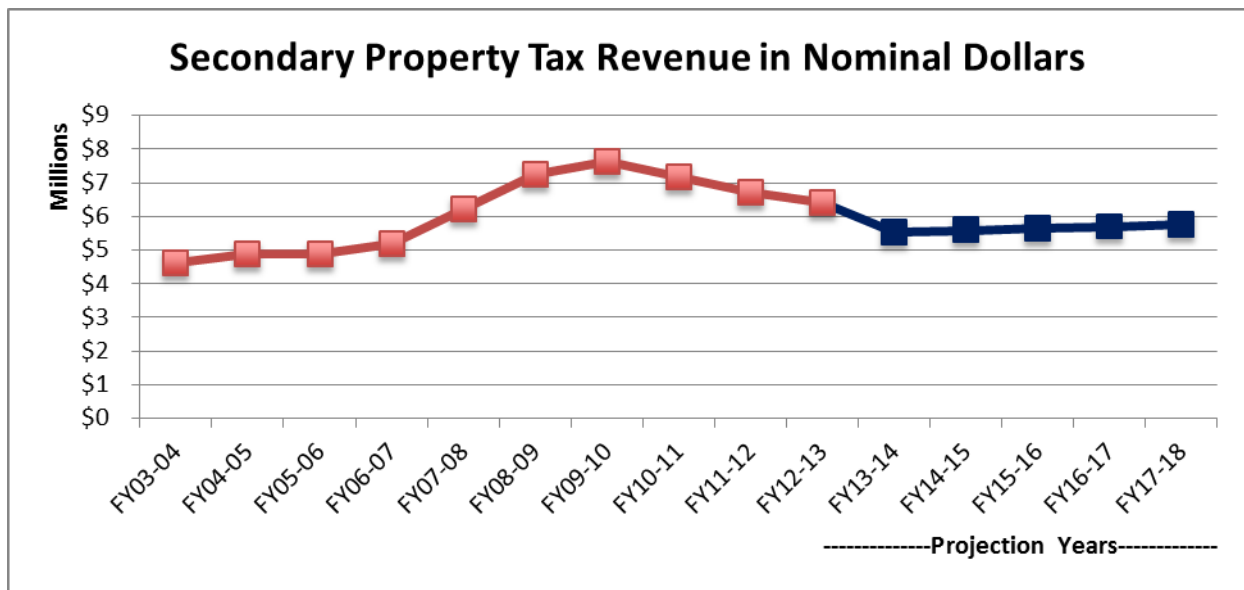
*Forecast of Revenues in Nominal Dollars*

	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18
Secondary Property Taxes Levied for Debt Service	\$5,530,453	\$5,585,758	\$5,641,615	\$5,698,031	\$5,755,012

Source: City of Flagstaff, Finance Department

The figure below charts ten years of past revenues from the Secondary Property Tax, as reported in the City of Flagstaff Comprehensive Annual Financial Reports, and the revenue projections for the next five fiscal years. As shown, for the next five years, the City projects annual revenue generated by the Secondary Property Tax will remain relatively flat.

**Figure B44: Secondary Property Tax Revenue Trend and Projections**



Source: City of Flagstaff, Finance Department

## APPENDIX C – LAND USE ASSUMPTIONS

Arizona Revised Statutes (ARS) 9-463.05 (T)(6) requires the preparation of a Land Use Assumptions document, which shows:

*“projections of changes in land uses, densities, intensities and population for a specified service area over a period of at least ten years and pursuant to the General Plan of the municipality.”*

TischlerBise prepared current demographic **estimates** and future development **projections** for both residential and nonresidential development that will be used in the Infrastructure Improvement Plan (IIP) and calculation of the development fees. Current demographic data estimates for FY12-13 are used in calculating levels-of-service (LOS) provided to existing development in the City of Flagstaff. Although long-range projections are necessary for planning infrastructure systems, a shorter period of five to ten years is critical for the development fee analysis. Arizona’s Development Fee Act requires fees to be updated at least every five years and limits the Infrastructure Improvements Plan to a maximum of ten years. The estimates and projections presented herein were calculated from data used by the City of Flagstaff to develop the 2012 Regional Plan Update for the City of Flagstaff planning region.

### SUMMARY OF GROWTH INDICATORS

---

Development projections and growth rates are summarized in Figure C45. These projections will be used to estimate development fee revenue and to indicate the anticipated need for growth-related infrastructure. However, development fee methodologies are designed to reduce sensitivity to accurate development projections in the determination of the proportionate share fee amounts. If actual development is slower than projected, development fee revenues will also decline, but so will the need for growth-related infrastructure. In contrast, if development is faster than anticipated, the City will receive an increase in development fee revenue, but will also need to accelerate capital improvements to keep pace with development.

Development projections are calculated through a three-step process. First, TischlerBise used historic population, housing, and employment data from the U.S. Census Bureau, and building permit data provided by the City of Flagstaff to calculate base year 2013 estimates. Second, TischlerBise had discussions with staff and used projections developed by the City of Flagstaff for the 2012 Regional Plan Update process. The City of Flagstaff calculated 20-year projections for population, housing, employment, and land use, based on 2010 decennial census counts and an internally designed high population growth assumption. Finally, TischlerBise applied exponential growth formulas based on the City of Flagstaff 2030 projections of year-round population, housing units, and jobs to estimate projections for each year beyond the base year 2013. See Figure C45 below for a summary of the base year estimates and 20-year projections. The City of Flagstaff is expected to add an average of 187 housing units and 160,000 square feet of non-residential floor area annually.

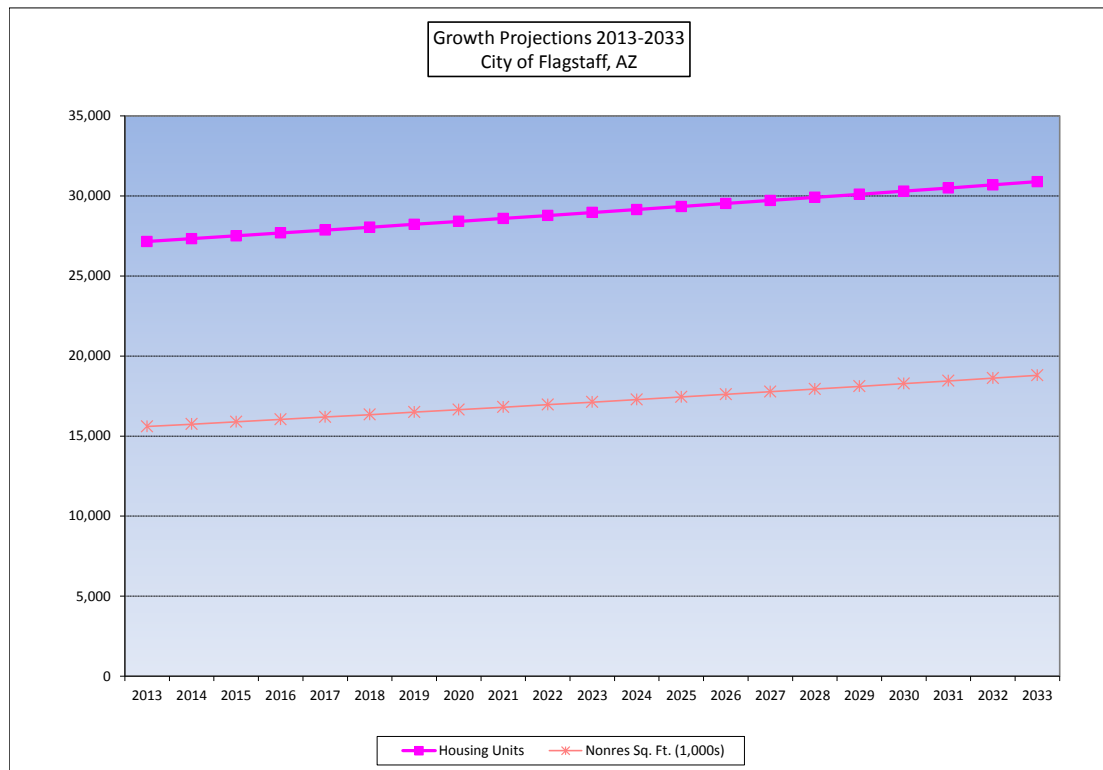
The City of Flagstaff calculated projections based on two growth scenarios using a low annual growth rate of 0.79 percent and a high annual growth rate of 1.06 percent. Housing unit, employment and land development projections for the 2012 Regional Plan Update were all calculated based on the high annual growth rate to ensure the City of Flagstaff is as prepared as possible to absorb potential growth.



Figure C45: Summary of Development Projections and Growth Rates

	Five-Year Increments ==>													Cumulative	Avg. Ann.
	Base Yr 2013	1 2014	2 2015	3 2016	4 2017	5 2018	6 2019	7 2020	8 2021	9 2022	10 2023	15 2028	20 2033	Increase 2013-2033	Increase 2013-2033
RESIDENTIAL DEVELOPMENT															
Housing Units															
Single Family	16,833	16,942	17,052	17,162	17,273	17,385	17,497	17,610	17,724	17,839	17,954	18,542	19,148	2,315	116
Multifamily	10,324	10,391	10,458	10,526	10,594	10,662	10,731	10,800	10,870	10,940	11,011	11,371	11,743	1,419	71
TOTAL	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
Nonres Floor Area (1,000 SF)															
Commercial (1,000 SF)	4,195	4,234	4,273	4,313	4,353	4,393	4,434	4,474	4,515	4,557	4,599	4,816	5,044	849	42
Office/Instit (1,000 SF)	6,084	6,139	6,193	6,248	6,303	6,359	6,416	6,473	6,530	6,588	6,648	6,948	7,262	1,178	59
Industrial/Flex (1,000 SF)	5,316	5,370	5,424	5,478	5,532	5,588	5,643	5,700	5,757	5,815	5,873	6,172	6,487	1,171	59
TOTAL	15,595	15,742	15,890	16,038	16,188	16,339	16,493	16,648	16,802	16,960	17,119	17,936	18,793	3,198	160
ANNUAL INCREASES (City Limits)														2013-2033	
	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	27-28	32-33	Avg Annual	
Housing Units	176	177	178	179	180	181	182	184	185	186	186	192	198	187	
Nonres Floor Area (1,000 SF)	147	148	148	150	151	154	155	154	158	160	160	165	175	160	

Source: City of Flagstaff; TischlerBise



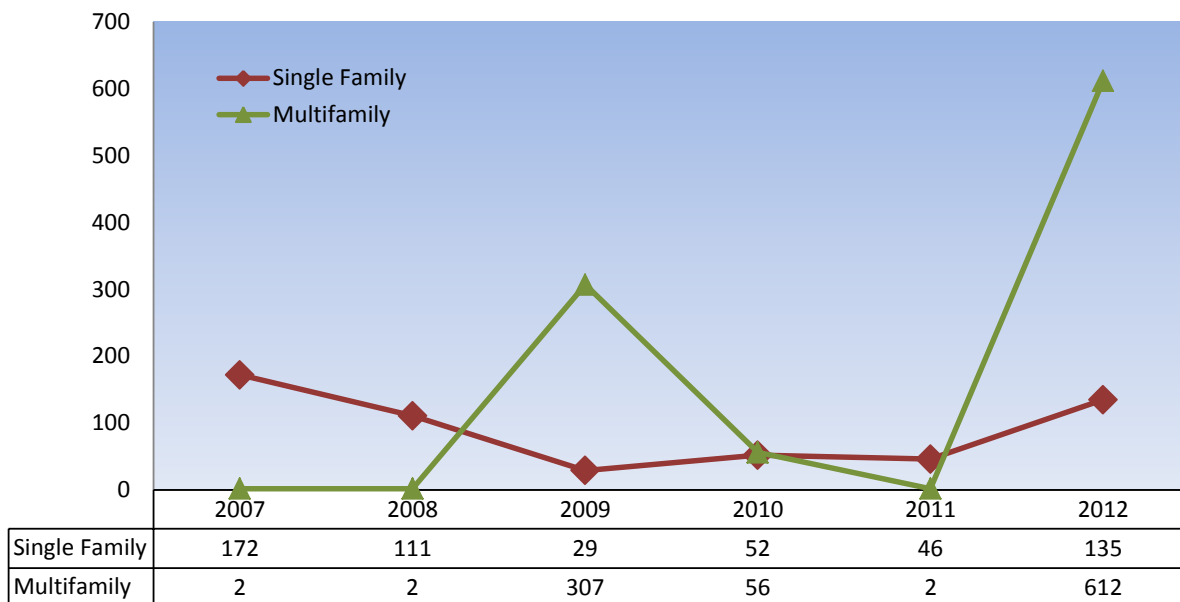
## RESIDENTIAL DEVELOPMENT

Current estimates and future projections of residential development are detailed in this section, including population and housing units by type.

### Current Housing Unit Estimates

Development fees require an analysis of current levels of service. For residential development, current levels of service are determined using estimates of population and housing units. To estimate current housing units in the City of Flagstaff, TischlerBise obtained building permit information from the City. This information is then used to determine a base year estimate of housing units. Figure C46 shows residential building permit trends by number and type of housing unit for the City of Flagstaff.

**Figure C46: Residential Building Permits in the City of Flagstaff, 2007-2012**



Source: City of Flagstaff

Residential housing units, and building permit trends, by type are shown in Figure C47 below. To calculate total housing units, the distribution of 63 percent single family and 37 percent multifamily units in the City was calculated from the 2011 U.S. Census American Community Survey (ACS), 1-Year Estimates for *Units in Structure*. This distribution was applied to the total number of units reported by the 2010 decennial census to get 16,600 single family units, and 9,654 multifamily units in the City of Flagstaff in 2010.

Figure C47: Residential Housing Units in the City of Flagstaff

<b>Building Permits [1]</b>		<b>2010*</b>	<b>2011*</b>	<b>2012*</b>	<b>Total</b>	<b>Average</b>
Single Family [2]		52	46	135	233	78
Multifamily [3]		56	2	612	670	223
Total		108	48	747	903	
<i>*Issued during calendar year</i>						
		<b>Base Year</b>				<b>2013</b>
<b>Housing Units [4]</b>		<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>Distribution<sup>^</sup></b>
Single Family	63%	16,600	16,652	16,698	16,833	62%
Multifamily	37%	9,654	9,710	9,712	10,324	38%
Total		26,254	26,362	26,410	27,157	
<i><sup>^</sup> Reflects the addition of issued permits</i>						

- [1] City of Flagstaff Community Development Department, Monthly Construction Permits  
 [2] Single Family includes detached, attached, and mobile homes  
 [3] Multifamily includes structures with 2 or more units  
 [4] U.S. Census Bureau, 2010 Decennial Census: DP1  
 [5] U.S. Census Bureau, 2011 American Community Survey 1-Year Estimates: Table B25024

To estimate 2011, 2012, and 2013 housing units, the building permits issued each year were added to the housing units, starting with the 2010 census count. TischlerBise estimates the City of Flagstaff had 27,157 housing units at the start of base year 2013. The addition of 612 multifamily units in 2012 changed the 2013 distribution of housing units by type to 62 percent single family and 38 percent multifamily.

### Current Household Size and Peak Population

According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. Development fees often use per capita standards and persons per housing unit (PPHU) or persons per household (PPH) to derive proportionate share fee amounts. When PPHU is used in the fee calculations, infrastructure standards are derived using year-round population. When PPH is used in the fee calculations, the development fee methodology assumes a higher percentage of housing units will be occupied, thus requiring seasonal or peak population to be used when deriving infrastructure standards. TischlerBise recommends that development fees for residential development in the City of Flagstaff be imposed according to the number of persons per household. This methodology recognizes the impacts of seasonal population peaks.

Persons per household requires data on population in occupied units and the types of units by structure. The 2010 decennial census did not obtain detailed information using a “long-form” questionnaire. Instead, the U.S. Census Bureau switched to a continuous monthly mailing of surveys, known as the American Community Survey (ACS), which has limitations due to sample-size constraints. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses). For development fees in Flagstaff, “single family” residential units include detached (both stick-built and manufactured) and attached (commonly known as townhouses, which share a common sidewall, but are constructed on an individual parcel of land). The second residential category includes duplexes and all other structures with two or more units on an individual parcel of land. (Note: housing unit estimates from the ACS will not equal decennial census counts of units. These data are used only to derive the custom PPH factors for each type of unit).

Figure C48 below shows the ACS 2011 1-Year Estimates for the City of Flagstaff. To calculate the PPH, persons (57,726) is divided by households (21,534). Dwellings with a single unit per structure (detached, attached, and mobile homes) averaged 2.75 persons per household. Dwellings in structures with multiple units averaged 2.57 PPH. The 2011 City of Flagstaff total PPH was 2.68.

**Figure C48: Persons per Household by Type of Housing**

Units in Structure	Renter & Owner		Persons per Household	Housing Units	Persons Per Hsg Unit	Vacancy Rate
	Persons	HsehlDs				
Single Family	32,735	11,891	2.75	14,879	2.20	20%
Mobile Homes	4,358	1,601	2.72	1,703	2.56	6%
2+ Units	20,633	8,042	2.57	9,643	2.14	17%
Total	57,726	21,534	2.68	26,225		
				Vacant/Seasonal HU	4,691	

2011 Summary by Type of Housing	Persons	House- holds	PPH	Housing Units	PPHU	Housing Mix
Single Family [1]	37,093	13,492	2.75	16,582	2.24	63%
Multifamily [2]	20,633	8,042	2.57	9,643	2.14	37%
Subtotal	57,726	21,534	2.68	26,225	2.20	Vacancy
Group Quarters	8,178					Rate
TOTAL	65,904	21,534		26,225		17.9%

Source: U.S. Census Bureau, 2011 American Community Survey 1-Year Estimates

[1] Single Family includes detached, attached, and mobile homes

[2] Multifamily includes duplex and all other units with 2 or more units per structure

### Peak Population Estimate

The first step in estimating a base year peak population is to calculate a *peak occupancy rate* using ACS estimates of housing units by occupancy. The *peak occupancy rate* is used to determine the number of *peak households* (occupied housing units during seasonal/peak periods). Occupied and vacant housing unit estimates, shown in Figure C49, are from the 2011 ACS 1-Year Estimates, which is the most recent information available for the City. Due to data availability, the share of vacant units counted as “vacant units for seasonal, recreational, or occasional use” is from the ACS 3-Year Estimates, and was used to estimate the percentage of 2011 vacant units that were occupied by seasonal population. Based on the ACS 3-Year Estimates, 51 percent (2,398) of the estimated 4,691 vacant units are seasonally populated. Peak households (23,932) is the sum of year-round occupied households (21,534) and seasonally populated units (2,398). The 2011 Peak Occupancy Rate of 91 percent is the relationship of peak households (23,932) to total housing units (21,534 occupied plus 4,691 vacant). Using peak households reduces the vacancy rate from a year-round rate of 17.9 percent to a seasonal rate of 8.7 percent.

**Figure C49: Household Occupancy Rates for City of Flagstaff**

2011 Peak Households Estimate	Housing Units			Peak Households		Peak Occ. Rate
	Occupied	Vacant	Seasonal*	Count	Share	
Single Family	11,891	2,988	1,535	13,426	56%	90%
Mobile Homes	1,601	102	48	1,649	7%	97%
2+ Units	8,042	1,601	815	8,857	37%	92%
Total	21,534	4,691	2,398	23,932	100%	91%

Source: U.S. Census Bureau, 2011 American Community Survey 1-Year Estimates

\*Seasonal share of vacant units estimated from U.S. Census Bureau, 2011 ACS 3-Year Estimates

Next in the process to estimate a base year peak population is to apply the peak occupancy rates by unit type to the 2010-2012 residential building permit data from Figure C46 above to determine how many peak households have been added since the 2010 decennial census count. According to the 2011 ACS 1-Year Estimates, occupied single family units are 63 percent of the City's households. The distribution is applied to the 2010 decennial census count of peak households (i.e., 91% of total housing units) to calculate an estimate of 14,969 single family households and 8,922 multifamily households. The annual units added are adjusted by the peak occupancy rates calculated in Figure C49 above, and then added to the 2010 estimate to determine the 2013 peak households by type. See Figure C50 for additional detail.

**Figure C50: Peak Households**

2010 Peak Households Estimate	Peak		Peak Households Added Annually [2]			2013 Peak Households
	Households [1]	Occupancy	2010	2011	2012	
Single Family	14,969	91%	47	42	123	15,181
Multifamily	8,922	92%	52	2	563	9,539
Total	23,891	91%	99	44	686	24,720

[1] U.S. Census Bureau, 2010 Decennial Census

[2] City of Flagstaff Community Development Department, Monthly Construction Permits

The last step in calculating a base year peak population for the City of Flagstaff is to apply the persons per household by housing type (see Figure C48) to the base year peak households by housing type (see Figure C50). The final 2013 peak population estimate for City of Flagstaff is the population in single family and multifamily households (66,267) plus the estimated 2013 population living in *group quarters*, which includes Northern Arizona University student housing. As part of the 2012 Regional Plan Update, The City of Flagstaff used 2010 decennial census as the base year figures from which to calculate a projected annual *group quarters* population growth rate of 2.41 percent (assuming the high population growth scenario used for other demographic and housing projections). As shown in Figure C51, the 2013 *group quarters* population estimate of 8,674 is added to the peak households population estimate of 66,267 to determine a base year 2013 peak population of 74,941 persons in the City of Flagstaff.

Figure C51: Peak Population Estimate

2013 Peak Households Estimate	Persons Per Household [1]	Peak	
		Households	Population
Single Family	2.75	15,181	41,736
Multifamily	2.57	9,539	24,474
Total	2.68	24,720	66,267
		Group Quarters [2]	8,674
		Total Base Year Peak Population	74,941

[1] Shown as rounded numbers

[2] City of Flagstaff 2012 Regional Plan Update,  
high population growth scenario

## Peak Population and Housing Unit Projections

TischlerBise analyzed recent growth trends, reviewed the City of Flagstaff 2012 Regional Plan Update data, and had discussions with staff. Based on the high population growth scenario and 2010 decennial census counts, the City of Flagstaff projects a 2030 housing unit estimate of 30,300 units, which equates to an annual growth rate of 0.72 percent. TischlerBise adjusted the annual growth rate to reflect the 2013 base year housing unit estimate of 27,157. The adjusted growth rate of 0.65 percent was used to calculate an estimate of housing units for each year past 2013. Housing units were divided into single family and multifamily unit estimates as described above, and then peak occupancy rates and persons per household factors were applied to the annual housing units added to calculate annual additional peak population in households. See Figure C52 for a summary of the projections.

Included in the City of Flagstaff 2012 Regional Plan Update demographic projections was the assumption that the *group quarters* population within the City (and including Northern Arizona University student housing) would grow at an annual rate of 2.41 percent, to reach a 2030 projected total of 13,000 persons. The annual growth rate was applied to the 2010 decennial census *group quarters* population count of 8,076 to estimate a *group quarters* population for each year beyond 2010. See Figure C52 for a summary of the projections.

Figure C52: Peak Population and Housing Unit Projections

	Decennial Census [1]	Estimates [2]				Projection [3]		Exponential Growth Rates	
	2010	2011	2012	2013	2018	2023	2030	2010-30	2013-30
Housing Units	26,254	26,362	26,410	27,157	28,047	28,965	30,300	0.72%	0.65%
Peak Population in Households [4]			64,428	66,267	69,788	72,021	75,271		0.75%
Group Quarters	8,076	8,271	8,470	8,674	9,770	11,005	13,000	2.41%	2.41%
Peak Population [4]			72,898	74,941	79,558	83,025	88,271		0.97%

[1] U.S. Census Bureau, 2010 Decennial Census

[2] Estimates calculated using the 2010-2030 Exponential Growth Rate

[3] 2030 projections from City of Flagstaff 2012 Regional Plan Update, high population growth scenario

[4] TischlerBise

Annual population projections for the City of Flagstaff are the sum of the peak population in households and the group quarter population. The 2013 base year estimate of 74,941 and the 2030 peak population projection of 88,271 persons were used to calculate an exponential growth rate of 0.97 percent for the City of Flagstaff peak population.

### Year-Round Population Estimates and Projections

The City of Flagstaff used U.S. Census Bureau 2010 decennial census data as the foundation for the City's 2012 Regional Plan Update. Arizona Department of Administration data from December of 2012 was used to calculate 2012 base year estimates. Intercensal population estimates produced by the Arizona Department of Administration demonstrate an average annual growth rate for the City of Flagstaff that has slowed from a 2007 peak of 3.3 percent and a 2010 peak of 2.2 percent. While the City of Flagstaff does not expect to return to past growth rates, it does expect annual growth well into the future, and that the City will host a growing share of the Coconino County population. Population projections calculated from the decennial census assume a sustained annual growth rate of 1.06 percent and a 2030 population of 81,300.

To calculate a 2013 year-round population, TischlerBise used annual Arizona Department of Administration Interim Intercensal July Population Estimates for 2010, 2011, and 2012. Next, the annual exponential growth rate of 1.06 percent was calculated from the 2010 and 2030 populations used by City of Flagstaff for the high growth scenario. According to the high growth scenario assumptions, the 2013 City of Flagstaff population is 67,024. The annual exponential growth rate of 1.14 percent was calculated from the 2013 population estimate and the 2030 projection, and then applied to each projection year past 2013 to match the City of Flagstaff projected 2030 population of 81,300. Figure C53 presents a summary of the population projections for the City of Flagstaff and Coconino County.

**Figure C53: Population Estimates and Projections for City of Flagstaff**

	April Census [1]	Annual July Population Estimates [2]				Population Projections [3]			Exponential Growth Rates	
	2010	2010	2011	2012	2013	2018	2023	2030	2010-30	2013-30
City of Flagstaff	65,870	65,985	66,013	66,322	67,024	70,941	75,086	81,300	1.06%	1.14%
Coconino County	134,421	134,679	134,162	134,313	135,394	141,632	148,157	157,800	0.80%	0.90%
City Share	49.0%	49.0%	49.2%	49.4%	49.5%	50.1%	50.7%	51.5%		

[1] U.S. Census Bureau, 2010 Decennial Census

[2] Arizona Department of Administration, Interim Intercensal Population Estimates

[3] 2030 population projection from City of Flagstaff 2012 Regional Plan Update, high population growth scenario

Year-round population estimates and projections are presented here to demonstrate the difference in growth patterns for the year-round (1.14%) and peak populations (0.97%) of the City.

### Population and Residential Development Summary

Peak Population and housing unit projections are used to illustrate the possible future pace of service demands, revenues, and expenditures. As these factors will vary to the extent that future development varies, there will be virtually no effect on the actual amount of the development fee. See Figure C54 below for a summary of population and housing unit projections.

Figure C54: Population and Housing Unit Projections in the City of Flagstaff, 2013-2033

	Five-Year Increments ==>													Cumulative Increase	Avg. Ann. Increase
	Base Yr 2013	1 2014	2 2015	3 2016	4 2017	5 2018	6 2019	7 2020	8 2021	9 2022	10 2023	15 2028	20 2033	2013-2033	2013-2033
SUMMARY OF DEMAND PROJECTIONS (City Limits)															
TOTAL PEAK POPULATION	74,941	76,931	77,576	78,228	78,889	79,558	80,234	80,918	81,611	82,314	83,025	86,723	90,670	15,729	786
TOTAL HOUSING UNITS	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
RESIDENTIAL DEVELOPMENT															
Housing Units															
Single Family	16,833	16,942	17,052	17,162	17,273	17,385	17,497	17,610	17,724	17,839	17,954	18,542	19,148	2,315	116
Multifamily	10,324	10,391	10,458	10,526	10,594	10,662	10,731	10,800	10,870	10,940	11,011	11,371	11,743	1,419	71
TOTAL	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
														2013-2033	
ANNUAL INCREASES (City Limits)															
	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	27-28	32-33	Avg Annual	
Peak Population		1,990	645	652	661	669	676	684	693	703	711	759	810	786	
Housing Units		176	177	178	179	180	181	182	184	185	186	192	198	187	

Source: City of Flagstaff; TischlerBise



## NONRESIDENTIAL DEVELOPMENT

### Employment Estimates and Projections

In addition to data on residential development, the calculation of development fees requires data on nonresidential square footage and employment (number of jobs) in the City of Flagstaff.

TischlerBise analyzed recent employment trends, reviewed data provided by the City of Flagstaff, and had discussions with staff. According to the analysis conducted by the City of Flagstaff, the City historically hosts between 60 and 65 percent of all Coconino County employment. The City expects this trend to continue well into the future. See Figure C55 below for additional information on County and City employment trends. According to the City of Flagstaff, 2010 employment in the City was approximately 37,100. The city projects 2030 employment will reach 44,600, based on the high population growth scenario used for the 2012 Regional Plan Update. TischlerBise used 2010 and 2030 data to calculate an exponential employment growth rate of 0.92 percent for the City and 0.69 percent for the County. Employment estimates and projections between 2010 and 2030 were calculated with exponential growth rates. TischlerBise estimates the City of Flagstaff had 38,139 jobs for the base year of 2013.

**Figure C55: Employment Trends in Coconino County and City of Flagstaff**

	City of Flagstaff Estimates [1]			Employment Estimates			Employment Projections [2]			Exponential Growth Rates	
	2000	2004	2010	2011	2012	2013	2018	2023	2030	2010-30	2013-30
City of Flagstaff	38,400	39,244	37,100	37,443	37,789	38,139	39,935	41,816	44,600	0.92%	0.92%
Coconino County	58,400	62,200	61,100	61,523	61,948	62,377	64,565	66,829	70,133	0.69%	0.69%
City Share	65.8%	63.1%	60.7%	60.9%	61.0%	61.1%	61.9%	62.6%	63.6%		

[1] City of Flagstaff 2012 Regional Plan Update; based on the 2010 employment estimate from U.S. Census Bureau LEHD web-based application OnTheMap, "all jobs" plus 5% assumed undercount

[2] 2030 projections from City of Flagstaff 2012 Regional Plan Update, high population growth scenario

### Employment by Industry Type

In addition to projecting total employment, as part of the City of Flagstaff 2012 Regional Plan Update process, the City analyzed employment trends and set economic development priorities for the future. City staff made three assumptions to project employment distribution into the future. First, total employment assumes the high population growth scenario used for the 2012 Regional Plan Update. Second, as the County seat, the region will have a high percentage of government office jobs. Third, Industrial/Flex jobs will grow at a faster rate (1.00%) than Commercial/Retail jobs (0.93%) and Office/Institutional jobs (0.89%). Between 2010 and 2030, the City of Flagstaff expects to add 7,500 jobs. Figure C56 shows the incremental growth in employment by industry type.

Figure C56: Employment Distribution by Industry Type

	City of Flagstaff Estimates [1]		Base Year Employment Estimates [2]		Industry Employment Projection [3]	
	2010	2010 Share	2013	2013 Share	2030	Growth Rate
Commercial/Retail	8,162	22%	8,390	22%	9,812	0.93%
Office/Institutional	19,663	53%	20,214	53%	23,496	0.89%
Industrial/Flex	9,275	25%	9,535	25%	11,292	1.00%
<b>TOTAL</b>	<b>37,100</b>	<b>100%</b>	<b>38,139</b>	<b>100%</b>	<b>44,600</b>	<b>0.92%</b>

[1] City of Flagstaff, 2012 Regional Plan Update, high population growth scenario

[2] TischlerBise, based on 2010 distribution from the City of Flagstaff

[3] Due to development activity since the 2012 Regional Plan Update process,  
the projected industry employment figures deviate from previous assumptions

## NONRESIDENTIAL SQUARE FOOTAGE DEVELOPMENT

Job estimates are used to estimate nonresidential square footage based on nationally recognized average square feet per employee data published by The Institute of Transportation Engineers (ITE), and shown in Figure C57.

Figure C57: The Institute of Transportation Engineers, Employee and Building Area Ratios, 2012

ITE Code	Land Use / Size	Demand Unit	Weekday Trip Ends per Demand Unit*	Emp Per Employee*	Emp Per Dmd Unit**	Sq Ft Per Emp
<b>Commercial / Shopping Center</b>						
820	Average	1,000 Sq Ft	42.70	na	2.00	500
<b>General Office</b>						
710	Average	1,000 Sq Ft	11.03	3.32	3.32	301
<b>Other Nonresidential</b>						
770	Business Park***	1,000 Sq Ft	12.44	4.04	3.08	325
760	Research & Dev Center	1,000 Sq Ft	8.11	2.77	2.93	342
610	Hospital	1,000 Sq Ft	13.22	4.50	2.94	340
565	Day Care	student	4.38	26.73	0.16	na
550	University/College	student	1.71	8.96	0.19	na
530	High School	student	1.71	19.74	0.09	na
520	Elementary School	student	1.29	15.71	0.08	na
520	Elementary School	1,000 Sq Ft	15.43	15.71	0.98	1,018
320	Lodging	room	5.63	12.81	0.44	na
254	Assisted Living	bed	2.66	3.93	0.68	na
151	Mini-Warehouse	1,000 Sq Ft	2.50	61.90	0.04	24,760
150	Warehousing	1,000 Sq Ft	3.56	3.89	0.92	1,093
140	Manufacturing	1,000 Sq Ft	3.82	2.13	1.79	558
110	Light Industrial	1,000 Sq Ft	6.97	3.02	2.31	433

\* Trip Generation, Institute of Transportation Engineers, 9th Edition (2012).

\*\* Employees per demand unit calculated from trip rates, except for Shopping Center data, which are derived from Development Handbook and Dollars and Cents of Shopping Centers, published by the Urban Land Institute.

TischlerBise used 2012 factors from the ITE to calculate the total nonresidential floor area for three categories of development used for the calculation of development fees. To estimate current nonresidential floor area, 2013 job estimates by category were multiplied by ITE square feet per employee factors. It is estimated the City of Flagstaff has approximately 16 million square feet of nonresidential space in active use. The estimated square footage in 2013 for each major category of nonresidential development is shown below in Figure C58.

**Figure C58: Estimated Employment and Nonresidential Floor Area in City of Flagstaff, 2013**

	<i>2013 Estimated Jobs</i>	<i>Square Feet Per Employee [1]</i>	<i>2013 Nonresidential Floor Area</i>	
			<i>Square Feet</i>	<i>Distribution</i>
Commercial/Retail	8,390	500	4,195,000	27%
Office/Institutional	20,214	301	6,084,359	39%
Industrial/Flex	9,535	558	5,316,636	34%
<b>TOTAL</b>	<b>38,139</b>	<b>409</b>	<b>15,595,995</b>	<b>100%</b>

[1] Trip Generation Manual, Institute of Transportation Engineers  
9th Edition (2012). Shown as rounded numbers.

### Nonresidential Floor Area and Employment Projections

Future employment growth and nonresidential development in the City of Flagstaff are projected based on information provided by City staff, and TischlerBise's analysis of past trends in the City. To project employment for the City, TischlerBise applied the industry-specific growth rates for each year beyond the base year 2013 estimates by industry category.

The projected increase in employment by industry type is then used to project growth in nonresidential square footage using the *Employee per Square Footage* data previously discussed. Results are shown in Figure C59. The City expects to add on average 386 jobs a year for the next twenty years. To keep pace with employment growth, the City should expect to add roughly 160,000 square feet of nonresidential development each year.

Figure C59: Nonresidential Floor Area and Employment Projections in City of Flagstaff, 2013-2033

	Five-Year Increments ==>													Cumulative Increase 2013-2033	Avg. Ann. Increase 2013-2033	
	Base Yr 2013	1 2014	2 2015	3 2016	4 2017	5 2018	6 2019	7 2020	8 2021	9 2022	10 2023	15 2028	20 2033			
SUMMARY OF DEMAND PROJECTIONS (City Limits)																
TOTAL JOBS	38,139	38,492	38,848	39,207	39,569	39,935	40,304	40,678	41,053	41,433	41,816	43,786	45,849	7,710	386	
NONRESIDENTIAL DEVELOPMENT																
Employment By Type																
Commercial/Retail	8,390	8,468	8,546	8,625	8,705	8,785	8,867	8,949	9,031	9,115	9,199	9,633	10,087	1,697	85	
Office/Institutional	20,214	20,394	20,575	20,758	20,942	21,129	21,316	21,506	21,697	21,890	22,085	23,084	24,128	3,914	196	
Industrial/Flex	9,535	9,630	9,727	9,824	9,922	10,021	10,121	10,223	10,325	10,428	10,532	11,069	11,634	2,099	105	
TOTAL	38,139	38,492	38,848	39,207	39,569	39,935	40,304	40,678	41,053	41,433	41,816	43,786	45,849	7,710	386	
Nonres Floor Area (1,000 SF)																
Commercial (1,000 SF)	4,195	4,234	4,273	4,313	4,353	4,393	4,434	4,474	4,515	4,557	4,599	4,816	5,044	849	42	
Office/Instit (1,000 SF)	6,084	6,139	6,193	6,248	6,303	6,359	6,416	6,473	6,530	6,588	6,648	6,948	7,262	1,178	59	
Industrial/Flex (1,000 SF)	5,316	5,370	5,424	5,478	5,532	5,588	5,643	5,700	5,757	5,815	5,873	6,172	6,487	1,171	59	
TOTAL	15,595	15,742	15,890	16,038	16,188	16,339	16,493	16,648	16,802	16,960	17,119	17,936	18,793	3,198	160	
ANNUAL INCREASES (City Limits)															2013-2033	
	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	27-28	32-33	Avg Annual		
Jobs		353	356	359	362	366	369	374	375	380	383	401	420	386		
Nonres Floor Area (1,000 SF)		147	148	148	150	151	154	155	154	158	160	165	175	160		

Source: City of Flagstaff; TischlerBise

## AVERAGE DAILY VEHICLE TRIPS

Nonresidential average Daily Vehicle Trips are used for the Public Safety development fee category as a measure of demand by land use. Vehicle trips are estimated using average weekday vehicle trip ends from the reference book, *Trip Generation, 9<sup>th</sup> Edition*, published by the Institute of Transportation Engineers (ITE) in 2012. A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway).

### Trip Rate Adjustments

Trip generation rates are adjusted to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor of 50 percent is applied to the office/institutional, and industrial/flex categories. The commercial/retail category has a trip factor of less than 50 percent because this type of development attracts vehicles as they pass-by on arterial and collector roads. For an average size shopping center, the ITE (2012) indicates that on average 34 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66 percent of attraction trips have the shopping center as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor of 66 percent is multiplied by 50 percent to calculate a trip adjustment factor for commercial land use of 33 percent.

### Estimated Vehicle Trips in Flagstaff

Trip adjustment factors are used in conjunction with average weekday vehicle trip ends provided by ITE (2012) to calculate average vehicle trips in the City of Flagstaff based on existing development. Figure C60 details the calculations to determine that existing nonresidential development in the City generates an average of 102,819 vehicle trips on an average weekday. An example of the calculation is as follows for commercial land uses: 4,195 x 42.70 vehicle trips per day per 1,000 square feet x 33 percent adjustment factor = 59,112 total vehicle trips per day from commercial development in the City. The same calculation is done for each land use type.

Figure C60: Average Daily Trips from Existing Development in City of Flagstaff

Base Year	
2013	
<b>Nonresidential Vehicle Trips on an Average Weekday**</b>	
<b>Nonresidential Gross Floor Area (1,000 sq. ft.)</b>	
Commercial/Retail	4,195
Office/Institutional	6,084
Industrial/Flex	5,316
<b>Average Weekday Vehicle Trips Ends per 1,000 Sq. Ft.**</b>	
	<i>Trip Rate</i>
Commercial	42.70
Office/Institutional	11.03
Industrial/Flex	3.82
<b>Nonresidential Vehicle Trips on an Average Weekday</b>	
Commercial	59,112
Office/Institutional	33,553
Industrial/Flex	10,154
<b>Total Nonresidential Trips</b>	<b>102,819</b>

\*\*Trip rates are from the Institute of Transportation Engineers. (2012). *Trip Generation Manual 9th Edition*

## DEMAND INDICATORS BY SIZE OF DETACHED HOUSING

As part of the development fee effort for the City of Flagstaff, TischlerBise further analyzed demographic data to present the option to refine the development fee schedule to be more progressive for residential development. This can be done by developing fees by size of housing unit based on bedroom count. Household size can be derived using custom tabulations of demographic data by bedroom range from survey responses provided by the U.S. Census Bureau in files known as Public Use Micro-data Samples (PUMS). Because PUMS data are only available for areas of roughly 100,000 persons, the City of Flagstaff is in Arizona Public Use Micro-data Area (PUMA) 0400. Data is first analyzed for the PUMA area and then calibrated to conditions in the City of Flagstaff.

TischlerBise used 2011 ACS 1-Year Estimates to derive persons per household by number of bedrooms. As shown in Figure C61, TischlerBise derived trip generation rates and average persons, by bedroom range, using the number of persons. Recommended multipliers were scaled to make the average value by type of housing for Arizona PUMA 0400 match the average value derived from ACS data specific to Flagstaff. As the number of bedrooms increases so do the persons per household.

**Figure C61: Average Persons per Household by Bedroom Range in City of Flagstaff**

	AZ PUMA 0400 [1]		Recommended Multipliers for Municipality [2]
	Households	Persons	Persons per Household
Single Family 0-3 Bdrms	457	1,258	2.62
Single Family 4+ Bdrms	109	376	3.29
<i>Single Family Subtotal</i>	<i>566</i>	<i>1,634</i>	<i>2.75</i>
Multi family Total	102	220	2.57
AZ PUMA 0400 TOTAL	668	1,854	

[1] American Community Survey, Public Use Microdata Sample for AZ PUMA 0400 (unweighted data for 2011).

[2] Recommended multipliers are scaled to make the average value by type of housing for AZ PUMA 0400 match the average value for Flagstaff, derived from American Community Survey 2011 data, with persons adjusted to the Citywide average of 2.75 persons per single family household.

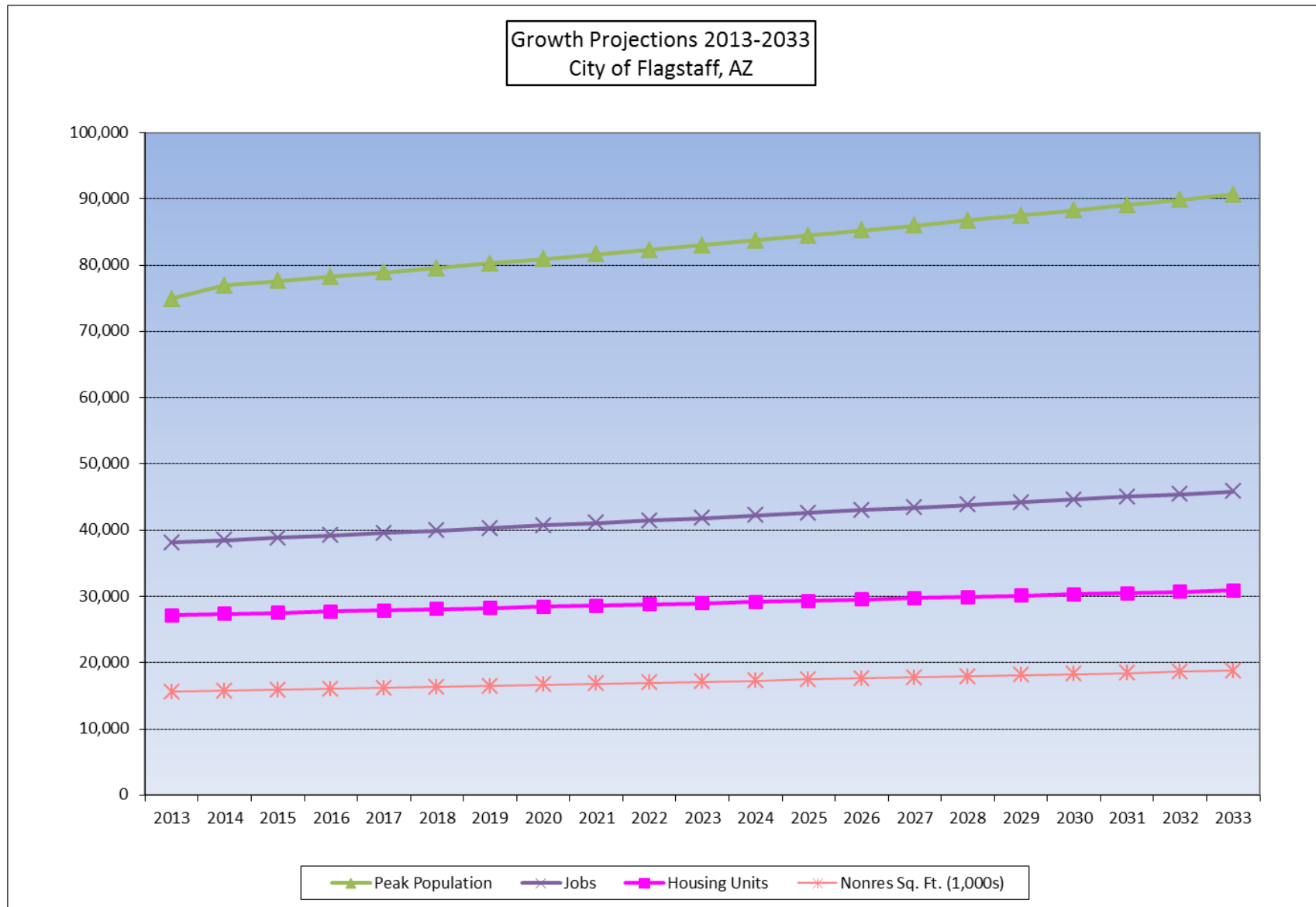
## LAND USE ASSUMPTIONS SUMMARY

Provided on the next page is a summary of annual demographic and development projections to be used for the development fee study. Base year estimates for 2013 are used in the development fee calculations. Development projections are used to illustrate a possible future pace of service demands and cash flows resulting from revenues and expenditures associated with those service demands.

Figure C62: Summary – City of Flagstaff Land Use Assumptions, 2013-2033

		Five-Year Increments ==>												Cumulative	Avg. Ann.
	Base Yr	1	2	3	4	5	6	7	8	9	10	15	20	Increase	Increase
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2028	2033	2013-2033	2013-2033
SUMMARY OF DEMAND PROJECTIONS (City Limits)															
TOTAL PEAK POPULATION	74,941	76,931	77,576	78,228	78,889	79,558	80,234	80,918	81,611	82,314	83,025	86,723	90,670	15,729	786
TOTAL HOUSING UNITS	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
TOTAL JOBS	38,139	38,492	38,848	39,207	39,569	39,935	40,304	40,678	41,053	41,433	41,816	43,786	45,849	7,710	386
RESIDENTIAL DEVELOPMENT															
Housing Units															
Single Family	16,833	16,942	17,052	17,162	17,273	17,385	17,497	17,610	17,724	17,839	17,954	18,542	19,148	2,315	116
Multifamily	10,324	10,391	10,458	10,526	10,594	10,662	10,731	10,800	10,870	10,940	11,011	11,371	11,743	1,419	71
TOTAL	27,157	27,333	27,510	27,688	27,867	28,047	28,228	28,410	28,594	28,779	28,965	29,913	30,891	3,734	187
NONRESIDENTIAL DEVELOPMENT															
Employment By Type															
Commercial/Retail	8,390	8,468	8,546	8,625	8,705	8,785	8,867	8,949	9,031	9,115	9,199	9,633	10,087	1,697	85
Office/Institutional	20,214	20,394	20,575	20,758	20,942	21,129	21,316	21,506	21,697	21,890	22,085	23,084	24,128	3,914	196
Industrial/Flex	9,535	9,630	9,727	9,824	9,922	10,021	10,121	10,223	10,325	10,428	10,532	11,069	11,634	2,099	105
TOTAL	38,139	38,492	38,848	39,207	39,569	39,935	40,304	40,678	41,053	41,433	41,816	43,786	45,849	7,710	386
Nonres Floor Area (1,000 SF)															
Commercial (1,000 SF)	4,195	4,234	4,273	4,313	4,353	4,393	4,434	4,474	4,515	4,557	4,599	4,816	5,044	849	42
Office/Instit (1,000 SF)	6,084	6,139	6,193	6,248	6,303	6,359	6,416	6,473	6,530	6,588	6,648	6,948	7,262	1,178	59
Industrial/Flex (1,000 SF)	5,316	5,370	5,424	5,478	5,532	5,588	5,643	5,700	5,757	5,815	5,873	6,172	6,487	1,171	59
TOTAL	15,595	15,742	15,890	16,038	16,188	16,339	16,493	16,648	16,802	16,960	17,119	17,936	18,793	3,198	160
Nonresidential Trips															
Commercial (1,000 SF)	59,112	59,661	60,211	60,767	61,331	61,895	62,472	63,043	63,621	64,213	64,805	67,862	71,068	11,956	598
Office/Instit (1,000 SF)	33,553	33,854	34,155	34,458	34,764	35,070	35,385	35,700	36,013	36,333	36,661	38,318	40,052	6,499	325
Industrial/Flex (1,000 SF)	10,154	10,256	10,360	10,463	10,567	10,672	10,779	10,887	10,996	11,106	11,217	11,788	12,390	2,236	112
TOTAL Nonresidential Trips	102,819	103,771	104,726	105,688	106,662	107,637	108,636	109,630	110,630	111,652	112,683	117,968	123,510	20,691	1,035
ANNUAL INCREASES (City Limits)														2013-2033	
Peak Population	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	27-28	32-33	Avg Annual	
Housing Units		176	177	178	179	180	181	182	184	185	186	192	198		
Jobs		353	356	359	362	366	369	374	375	380	383	401	420		
Nonres Floor Area (1,000 SF)		147	148	148	150	151	154	155	154	158	160	165	175		

Source: City of Flagstaff; TischlerBise





**ORDINANCE NO. 2014-10**

**AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF FLAGSTAFF,  
ARIZONA AMENDING THE FLAGSTAFF CITY CODE, TITLE 3, SECTION 3-  
11-007-0001, DEVELOPMENT FEE FOR RESIDENTIAL DEVELOPMENT,  
AND SECTION 3-11-007-0002, DEVELOPMENT FEE FOR NONRESIDENTIAL  
DEVELOPMENT, SEVERABILITY, AUTHORITY FOR CLERICAL  
CORRECTIONS, AND ESTABLISHING AN EFFECTIVE DATE**

**RECITALS:**

WHEREAS, under Arizona Revised Statutes §9-463.05, an Arizona municipality may assess development fees to offset costs associated with providing necessary public services to a development; and

WHEREAS, in 2011 the Arizona State Legislature adopted (and on April 26, 2011 Governor Jan Brewer signed into law) SB 1525, a bill that amended A.R.S. §9-463.05 by changing how fees are calculated and how municipalities may administer said fees; and

WHEREAS, A.R.S. §9-463.05, as amended by SB 1525, requires that any development fees in place when SB 1525 became effective shall be replaced by development fees compliant with SB 1525 no later than August 1, 2014; and

WHEREAS, on December 20, 2011, the City Council adopted Ordinance No. 2011-32, an ordinance that, among other things, revised development fees pursuant to SB 1525; and

WHEREAS, the City has determined that additional revisions pursuant to SB 1525 are necessary.

**ENACTMENTS:**

**NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF FLAGSTAFF  
AS FOLLOWS:**

**SECTION 1. In General.**

The Flagstaff City Code, Title 3, Section 3-11-007-0001, Development Fee For Residential Development, and Section 3-11-007-0002, Development Fee for Nonresidential Development, are hereby amended as set forth below (deletions shown as stricken, and additions shown as underlined text in italics):

Division 3-11-007  
Police and Fire Protection Development Fee

**Sections:**

- 3-11-007 -0001 Development Fee for Residential Development
- 3-11-007-0002 Development Fee for Nonresidential Development

**3-11-007-0001 Development Fee for Residential Development**

<b>Residential (per housing unit)</b>	<b>Police</b>	<b>Fire</b>	<b>TOTAL</b>
<del>Single Family Detached</del>	<del>\$231</del>	<del>\$444</del>	<del>\$675</del>
<del>Multi-Family</del>	<del>\$184</del>	<del>\$352</del>	<del>\$536</del>
<del>All Other Housing</del>	<del>\$223</del>	<del>\$428</del>	<del>\$651</del>
<del><i>Single family residential:</i></del>	<del><i>\$182</i></del>	<del><i>\$366</i></del>	<del><i>\$548</i></del>
<del><i>Multi-family residential:</i></del>	<del><i>\$170</i></del>	<del><i>\$342</i></del>	<del><i>\$512</i></del>

**3-11-007-0002 Development Fee for Nonresidential Development**

<b>Nonresidential (per sq. ft. unless otherwise noted)</b>	<b>Police</b>	<b>Fire</b>	<b>TOTAL</b>
<del>Commercial/Shopping Center 25,000 SF or less</del>	<del>\$0.91</del>	<del>\$1.09</del>	<del>\$2.00</del>
<del>Commercial/Shopping Center 25,001-50,000 SF</del>	<del>\$0.79</del>	<del>\$0.94</del>	<del>\$1.73</del>
<del>Commercial/Shopping Center 50,001-100,000 SF</del>	<del>\$0.66</del>	<del>\$0.79</del>	<del>\$1.45</del>
<del>Commercial/Shopping Center 100,001-200,000 SF</del>	<del>\$0.56</del>	<del>\$0.67</del>	<del>\$1.24</del>
<del>Commercial/Shopping Center over 200,000 SF</del>	<del>\$0.48</del>	<del>\$0.57</del>	<del>\$1.05</del>
<del>Office/Institutional 10,000 SF or less</del>	<del>\$0.33</del>	<del>\$0.40</del>	<del>\$0.73</del>
<del>Office/Institutional 10,001-25,000 SF</del>	<del>\$0.27</del>	<del>\$0.32</del>	<del>\$0.59</del>
<del>Office/Institutional 25,001-50,000 SF</del>	<del>\$0.23</del>	<del>\$0.28</del>	<del>\$0.51</del>
<del>Office/Institutional 50,001-100,000 SF</del>	<del>\$0.20</del>	<del>\$0.23</del>	<del>\$0.43</del>
<del>Office/Institutional over 100,000 SF</del>	<del>\$0.17</del>	<del>\$0.20</del>	<del>\$0.37</del>
<del>Business Park</del>	<del>\$0.19</del>	<del>\$0.22</del>	<del>\$0.41</del>
<del>Light Industrial</del>	<del>\$0.10</del>	<del>\$0.12</del>	<del>\$0.23</del>
<del>Warehousing</del>	<del>\$0.07</del>	<del>\$0.09</del>	<del>\$0.16</del>
<del>Manufacturing</del>	<del>\$0.06</del>	<del>\$0.07</del>	<del>\$0.12</del>
<del>Hotel (per room)</del>	<del>\$83</del>	<del>\$99</del>	<del>\$182</del>

<i>Commercial:</i>	<i>\$0.29</i>	<i>\$0.59</i>	<i>\$0.88</i>
<i>Office:</i>	<i>\$0.11</i>	<i>\$0.23</i>	<i>\$0.34</i>
<i>Industrial Flex:</i>	<i>\$0.03</i>	<i>\$0.08</i>	<i>\$0.11</i>

SECTION 2. Severability.

If any section, subsection, sentence, clause, phrase or portion of this ordinance or any part of the code adopted herein by reference is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions thereof.

SECTION 3. Clerical Corrections.

The City Clerk is hereby authorized to correct typographical and grammatical errors, as well as errors of wording and punctuation, as necessary, related to this ordinance as amended herein, and to make formatting changes needed for purposes of clarity and form, or consistency, within thirty (30) days following adoption by the City Council.

SECTION 4. Effective Date.

This ordinance shall become effective August 1, 2014.

PASSED AND ADOPTED by the City Council and approved by the Mayor of the City of Flagstaff this \_\_\_\_\_ day of \_\_\_\_\_, 2014.

\_\_\_\_\_  
MAYOR

ATTEST:

\_\_\_\_\_  
CITY CLERK

APPROVED AS TO FORM:

\_\_\_\_\_  
CITY ATTORNEY

# Memorandum

4.

## CITY OF FLAGSTAFF

**To:** The Honorable Mayor and Council  
**From:** Stacy Saltzburg, Deputy City Clerk  
**Co-Submitter:** Paul Summerfelt, Wildland Fire Manager  
**Date:** 05/08/2014  
**Meeting Date:** 05/13/2014



---

### TITLE:

**Wildfire Preparedness Update**

### DESIRED OUTCOME:

Informational

### INFORMATION:

Wildland Fire Manager Paul Summerfelt will be providing a PowerPoint Presentation on Wildfire Preparedness. The PowerPoint is attached for your information.

---

**Attachments:** [Wildfire Preparedness Presentation](#)



# WILDFIRE PREPAREDNESS BRIEFING

*May 13, 2014*

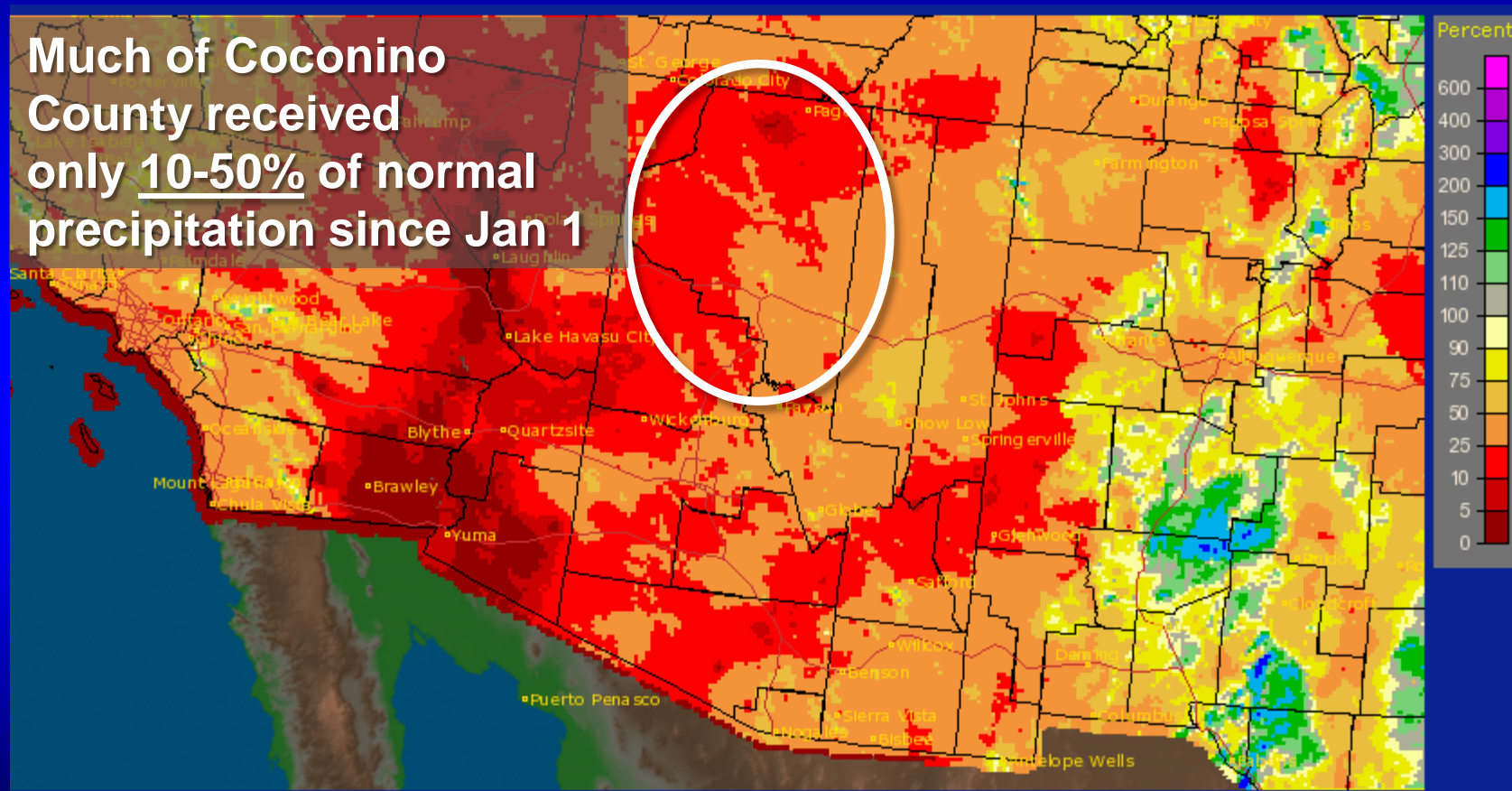
***Paul Summerfelt – FFD  
Frank Higgins – FPD  
Robert Rowley – CCEM  
Don Muise – USFS***



# Percent Normal Precipitation (Since Jan 1)



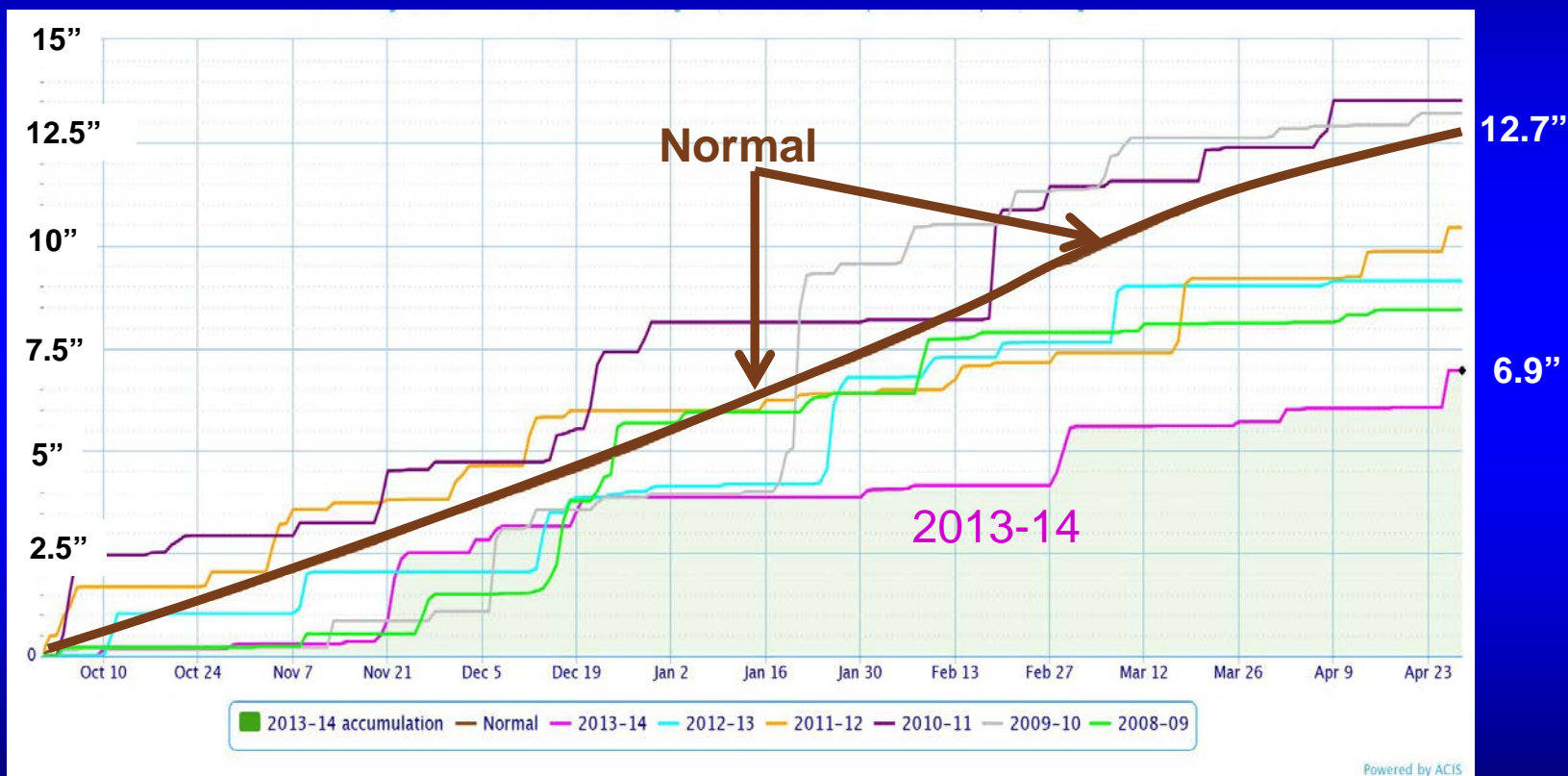
Much of Coconino  
County received  
only 10-50% of normal  
precipitation since Jan 1



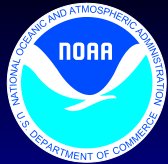


# Accumulated Oct-Mar Precipitation

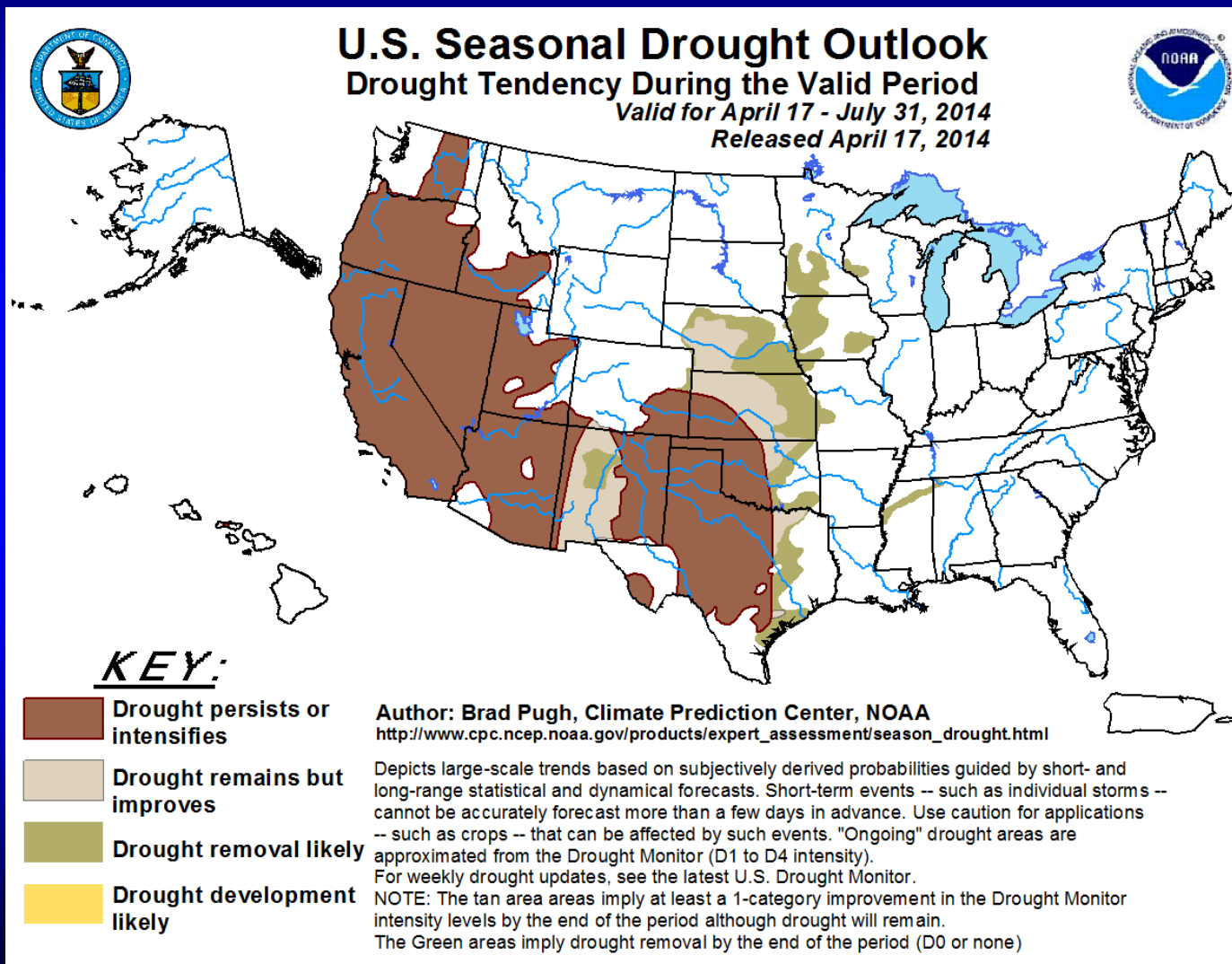
Precip (inches)







# Drought Outlook through July





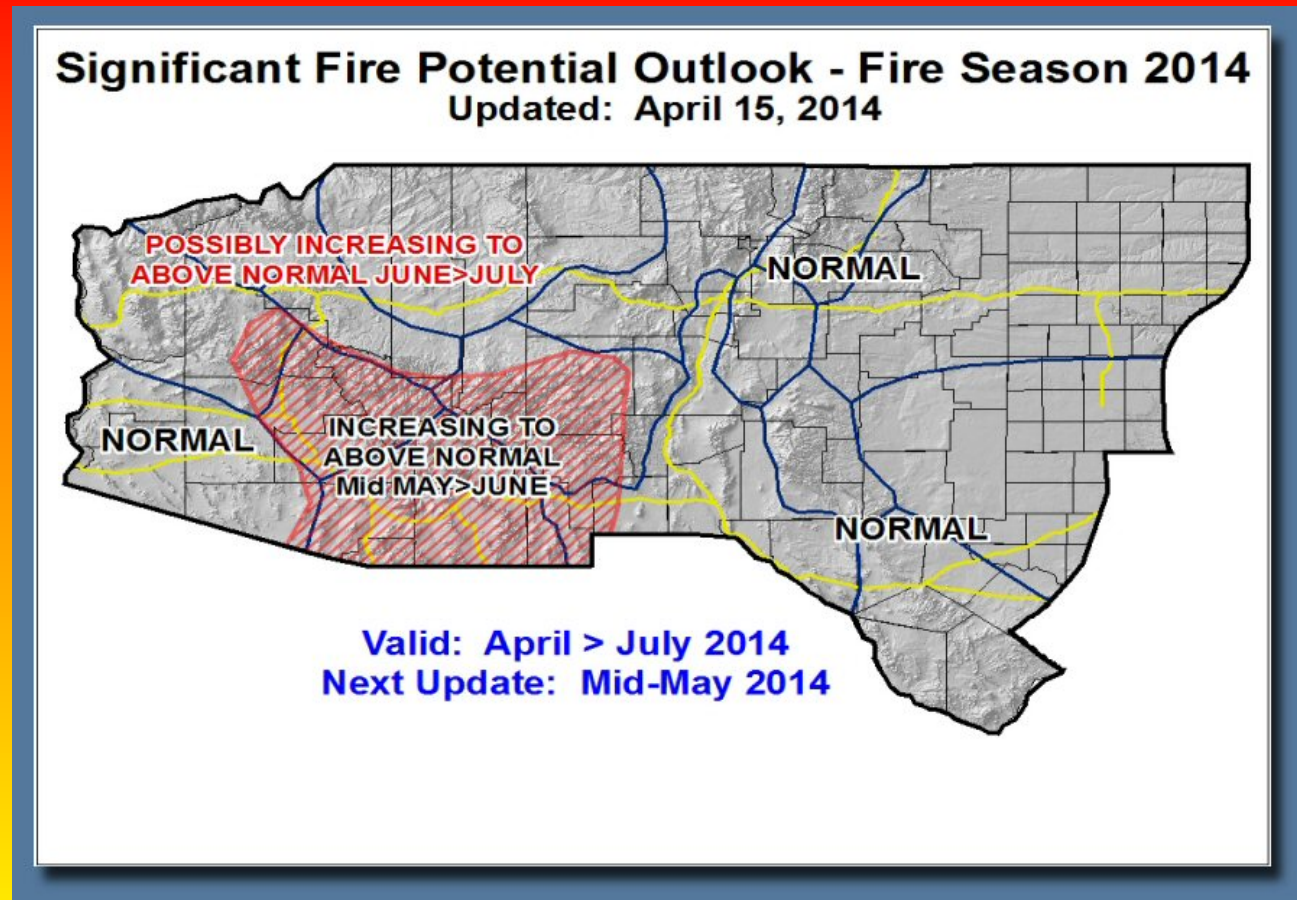


# Coconino County Area Monsoon Outlook

- **Normal conditions (*little precipitation*) expected through June.**
  - Area drought conditions likely to worsen;
  - Enhanced fire danger expected this fire season.
- **Conditions indicate *potential* for early onset – a few days to a week early. Normal ‘start’ is first week in July.**
- **Slightly enhanced chances for wetter than normal (8-13” rainfall, July 1 – Sept 30).**
  - Don’t expect massive rainfall totals we saw last year (15-20”!)
  - Thunderstorm event days tend to ‘cluster’ into periods 2-4 days long.

# 2013 Fire Season Potential

- June – July: Above Normal fire potential for portions of Southwest





# **2014 Focus Areas**

- **Prevention** –

- ***Homeless Shelter presentations & Woods Watch engagement***
- ***Joint patrols w//PD***

- **Preparedness** –

- ***Restrictions & Closure Plan***
- ***Weekly Wildfire Preparedness Update***

## **Fire Restrictions In Effect**



No Fires



No Smoking



No BBQ's  
(Charcoal or Wood)



[www.flagstaff.az.gov](http://www.flagstaff.az.gov)

Per Flagstaff City Code Section 502-0310001 & IFD 307.1.1



# 2014 Focus Areas

- **Preparedness (cont)**

- ***National Firewise Day***

- ***Training:***

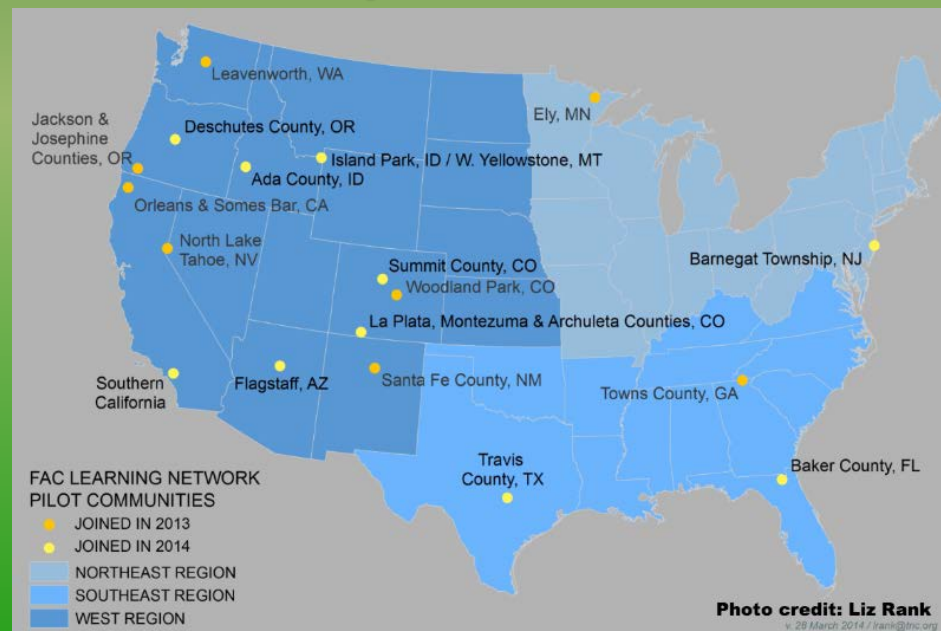
- ***AZ Wildfire Academy***
    - ***Annual Refresher***
    - ***Media Orientation***
    - ***USFS-City-County meeting***
    - ***PFAC Drill***
    - ***Command Exercise***

- **Response:**

- ***Seasonal crew***

- ***Severity response***

## *Fire Adapted Communities*



# COLLABORATION & PARTNERSHIPS



**FLAGSTAFF WATERSHED  
PROTECTION PROJECT**





# Law Enforcement Fire Prevention Patrols

- Proactive patrols typically start in May. This year, the PD began in April.
- Patrols begin when weather becomes more moderate due to a “Necessity” clause in the city camping ordinance.
  - *Fire danger is lower during (most) winter months due to precipitation and the availability of housing for the homeless population through Flagstaff Shelter Services.*



# Law Enforcement Fire Prevention Patrols

## Patrol Efforts

- Approximately 87 man hours spent on proactive patrols in April
- The Justice Assistance Grant is currently being used to pay overtime costs associated with evening flights
  - *1 officer daily for 2 - 3 hours since April 15*
- Night time flights begin in coordination with fire restrictions
  - *Currently flying every night as weather permits*



Evening air patrols conducted  
with CCSO

# Law Enforcement Fire Prevention Patrols

## Woods Watch: *Volunteers*

- The Woods Watch program has begun in cooperation with the Coconino County Sheriff's Office
  - First training was April 11
    - 61 in attendance
  - Second training was April 29
    - 65 in attendance





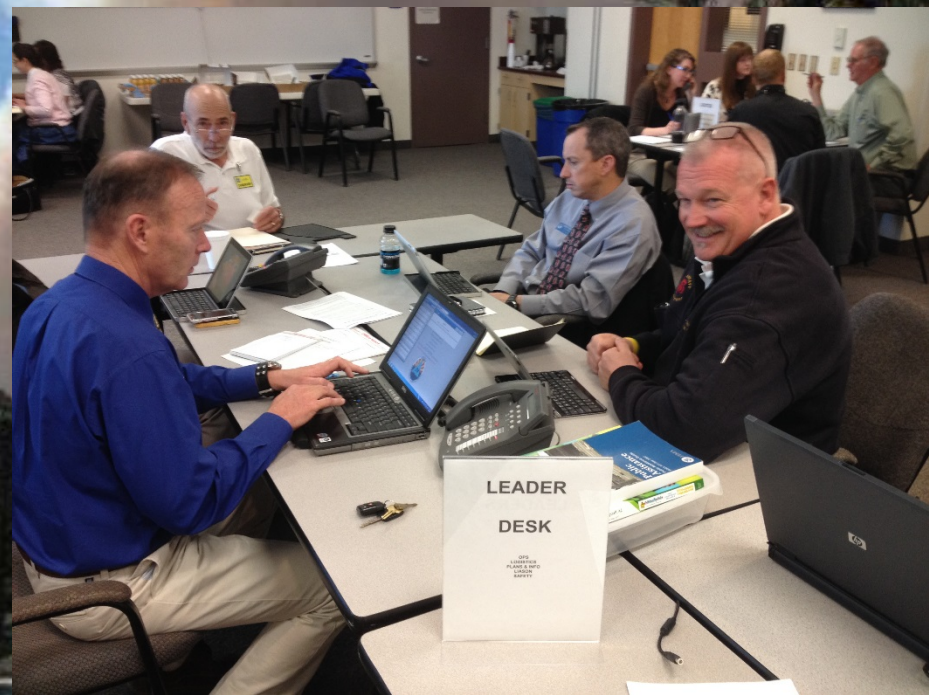
# **Coconino County**

- **ADEM is prepared to assist during major incidents;**
- **Citizens are encouraged to report suspicious smoke through the Woods Watch program;**
- **County fireworks use and sales ban in effect; and**
- **The County is prepared to enact additional restrictions as needed and as USFS upgrades.**



# Coconino County

## City / County EOC Team Exercise April 18<sup>th</sup>, 2014





# Coconino County

## PFAC Full Scale Exercise

- Firefighter training
- Incident Command / Unified Command
- EOC / ICP Interface
- Evacuation Planning and Execution





# Coconino County

**CODE RED<sup>®</sup>**

Keeping citizens informed.

**Our new public alert and warning system  
is now in place and fully operational**

# Coconino NF

## Restoration Efforts

- ▶ Forest Plan Revision
- ▶ Four Forest Restoration Initiative
- ▶ Flagstaff Watershed Protection Project
- ▶ Schultz Flooding Mitigation



# Wildland Fire Dispatch

- ▶ Coconino National Forest
- ▶ Navajo and Hopi
- ▶ Flagstaff and Verde Valley Monuments
- ▶ PFAC and the Greater Flagstaff Area





# Fire Prevention Strategies

- Education
- Patrols
- Severity
- Restrictions
- Closures



# Wildfire Detection

- ▶ Lookout Towers
- ▶ Aerial Detection
- ▶ Public





# Engines and Crews (USFS)

- ▶ Engines (12)
- ▶ Crews (3)
- ▶ Water Tenders (4)
- ▶ Dozers (3)



# Regional Ground Resources

- ▶ 5 Interagency IMT
- ▶ 20 Interagency Hotshot Crews
- ▶ 35 Type 2 Crews
- ▶ 111 Engines
- ▶ Partners
- ▶ National



# National Ground Resources

- ▶ 60 Interagency IMT
- ▶ 100 Interagency Hotshot Crews
- ▶ 10,000 Firefighters
- ▶ 900 Engines
- ▶ Partners
- ▶ International





# Regional Aviation Resources

- ▶ 41 Fixed Wing
- ▶ Multiple Type 1(2), 2(1) and 3(11) helicopters (EU Contract)
- ▶ AZ and NM Air National Guard
- ▶ 12 CWN Helicopters



# National Air Tanker Resources

- ▶ Two Very Large Airtanker VLAT (DC-10)
- ▶ 15 Large Fixed-Winged Airtankers
- ▶ 8 Modular Airborne Fire Fighting Systems (MAFFS)
- ▶ Single Engine Air Tankers



# Questions ?



# Memorandum

5.

## CITY OF FLAGSTAFF



**To:** The Honorable Mayor and Council  
**From:** Stacy Saltzburg, Deputy City Clerk  
**Co-Submitter:** Don Jacobson, Court Administrator  
**Date:** 05/09/2014  
**Meeting Date:** 05/13/2014

---

### **TITLE:**

**Update on Veterans Court**

### **DESIRED OUTCOME:**

Informational

### **INFORMATION:**

Judge Tom Chotena will be providing a PowerPoint Presentation on an update of the Veterans Court.

### *Need*

Most veterans are strengthened by their military service, but the combat experience has unfortunately left a growing number of veterans with Post-Traumatic Stress Disorder and Traumatic Brain Injury. One in five veterans has symptoms of a mental health disorder or cognitive impairment. One in six veterans who served in Operation Enduring Freedom and Operation Iraqi Freedom suffer from a substance abuse issue. Research continues to draw a link between substance abuse and combat-related mental illness.

Left untreated, mental health disorders common among veterans can directly lead to involvement in the criminal justice system.

The Veterans Treatment Court model requires regular court appearances (a bi-weekly minimum in the early phases of the program), as well as mandatory attendance at treatment sessions and frequent and random testing for substance use (drug and/or alcohol). Veterans respond favorably to this structured environment given their past experiences in the Armed Forces. However, a few will struggle and it is exactly those veterans who need a Veterans Court program the most. Without this structure, these veterans will reoffend and remain in the criminal justice system. The Veterans Court is able to help them meet their obligations to themselves, the court, and their community.

### *Structure*

The Flagstaff Municipal Court Veterans Court will be based on diversion and deferral programs to be developed by the City of Flagstaff Prosecutor's Office. Admission to the Veterans Court program will be for individuals who are part of the target population and at the discretion of the Prosecutor's Office.

### *Goals of the Veterans Court Program*

- **Increase Treatment Engagement** (which includes improved quality of life)
- **Improve Public Safety** (by decreasing criminal involvement)
- **Increase the Effective Use of Resources** (By shifting response from criminal justice to treatment for offenders who are qualified veterans and decreasing criminal justice involvement)

## *Population*

- To be eligible for the Veterans Court program participants must be charged with a misdemeanor crime and be eligible for veteran benefits as determined by the Veterans Administration. Defendants with co-occurring substance abuse disorders and mental illness are eligible. Homelessness does not prevent eligibility but we recognize that homelessness creates problems tracking individual progress and in stabilizing the individual in his/her treatment regimen. There must be some method of contacting the homeless participant. The program may assist the individual to find housing and other appropriate resources.
- Misdemeanor violent offenses will not preclude eligibility per se. The prosecutor will review such cases and consult with any victims before agreeing to participation. While prior criminal history does not preclude participation in the program the prosecutor may exclude someone where prior history involves serious criminal conduct or otherwise suggests defendant will be a danger to the community. Individuals previously enrolled in this or another Veterans Court program are not per se ineligible but will be subject to same review process as other participants.
- Individuals who are deemed legally incompetent will not be accepted into the program but will be referred for appropriate legal or treatment alternatives (such as the Flagstaff Municipal Courts Mental Health Court program). Because this is a voluntary program, any Defendant may decline to participate in the Veterans Court program. In such cases the matter will be removed from the Veterans Court docket and will proceed on the standard court docket.

## *Veterans Court Team*

- The Veterans Court team will be made up of the Veterans Court Judge, City Prosecutor, a representative of the Veterans Administration and a Municipal Court probation officer. Team meetings will be scheduled bi-monthly for an amount of time to be determined by the needs of the team and the number of participants in the program.
- Administration of the program, from the court perspective, will be managed by the Flagstaff Municipal Court and Court Administration. With regard to treatment, the Veterans Administration will be responsible for administration.

## *Privacy and Confidentiality*

The Veterans Court team will respect the privacy and dignity of individual participants. Information obtained through the Veterans Court program will be used for court and treatment purposes only and will not be otherwise disclosed unless required by law or order of the court and/or in accordance with Arizona Rules of Supreme Court, Rule 123. To the extent possible, treatment records will not be filed as court documents.

## *Implementation*

The Flagstaff Municipal Court Veterans Court will kick-off our program in conjunction with the 2014 High Country Veterans Stand Down to be held May 16<sup>th</sup>. The stand down, to be held at the Arizona National Guard Armory, will provide an opportunity for veterans to visit with the court, manage outstanding case related issues and even have warrants quashed without fear of arrest. Our first Veterans Court hearings will be the following week.

---

## **Attachments:**



# Memorandum

6.

## CITY OF FLAGSTAFF

**To:** The Honorable Mayor and Council  
**From:** Matthew Morales, Project Manager  
**Date:** 04/11/2014  
**Meeting Date:** 05/13/2014



---

### TITLE:

**Overview of the City of Flagstaff Solid Waste Plan**

### DESIRED OUTCOME:

The Solid Waste Plan is informational, and this presentation intends to apprise City Council of the status of the report.

### INFORMATION:

City Council established a priority for FY 13 to maintain and deliver quality reliable infrastructure. The City of Flagstaff Solid Waste Section responded by proposing a comprehensive Solid Waste Plan by FY 15. The plan addresses milestones, strengths, and challenges for the Solid Waste Section over the next ten years. The Solid Waste Plan will act as a living document, and updates are proposed to take place on an annual basis (preferably by the end of Fall). This presentation discusses the noteworthy sections of the Solid Waste Plan. The report should be finalized with the City Manager's endorsement in June, 2014.

---

**Attachments:** PowerPoint  
Plan

# City of Flagstaff, Public Works Solid Waste Plan-Overview Council Worksession-5/13/2014

Council priority for FY 13

- Maintain quality and reliable infrastructure

Public Works

- Proposed Solid Waste Plan for FY 15
  - Provide a ten year outlook of the Solid Waste program
- Operations Summary-Developed over FY 14
- Solid Waste Plan-Drafted and being submitted for review
  - Comments accepted thru May 30, 2014
  - Annual report-submitted to Council in October, 2014

# Operations Summary

## Solid Waste-Existing Services

Program extends services beyond Flagstaff

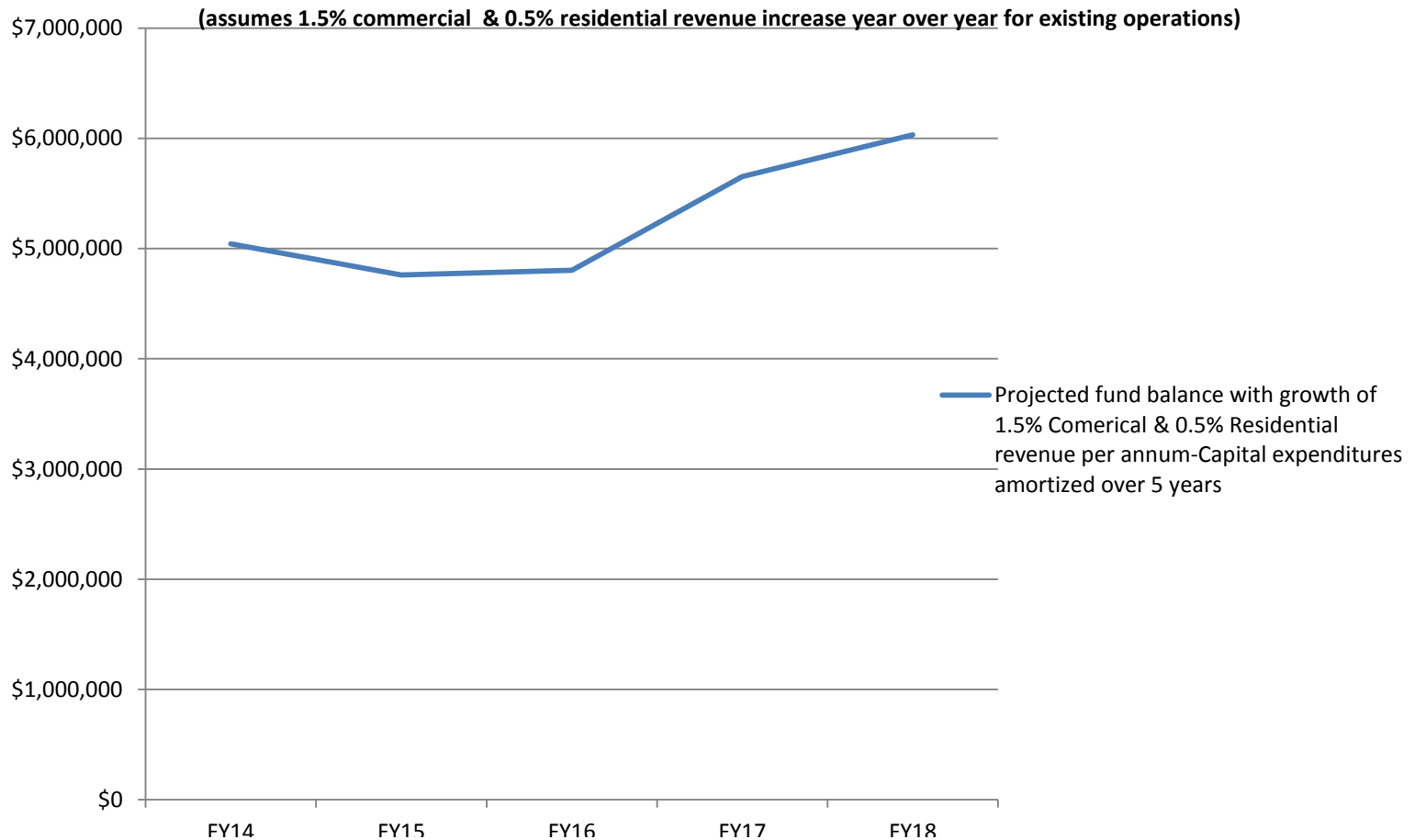
- 75 mile radius
  - Municipal Solid Waste Collection and Disposal
    - 57,000 tons of City Municipal Solid Waste disposed in CY 13
  - Recycling
    - 11,740 tons total
  - Provides outreach to other agencies
    - Intergovernmental Agreements

Program remains financially secure

- Planning-currently based on each budget cycle with accommodations for growth
- Challenges-evaluation of future programs with little immediate returns

# Operations Summary Budget

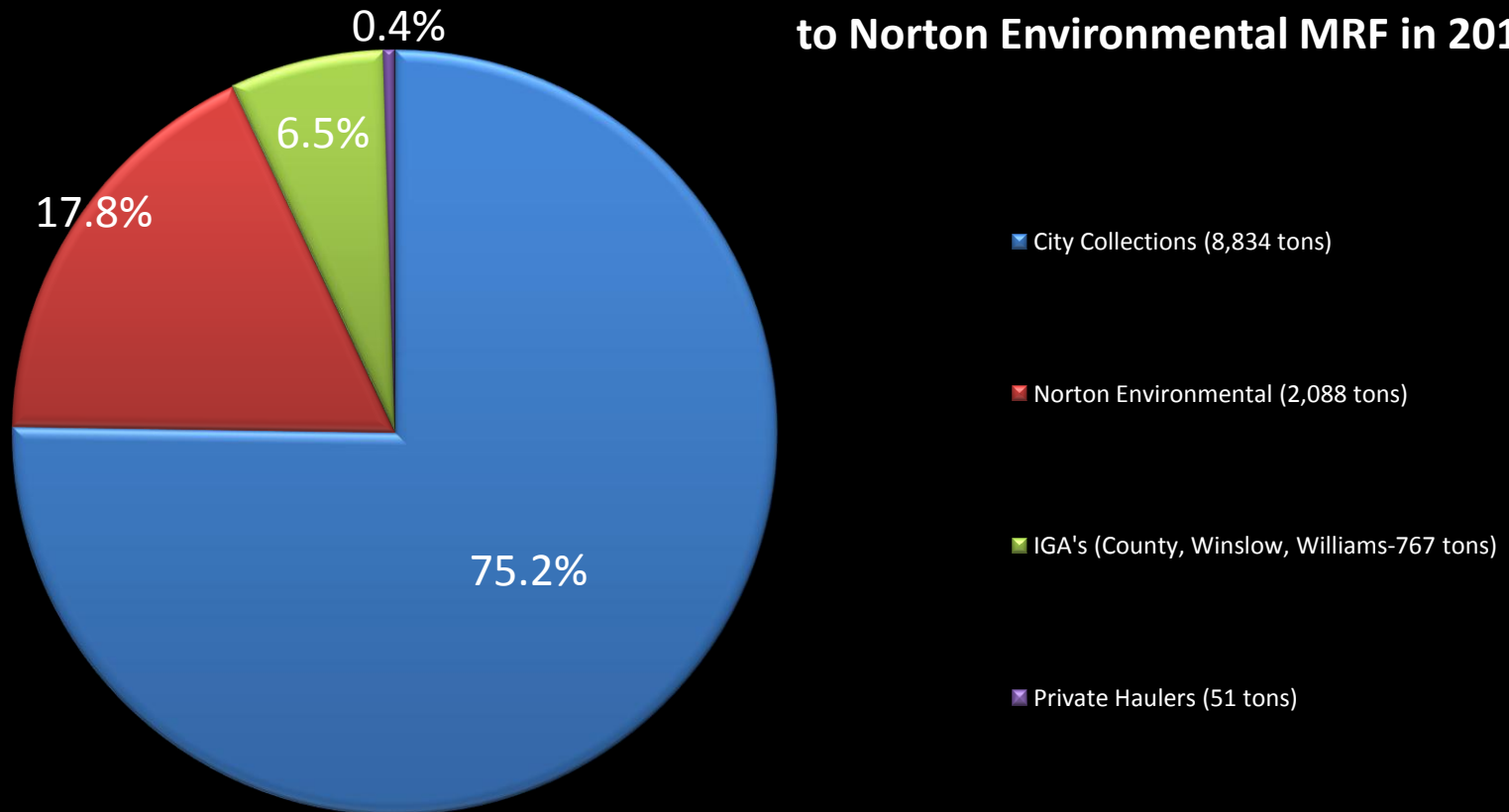
## Projections for the Solid Waste Section



# Operations Summary

## Waste Diversion-Recyclables

**Recyclable Materials Delivered  
to Norton Environmental MRF in 2011**



# Operations Summary

## Research and Development for CLL

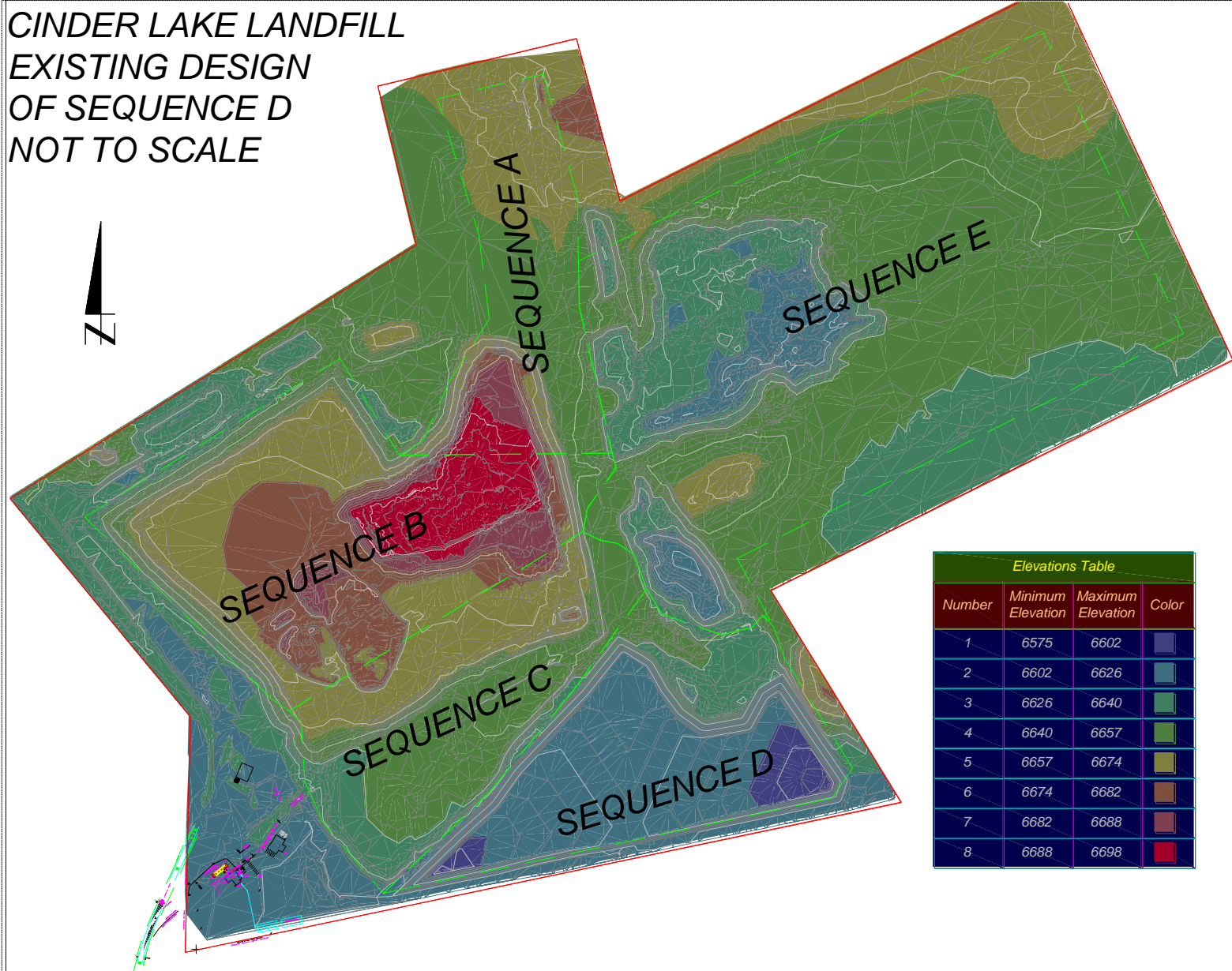
### Existing Design Configuration (permitted in year 2000)

- Scenario 1
  - 3% increase in trash disposal per year thru closure
  - Closure 2054
- Scenario 2
  - 1% increase in trash disposal per year thru closure
  - Closure 2081

### Sequence D-Design Revision

- Scenario 1
  - 3% increase in trash disposal per year thru closure
  - Closure 2059
- Scenario 2
  - 1% increase in trash disposal per year thru closure
  - Closure 2086

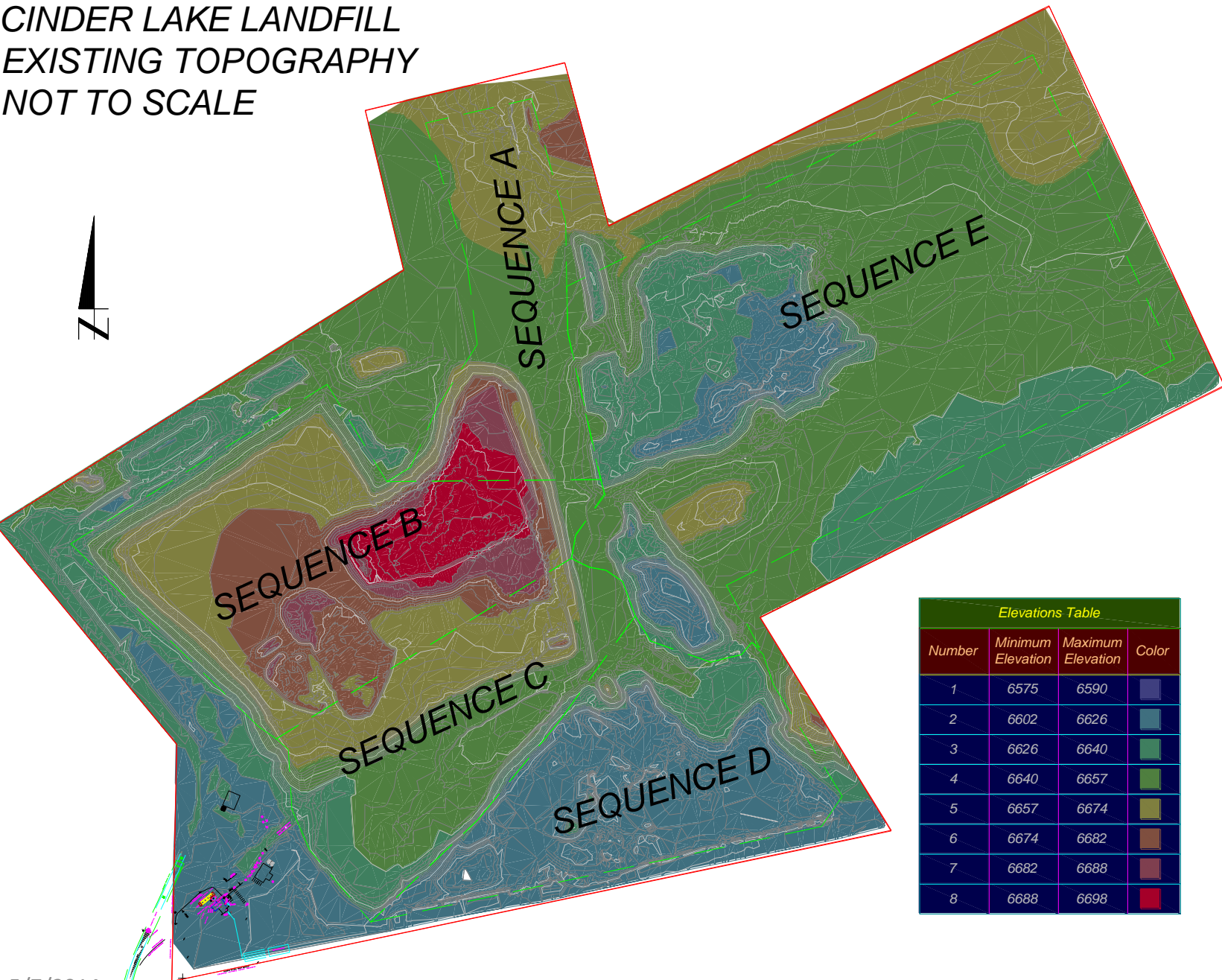
CINDER LAKE LANDFILL  
EXISTING DESIGN  
OF SEQUENCE D  
NOT TO SCALE



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	6575	6602	Blue
2	6602	6626	Dark Blue
3	6626	6640	Light Blue
4	6640	6657	Green
5	6657	6674	Yellow
6	6674	6682	Brown
7	6682	6688	Dark Brown
8	6688	6698	Red



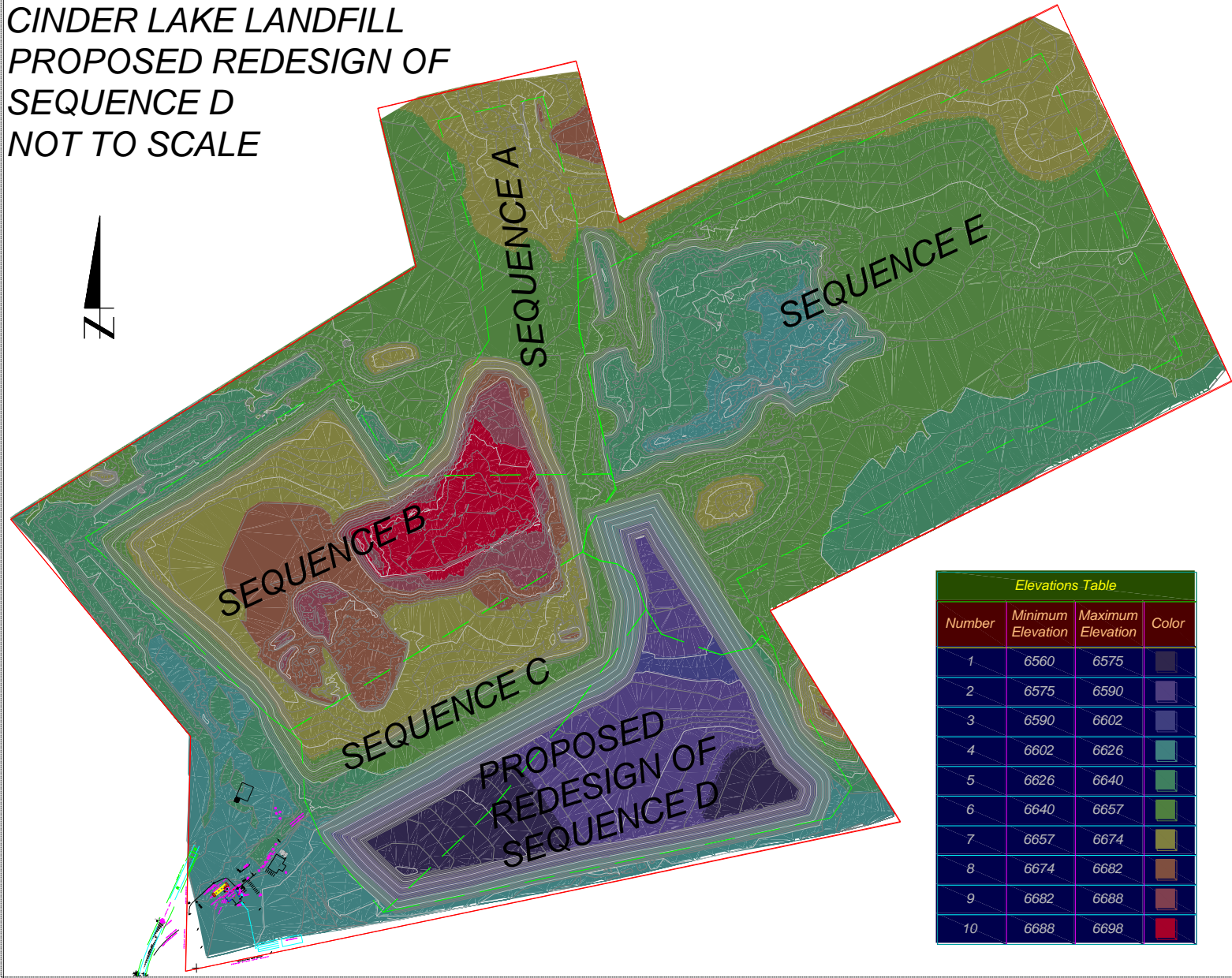
CINDER LAKE LANDFILL  
EXISTING TOPOGRAPHY  
NOT TO SCALE



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	6575	6590	
2	6602	6626	
3	6626	6640	
4	6640	6657	
5	6657	6674	
6	6674	6682	
7	6682	6688	
8	6688	6698	



CINDER LAKE LANDFILL  
PROPOSED REDESIGN OF  
SEQUENCE D  
NOT TO SCALE



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	6560	6575	
2	6575	6590	
3	6590	6602	
4	6602	6626	
5	6626	6640	
6	6640	6657	
7	6657	6674	
8	6674	6682	
9	6682	6688	
10	6688	6698	

# Operations Summary

## Research and Development

- Existing Technology
  - GPS
    - Accurate densities
    - Assists in calculating operation costs
    - Tracks performance
- Existing Research
  - Alternative cap design (NAU, 2013)
  - Re-design of Sequence D
- Future Considerations
  - Waste Optimization
    - Diversion
  - Additional research on alternative landfill cap and liner materials

# Solid Waste Plan

## Objective

- Provide the community with an outlook on the existing conditions, future challenges, and opportunities that are likely to be faced in the future
- Budget
  - \$100,000 for consulting services
- Existing Plans and Initiatives
  - NACOG Solid Waste Plan (1979)
  - County Comprehensive Plan (2003)
  - Regional Plan 2030 (Pending Election)

# Solid Waste Plan

## Policy Change and Stakeholder Input

- No proposed policy changes for 1<sup>st</sup> draft of SWP
- Annual review and updates
- Stakeholder Input
  - Identifying existing programs and improving accessibility
  - Understanding the implications of introducing additional programs and their affect other businesses
  - Understanding the long term outlook for the City

# Solid Waste Plan

## Ten Year Outlook

- Establish baseline of existing conditions and milestones within the Solid Waste Program
- Maximize diversion
- Obtain a neutral soil balance for landfill
- Annual review and updates every October

# Solid Waste Plan

- Comments accepted thru May 30, 2014
- Final report sent to Kevin Burke June 2, 2014
- Send comments to Matt Morales
- Questions?

# Solid Waste Plan

## DRAFT

# 2014

## Existing Program Elements and Future Considerations for Solid Waste



### Overview

During fiscal year 2014, the City of Flagstaff Solid Waste Section (Solid Waste) will draft a Solid Waste Management Plan (SWP). The SWP will provide policy and program direction for the next decade. This section provides the community with a general overview of the existing Solid Waste program, with future considerations for development and growth. In addition the report provides suggestions on how to present the SWP to stakeholders within the community.

Pat Bourque, Solid Waste Director  
Steve Bergeron, Solid Waste Manager  
Mike Gallegos, Solid Waste Manager  
Matt Morales, P.E., Project Manager  
4/29/2014

DRAFT



## Table of Contents

Executive Summary .....	i
1 Solid Waste Plan.....	1
1.1 Purpose .....	1
1.2 Existing Initiatives .....	1
1.2.1 Federal Initiatives.....	1
1.2.2 State Initiatives .....	1
1.2.3 Regional Initiatives.....	1
1.2.4 City Initiatives.....	2
1.3 Goals .....	2
1.4 Policy Changes and Stakeholder Input .....	3
1.5 SWP Schedule.....	4
2 Operations Summary .....	5
2.1 Structure of Solid Waste Program.....	5
2.2 Services Offered within Solid Waste .....	5
3 Existing Budget.....	7
3.1 General Observations of the Solid Waste Section.....	7
3.2 Collections Program.....	10
3.3 Landfill Program.....	10
4 Regulatory Compliance for CLL and Dry Lake Inert Material Pit.....	10
5 Growth and Development of the Solid Waste Section .....	10
5.1 Collections .....	11
5.2 Municipal Solid Waste Diversion .....	11
5.2.1 Recycling .....	11
5.2.2 Diversion.....	13
5.3 Landfill Growth and Development .....	14
5.4 Phasing and Construction Plans .....	14
5.5 Gaining Efficiencies in Future Sequences.....	15
5.5.1 Excavation of Sequence D.....	20
5.5.2 Alternative Cap and Liner Designs.....	21
6 Waste Utilization and Conversion Technologies.....	22
6.1 Traditional Landfill Gas Extraction.....	22

6.2	Alternative Technologies.....	23
6.3	Future Outlook for Alternative Technologies .....	24
7	Conclusion .....	25
8	References .....	26

## List of Figures

Figure 1-Existing Diagram of the Structure of the Solid Waste program

Figure 2-Projection of Existing Program

Figure 3-Scenario depicting year over year revenue increases of 1.5% for commercial collections and 0.5% for residential collections

Figure 4-Approximate Percentages of Solid Waste and Recyclables within the City of Flagstaff for 2011

Figure 5-Municipal solid waste disposal trends for the City of Flagstaff

Figure 6-Municipal solid waste disposal trends for the United States

Figure 7-Trends for recycle volumes within the City of Flagstaff

Figure 8-Aerial Photo of Cinder Lake Landfill (spring, 2011)

Figure 9-Cinder Lake Landfill color elevation map of existing topography

Figure 10-Cinder Lake Landfill approved design with color elevation map

Figure 11-Cinder Lake Landfill proposed design of Sequence D

Figure 12-Percentages of Waste Disposed at Cinder Lake Landfill in 2011

Figure 13-Percentages of Recyclables Delivered to Norton Environmental MRF in 2011

Figure 14-Typical example of wildcat dumping occurring within Forest Service boundaries

## List of Tables

Table 1- Scheduled Tasks Necessary for Completion of the Solid Waste Plan

Table 2-Comparison of Closure Dates with Potential Expansion in the Cell D

Table 3-FY 12 IGA-Contributions for recycling

Table 4-Regional Private Solid Waste Providers

## **Appendices**

Appendix A- Identification of Stakeholders and their Role in Solid Waste

Appendix B-Federal Laws and Regulations that Govern Cinder Lake Landfill

Appendix C- Cinder Lake Landfill Compliance Requirements

Appendix D-Infrastructure

Appendix E- Other Programs Supported by Solid Waste

Appendix F-Cinder Lake Landfill MSW Disposal Trends

Appendix G- Solid Waste Operating Capital and Capital Expenditures-Ten Year Plan

Appendix H-Cinder Lake Landfill Closure Projections

## Executive Summary

Flagstaff City Council (Council) established a priority for fiscal year (FY) 2013 to maintain and deliver quality reliable infrastructure. The City of Flagstaff Solid Waste Section (Solid Waste) responded to the goal by proposing a comprehensive solid waste plan (SWP) by FY 2015. With an assumed vested interest in municipal solid waste (MSW) for the City and the region, it is only fitting that Solid Waste draft a comprehensive plan that addresses the program for the next ten years. Volume I represents a baseline of the Solid Waste program as it currently exists, with highlights of possible considerations for growth in the future.

The Solid Waste program offers a wide range of residential and commercial trash collection services within the limits of Flagstaff. Some services are also extended into the County. Private haulers within the City and outside the City limits utilize the Waste Management Transfer Station and Cinder Lake Landfill (CLL) as their dropoff points. CLL is the only regional landfill within a 75 mile radius of the City. The facility footprint encompasses 346 acres and will remain open until it reaches capacity in approximately 40 years. Solid waste disposal will occur in cells A, B, and C (110 acres) for 9 to 13 years (depending on growth). Future expansions in cells D and E (136 acres) will require engineering controls such as a leachate collection system and an impervious cap. CLL is conducting research and development for materials that have the potential to act in lieu of the standard landfill cap and liner. In addition landfill staff is exploring the feasibility of excavating cell D to depths greater than the prescribed design, thereby gaining an additional 5 to 20 years of landfill life.

Although the timeline for CLL is favorable, maintaining a strong diversion rate (above 40%) is a key element to ensuring the life of the landfill. Therefore affordable and realistic methods of diversion will continue to be explored.

The financial outlook for Solid Waste is expected to remain relatively flat until significant growth returns to the region. Solid Waste managers will continue to adjust for fluctuations in growth as needed. In addition, Solid Waste programs will be assessed carefully to determine what how they may affect the community from a financial and social standpoint.

Many regional stakeholders (other government agencies and private solid waste services) rely on the City for collection, recycling, and disposal services. In addition, private solid waste services are provided within the City (for commercial customers) and within Coconino County (residential and commercial customers).

Solid Waste staff prepared a list of goals for the program which are meant to springboard discussion of the most relevant policy drivers thus far. Any changes or considerations by the City Manager and Council are welcome throughout this endeavor.

The SWP is scheduled to be completed and submitted to the City Manager by May 30, 2014. Subsequent to the submittal staff will seek guidance on how future initiatives and programs should be instituted.

# **1 Solid Waste Plan**

## **1.1 Purpose**

The key purpose of a Solid Waste Management Plan (SWP) is to provide the community, and perhaps the region, with an outlook on the existing conditions, future challenges, and opportunities that are likely to be faced in the future. No matter what path the City of Flagstaff (City) Solid Waste Section (Solid Waste) takes in the future, the SWP will adjust to the needs of the community by proposing annual edits and additions for the program. As noted by this report, much of the framework for the SWP has already been prepared. Additional insight will be provided for the City Manager and Council to consider when making policy changes. Some of the questions that will require collaboration are the following:

- What are the City's goals in drafting the SWP?
- What initiatives (federal, state, local) affect the successful implementation of the SWP?
- What agencies are likely to have a role in the success of the SWP?
- What types of policy should be realized in drafting the SWP?
- What other agencies will be affected by the change in policy?
- What role do other stakeholders play in the SWP?

## **1.2 Existing Initiatives**

The following section identifies agencies that drafted initiatives or plans for the implementation of solid waste management in the past.

### **1.2.1 Federal Initiatives**

In 1976 congress enacted the Resource Conservation and Recovery Act (RCRA) which amended the Solid Waste Disposal Act of 1965. The law gave states the necessary authority and financial assistance to incorporate new provisions for the development of state planning guidelines (40 CFR Part 256 and 257).

### **1.2.2 State Initiatives**

In response to the regulations, the State of Arizona Department of Health Services (now Arizona Department of Environmental Quality-ADEQ) drafted the Arizona Solid Waste Management Plan. The Arizona Solid Waste Management Plan (Arizona, 1981) designated six Councils of Governments as regional solid waste management planning agencies within the State of Arizona.

### **1.2.3 Regional Initiatives**

In response to the previously mentioned state initiative, the Northern Arizona Council of Governments (NACOG) drafted their Solid Waste Management Plan in 1979. The document is a generic approach to solid waste management for the four counties in Northern Arizona (Apache, Coconino, Navajo, and Yavapai). Many changes have occurred since the adoption of the document, and today many of the discussion items are outdated.

In drafting the County Comprehensive Plan of 2003, the County made it a goal to reduce the amount of solid waste sent to landfills and minimize the impact of its disposal (Coconino County, 2003). The County currently utilizes Waste Management Joseph City Landfill and CLL as its final disposal facilities.

The County has also enacted a subdivision ordinance whereby “subdividers are required to indicate in their development proposal the distance between the new development and an approved sanitary landfill or solid waste transfer station. If this distance exceeds 10 miles, the subdivider must form a sanitation district to construct, operate, and maintain a new facility. This requirement may be waived if the subdivision is served by adequate private collection”. It is unknown whether any sanitation districts have been formed within the County.

### **1.2.4 City Initiatives**

The Flagstaff City Code-Chapter 07-04 (City Code) provides regulatory authority for Solid Waste. Portions of the SWP have been guided by the City Code and the policy contained therein. The SWP will also help to determine whether future changes in policy will be anticipated, and whether an ordinance will be required to carry the policy forward.

The City of Flagstaff Regional Plan, which applies to 525 square mile Flagstaff Metropolitan Planning Organization planning area, identifies CLL as the closest landfill within the region. Within the Flagstaff Regional Plan, CLL stated that “it remains a top priority to explore efficient and realistic methods of extending the useful life of this facility.”

In an effort to enhance the level of service provided to the community, the City Sustainability and Environmental Management Section (SEMS) have prepared the following mission statement:

“The Sustainability and Environmental Management Section’s mission is to preserve and enhance the community and natural environment by implementing resource conservation and sustainability through projects, leadership and education.”

It is imperative that the SWP work in concert with SEMS mission and goals. In addition new policy changes will require careful consideration of the existing level of service that the community has come to expect from Solid Waste.

### **1.3 Goals**

In order for the Solid Waste program to remain financially solvent, it is imperative that the following considerations be maintained for the program

- Municipal solid waste (MSW) should continue to be delivered to CLL from the City and the region
- It will be equally important to optimize diversion of recyclable goods to the Norton Environmental Material Recovery Facility (MRF)
- Future implementation of new programs or changes existing Solid Waste programs should be gauged on their financial implications along with the social impact on the community

MSW has historically been perceived by many communities as a problem. Solid Waste strives to change the paradox so the community can realize potential resources that are available in the organic and recyclable fraction of MSW. Therefore, Solid Waste is proposing the following goals as a template of ideas meant to springboard the SWP into action:

- Establish a baseline of existing conditions and milestones within the Solid Waste Program
- Provide a path for optimization of the program with private and public partners
- Gain community endorsement (financial and otherwise) of the SWP
- Maximize diversion of recyclable materials by 2024
- Obtain a neutral soil balance by 2025
- Achieve full diversion and development of monetizable components of waste stream by 2030

Solid Waste staff will be requesting guidance from City Manager to decipher what goals work in concert with the City's priorities. Should any new policy changes be realized through the chartering of this project, then Solid Waste will seek direction on the implementation of new programs and how they might affect existing programs within Solid Waste.

#### **1.4 Policy Changes and Stakeholder Input**

The first volume of the SWP should not necessitate any policy changes, for the intent of the volume is to convey where the program is at in its current state. Subsequent annual revisions may incorporate new programs and changes in the SWP, and thereby additional ordinances may need to be adopted in City Code.

Appendix A identifies commercial and government solid waste organizations that rely on the Solid Waste program for the proper disposal of MSW and diversion. While each organization's level of support for the SWP varies, the City should take a pro-active role in planning for future solid waste needs within the municipality and the region. Future challenges can be achieved in a much more expedient manner if the program addresses a plan for growth. Existing financial projections and growth projections are discussed in subsequent sections. The financial projections also act as the baseline for determining the viability of additional programs within the Solid Waste. The City is in a unique position because CLL has assumed the role as the regional landfill even though it is ultimately the responsibility of the regional and state authorities to address how MSW is managed. With that said, the facility is one of the City's most valuable assets. Therefore it is in the best interest of the City to continue tracking MSW it receives from its citizens, while assessing the future needs of the region as well.

During the development of the Volume I, Solid Waste formed a workgroup with private and public solid waste managers throughout the region. The group was provided with the necessary framework of existing policy and programs in Solid Waste in October, 2013. Subsequent to sending copies to each of the managers, a stakeholder meeting was scheduled in November 18, 2013. The group had 30 days to comment on the existing program and how it affects their business or programs. Staff reviewed the comments and suggestions to determine whether they fit within the SWP ten year plan. No solid waste providers (public nor private) were shown to be

adversely affected by the existing Solid Waste program. Any discussion items relevant to the existing program are addressed in subsequent sections of Volume I. Copies of letters from stakeholders are provided in Appendix A.

It is likely that some stakeholders will have interest in programs that provide social benefit to the community. In the past the City has been approached by various vendors with a new technology that is touted to increase diversion while converting MSW to an alternative end-product (i.e. ash or compost). Staff is proposing that the stakeholders and vendors use the financial model (discussed in subsequent sections) to validate their concept. Staff is suggesting that the stakeholder or vendor contract with a qualified Arizona state licensed professional engineer to validate their concept. This allows staff to have a consistent perspective in evaluating whether a project is worthy of consideration over the next ten years.

## 1.5 SWP Schedule

Solid Waste has been dedicated to completing the SWP in Fiscal Year 2014 (FY 14). The project schedule shown in Table 1 was rigorous with very little accommodation for scope creep.

Table 1- Scheduled Tasks Necessary for Completion of the Solid Waste Plan

Task	Start	Finish
<b>Solid Waste Plan Schedule</b>	<b>7/3/13</b>	<b>6/2/14</b>
<b>Operations summary</b>		
Projected Coordination Meetings	7/3/13	8/1/13
1st Draft Operations Summary	7/8/13	8/14/13
<b>Leadership Meeting and Endorsement</b>	8/2/13	9/3/13
Preparation for Operations presentation to Leadership	8/2/13	9/17/13
Operations Presentation to Leadership	9/17/13	9/17/13
<b>Stakeholder gathering</b>		
Stakeholder Invitation Prepared and mailed by City Manager	9/17/13	9/30/13
Determine outsourcing needs (mediators or professional consultants) and prepare Scope and RFP's	11/14/13	12/13/13
Stakeholder Comments Accepted and Compiled	11/29/13	12/30/13
Stakeholder Comments Prepared in a Memo for Management	12/30/13	1/8/14
Present stakeholder comments to Leadership	1/14/14	1/16/14
<b>Prepare SWP</b>		
Drafted Sections of SWP	9/23/13	4/16/14
Preparation for Stakeholder Meetings	10/8/13	11/12/13
1st stakeholder meeting	11/12/13	11/14/13
Prepared considerations from Stakeholder comments	1/16/14	1/16/14
<b>SWP Submitted to Leadership for review</b>		
Meeting to discuss 1st draft of SWP with Administration	4/16/14	4/16/14
1st Review of SWP and comments by Administration	4/1/14	5/10/14
Final Draft of SWP prepared by staff	5/10/14	5/31/14



Details on the schedule for adoption of the SWP have not been addressed yet. Staff would consider implementation subsequent to the final draft.

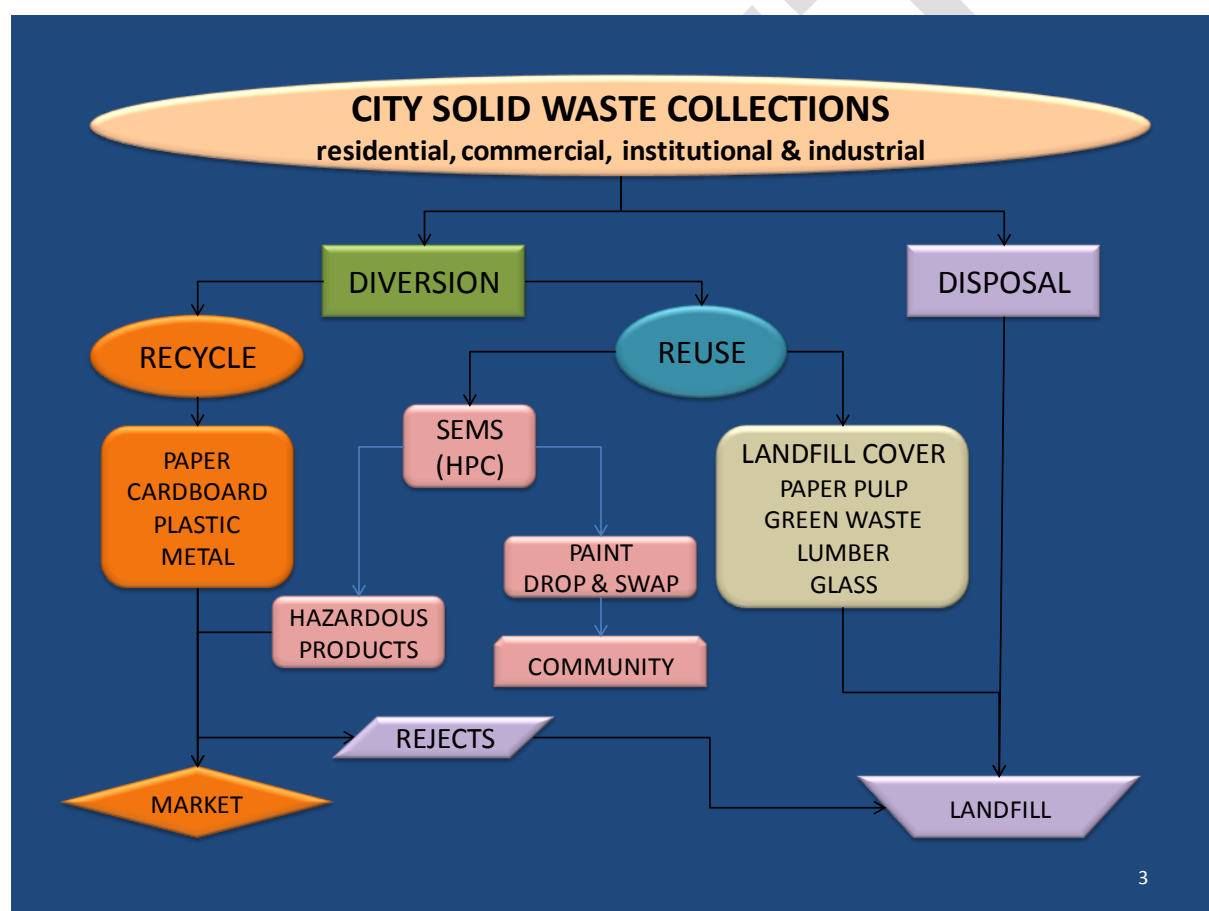
## 2 Operations Summary

This section provides an overview of current services and the opportunities for growth within Solid Waste Section (Solid Waste).

### 2.1 Structure of Solid Waste Program

Solid Waste currently maintains operations within the program as shown in Figure 1:

Figure 1-Existing Diagram of the Structure of the Solid Waste program



### 2.2 Services Offered within Solid Waste

#### Landfill

Cinder Lake Landfill is the only permitted landfill within Coconino County. The facility is open to the public 6 days a week throughout the year. The current rate of trash disposal is 279 tons per day (Appendix A). There is currently not enough soil to cover the entire landfill through its life (approximately 41 years). Therefore the operation uses alternative daily cover (ADC) in the

form of paper pulp millings from the SCA Tissue plant in Flagstaff mixed with green waste. Approximately 135 tons of (ADC) was delivered daily to Cinder Lake Landfill in FY 13.

### **Dry Lake Inert Material Pit**

The Dry Lake Inert Materials Pit (Dry Lake Pit) is located on Forest Service Rd. 231 approximately 2 miles south of West Route 66. The facility is sited on Forest Service Land and is open upon request to the public. Yearly maintenance to the site is required. In addition the site is permitted under the Arizona Pollutant Discharge Elimination System. Materials are diverted from the landfill and used to reclaim the old cinder mining operation. The facility is permitted to accept rock, dirt, cinder blocks, and clean concrete.

### **Residential Trash Collection**

The residential trash collection program is responsible for servicing some 17,000 homes weekly. Currently, the City is divided into 4 sections, or routes. Service days are Monday, Tuesday, Thursday, and Friday. The 4.5 operators who collect these areas work 10 hr. shifts.

### **Bulky Trash/Woodwaste**

This program is responsible for the curbside collection of household bulky items as well as tree limbs, yard waste, etc. The work is performed by 2 trucks with 2 operators each. The trucks are loaded with an articulated loader, purchased in FY 09/10. The loader increased productivity and efficiencies, allowing for collaboration with Flagstaff Fire Department to remove slash piles from forest thinning projects. Capture of this green waste reduces carbon emissions due to burning as well as providing valuable Alternative Daily Cover for Cinder Lake Landfill.

### **Commercial Trash**

This program collects trash from commercial businesses, apartments and town homes. The operation runs 7 days a week. The operators work 10 hr shifts with staggered off days in order to provide route coverage and meet customer service expectations.

### **Residential Bin Maintenance-**

This program is responsible for the delivery, pick up, cleaning, and repair of residential curbside containers. Other duties include special events, collection of white goods (weekly), collection of move- in boxes, pre- baled cardboard, pick up and disposal of dead animals from Flagstaff's streets (dogs, cats, skunks, deer, etc.), snow removal when needed, and the operation of any and all solid waste collection vehicles when needed. The position may respond to customer "emergencies" after hours or on weekends.

### **Commercial Bin Maintenance**

This program is responsible for all commercial and roll off container deliveries, repairs, painting and cleaning. Other duties include welding, fabrication, and design, delivery and pick up of temporary bins, repairs and fabrication of gates, enclosures, etc. The position has a high degree of interaction with internal and external customers on a daily basis, and is a large factor in customer satisfaction & retention. Both bin maintenance programs respond to customer requests within 24 hrs. Most times same day service is provided. The position is also required to operate solid waste collection vehicles when needed.

### **Hoist & Haul (Roll Off)**

This program services commercial and residential customers with a variety of needs. Construction materials, clean ups, grocery store and food service compactors(including NAU and Flagstaff Medical Center), recycling, and glass recycling drop off locations are all a part of this program. The program currently has 3 assigned operators who run Mon – Fri., with some Sat. & Sun. pulls by request. The operators work a 5 day, 8 hr schedule in the fall and winter months when activity is slower. During the busy season they work 4 -10 hr days.

### **Residential Recycling**

The residential curbside recycling program operates much like the residential trash program, with approximately 17,000 homes to service.

### **Commercial recycling**

This program is similar to the commercial trash program, with the exception of the schedule. Recycling collection is currently Monday- Friday. As volumes increase, Saturday collection may be considered.

### **Glass Collection**

In addition to City provided Glass Collection Drop-Off Location sites, The City of Flagstaff Solid Waste Section offers glass collection to residential customers on a subscription basis (\$3.55 / month).

### **Administration**

The administrative staff handles all dispatch and phone calls from the public. In addition they provide support in accounting and book keeping for the program. Administrative assistants are posted at the Public Works Yard and the Scale House at Cinder Lake Landfill.

### **Program Assistant-Sales**

This position is responsible for increasing our market share in all commercial programs, increasing the volume of recyclables collected, and providing excellent customer service. The position helps to provide services to meet customer demands, “right sizes” service levels, and provides information on all services provided.

## **3 Existing Budget**

### **3.1 General Observations of the Solid Waste Section**

The community often seeks to understand whether certain services or solid waste technologies could successfully be introduced into the Solid Waste Section. In the past, decisions of whether to provide certain solid waste services were weighed on the potential social costs and benefits rather than fiscal policy. In addition many diversion technologies (i.e. composting, glass recycling, and biomass recycling) were not vetted against a recognized model that accounted for the Section’s future.

The Solid Waste Section has historically remained financially solvent. This is due in part to the City’s ability to successfully track and anticipate changes in solid waste disposal rates within the City and the region. Although the existing program is stable, it is important to note that small

decreases in revenue have the potential to affect the potential success of the Section. Figures 2 and 3 are meant to provide an example of how variables in revenue can affect the program. Figure 2 shows the five year outlook for the program as demonstrated by the Finance Section today. The projections assume that all revenue will increase 2% year over year.

Figure 2-Projection of Existing Program

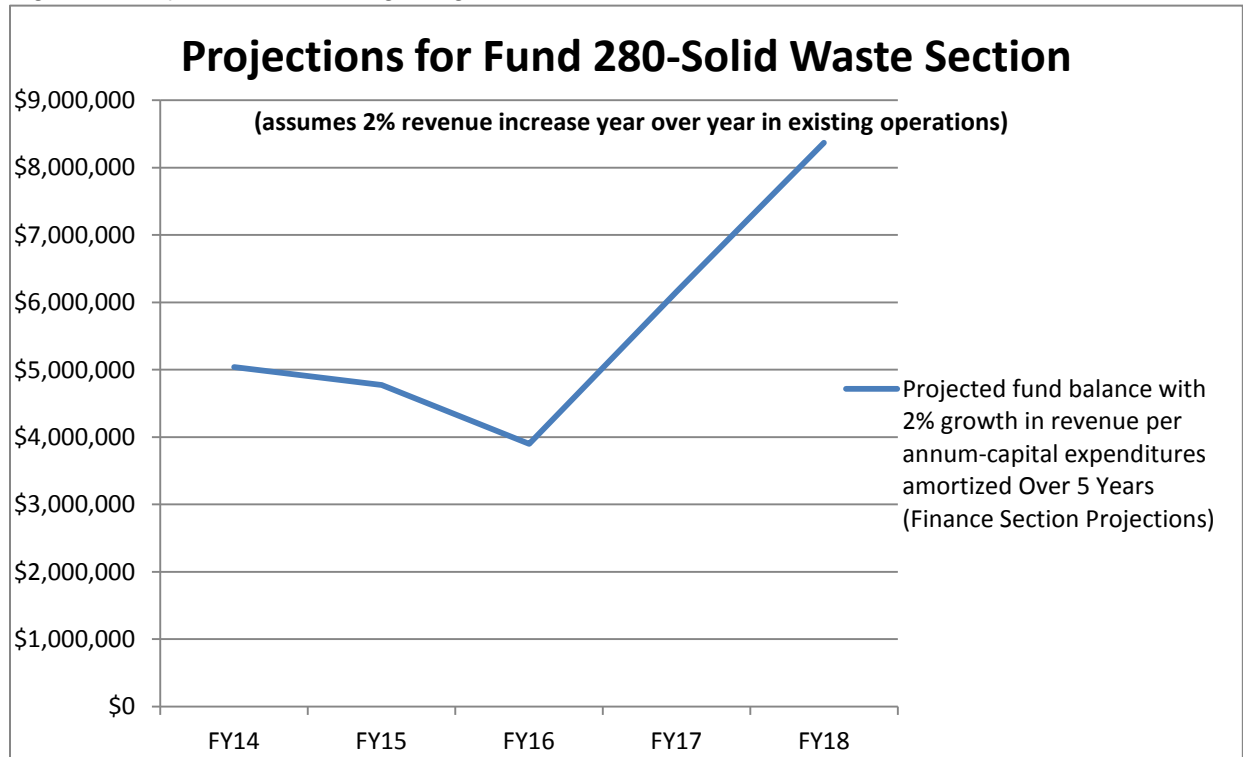
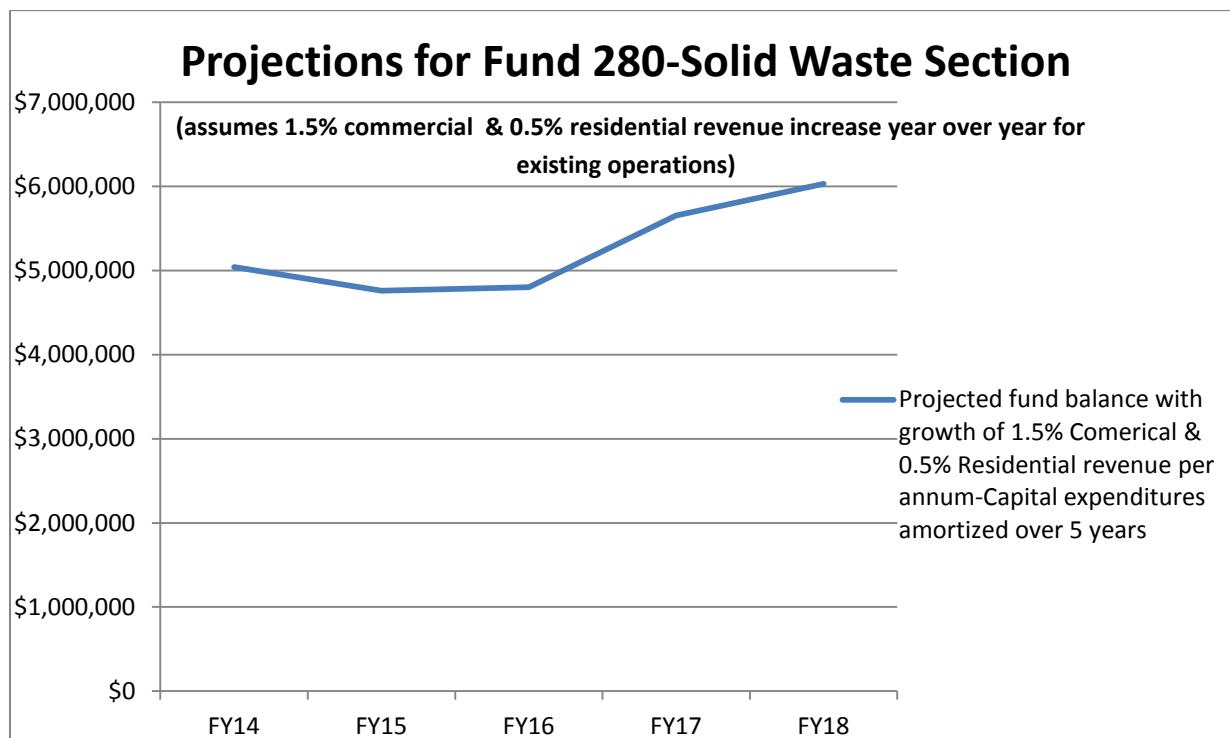


Figure 3 shows the affects of lowering commercial revenues to 1.5% per year and residential revenues to 0.5% per year (a more realistic scenario). Regardless of either scenario, management would revise capital expenditures to accommodate for any changes in growth. However, the exercise demonstrates the importance of ensuring controlling the flow of MSW within the City while maintaining competitive disposal rates.

Figure 3-Scenario depicting year over year revenue increases of 1.5% for commercial collections and 0.5% for residential collections



Budgetary considerations historically are based on a program's financial conditions during the current year. However in order for the Solid Waste program to prepare for future developments, it is necessary to consider some capital expenditures ahead of schedule. Preparing for such endeavors may provide significant savings within a reasonable payback period. The SWP will serve as the mechanism that identifies projects that have been vetted by Solid Waste staff. Projects with long-term outlooks are discussed further in sections 5 and 6.

The SWP will act as a reference for the community to better understand the triggers which allow for additional solid waste services or sustainable technologies. If specific groups within the community propose changes in the existing level of service, then those interested parties should demonstrate how the service or technology would operate within the framework of the existing program. Feasibility studies prepared by groups with specific interests should qualify their proposal with a qualified Arizona licensed professional engineer.

Council may wish to direct Solid Waste staff to conduct studies during the annual review of the SWP. Staff would determine whether the study would be worthy of third party review or whether the study can be done internally. Ideally the study would be proposed annually in August so that staff can determine the scope of work and level of review (third party or internal) and what the cost would be to the program.

### **3.2 Collections Program**

Budget projections- Solid Waste Collections has budgeted flat for FY14, with minor adjustments between line items and overtime projections to account for position vacancies, fuel costs and Fleet Services rate adjustments. Residential collections are expected to increase by approximately 400-600 units over the next 2 years in high density in-fill areas such as the Sawmill project and Presidio in the Pines. No rate increases are projected in the foreseeable future.

### **3.3 Landfill Program**

From fiscal year 2009 through fiscal year 2013 Cinder Lake Landfill experienced a 9% decrease in tonnage. The main reason for the decrease was attributed to the change in consumer trends, which now showed a conservative spending pattern. However in calendar year 2014 a rise in tonnage is being noticed. We will continue to analyze whether this disposal rates are truly on the rise within the region. In the meantime landfill expenditures will continue to be adjusted in concert with consumer trends in anticipation of a new baseline in per capita waste disposal trends.

With the changes in consumer trends over the past five years, a decrease in solid waste from Flagstaff and municipalities around Northern Arizona has occurred. However landfill disposal volumes from other municipalities have historically contributed less than 10% of the total volume buried in the landfill. Therefore it is anticipated that there will be little chance for a decrease in disposal rates unless another recession were to occur.

## **4 Regulatory Compliance for CLL and Dry Lake Inert Material Pit**

Maintaining regulatory landfill compliance for CLL and Dry Lake Inert Material Pit (Dry Lake Pit) typically comes with a fixed annual cost to the program (unless unforeseen exceedances occur). There are currently no new regulations being discussed at the state or federal level. There are two employees in Solid Waste that manage employee training, environmental monitoring and reporting activities for CLL. A total of 750 hours per year is spent to ensure that CLL is within the federal and state rules and regulations as discussed Appendix C.

## **5 Growth and Development of the Solid Waste Section**

There are many factors that depend on the successful development of the Solid Waste Section. Decisions are heavily weighted on economic factors and how they will affect the community. The most pertinent discussion pieces are found in the following sections. Additional factors are also rooted in Appendix A, B, and C.

## 5.1 Collections

Collections fleet is adequate for the current work load. Commercial equipment ranges from 2008 and newer. While some older equipment remains on-line, aging equipment is scheduled for replacement over the next 2-3 years. The number of trucks to be replaced in the future will be determined by economic factors based on development of subdivisions within the City.

## 5.2 Municipal Solid Waste Diversion

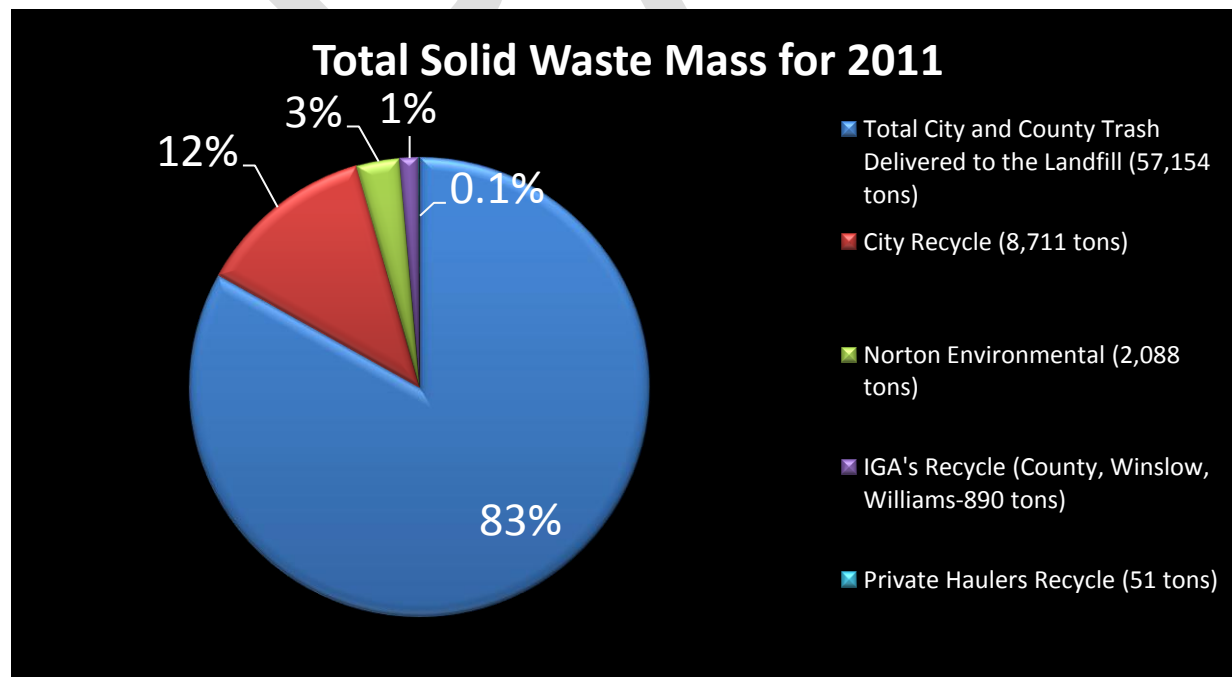
Diversion includes both recycling and reuse of goods. Recycling involves a series of activities by which materials that are no longer useful to the generator are collected, sorted, processed, and converted into raw materials and used in the production of new products (EPA, 1995). While an example of re-use involves applying loads of paper millings as alternative daily cover at Cinder Lake Landfill. Both segments of recycling and reuse are discussed below.

### 5.2.1 Recycling

The City recycling program operates under a format known in the industry as a co-mingled system. Research shows that citizen participation increases because individuals are not required have separate bins for cardboard, paper, metals, and plastic. In addition the level of contamination is decreased in a co-mingled recycling operation. However, even the most stringent recycle programs will experience contamination in some manner.

In FY 12, CLL conducted a waste audit to determine characteristics of waste coming from both the rejected recyclables and trash at the landfill. The majority of trash and recyclables are generated within the City (Figure 4).

Figure 4-Approximate Percentages of Solid Waste and Recyclables within the City of Flagstaff for 2011





Subsequent to the audit we compared the City disposal trends with the existing disposal rates in the United States (EPA, 2010) as shown on Figures 5 and 6. Note that disposal of miscellaneous inorganic waste is much higher on the City chart. This difference is likely because the EPA data represents waste that was mechanically sorted and hand sorted prior to sampling. Whereas the majority of waste audited for our study was only hand sorted.

Figure 5-Municipal solid waste disposal trends for the City of Flagstaff

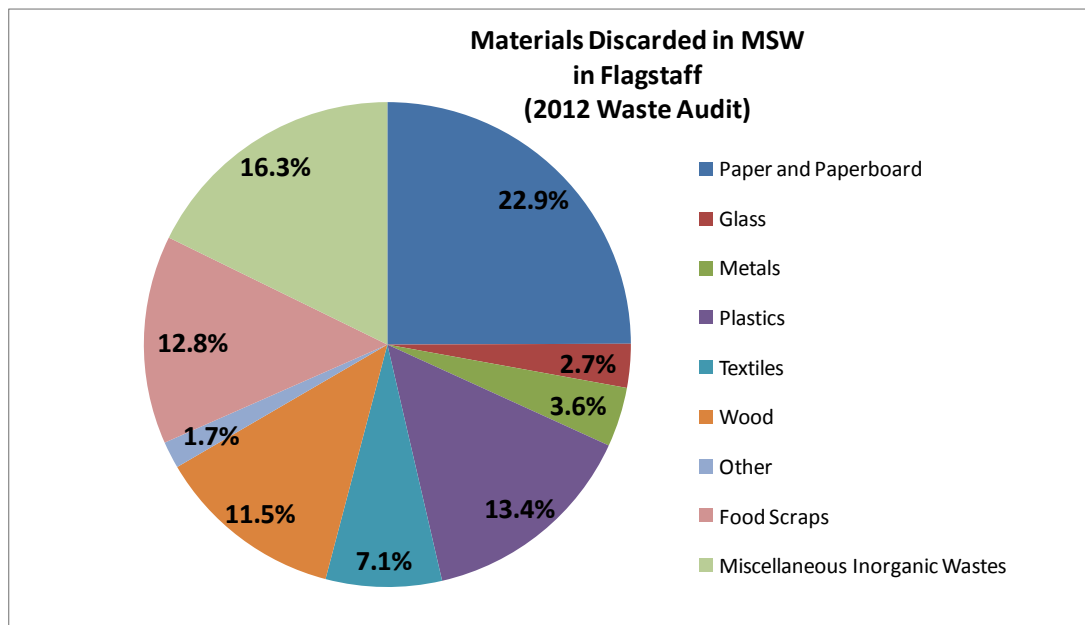
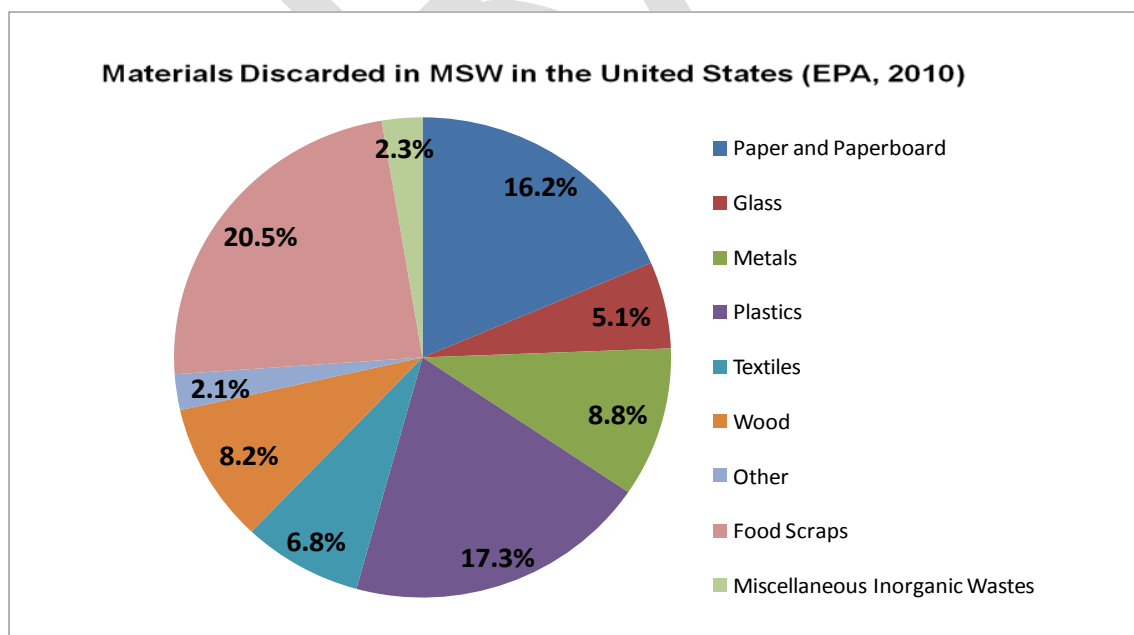


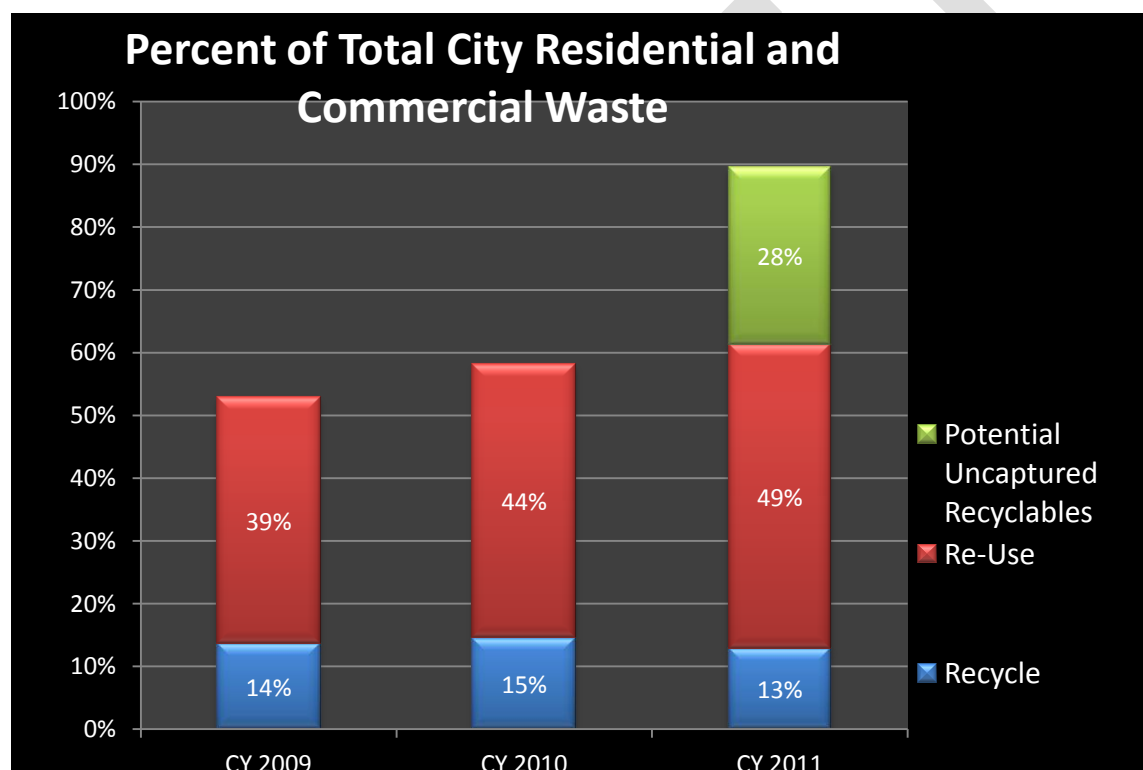
Figure 6-Municipal solid waste disposal trends for the United States



It is also worth noting that the City disposal rate is much less than that of the country as a whole. City disposal rates are at approximately 1.8 pounds per person per day compared to the national average of 4.4 pounds per person per day (EPA, 2012). Both rates include recycling in the rate. Further details on City disposal rates can be found in Appendix F.

The waste audit also concluded that approximately 28% of the material disposed in the City solid waste bins could have been sent to the Material Recovery Facility (MRF) as recyclable goods (Figure 7). There was no mechanism for determining how much of the recyclables were likely to be contaminated. However it demonstrates that some portion of recyclable materials disposed in the trash bin could have provided an increased revenue source within the profit share program.

Figure 7-Trends for recycle volumes within the City of Flagstaff



As discussed in Section 3.3, definitive correlations were noted between economic conditions and the amount of trash discarded since 2009 thru 2012. Recycle rates also dipped slightly during that time period. However, there has been a slight rebound in incoming waste at the landfill and the MRF during 2013. In addition there have been slight increases in recycle rates during 2013.

### 5.2.2 Diversion

Three different products are commonly re-used as approved cover material at Cinder Lake Landfill. These products include paper pulp millings, grinded green waste, and grinded wood waste (lumber).

## **Paper Pulp Millings**

Paper pulp millings are a bi-product of the paper manufacturing process. The paper fibers become microscopic as they run through the de-inking process. The shorter fibers and clays will fall out of the system, and are considered a waste material for the paper plant. Approximately 170 tons per day is delivered to the landfill, where it is used as an approved alternative daily cover. The use of paper pulp millings has undoubtedly decreased the existing soil deficit at the facility. However, over time we have managed to stockpile approximately 27,000 cubic yards of material. The stockpile is restricting the amount of available space where we can operate. Therefore we are in the process of submitting a proposal to ADEQ for the storage of the material in future landfill cells. The storage of the material would allow us to bank a minimum of 150,000 cubic yards for future use.

## **Green Waste**

Exclusive loads of Green waste (tree limbs and stumps) and lumber are delivered to CLL by the public. The product is processed through a grinding operation and used as an amendment to paper pulp millings for alternative daily cover. In CY 2013 approximately 600 tons of green waste was used as alternative daily cover.

## **Wood Waste (Lumber)**

Wood waste includes wood construction products such as lumber and particle board. Although the material does not make up the bulk of our cover needs, it assists in decreasing the cover deficit. In addition, we find that the compaction rate has remained more consistent because the material is grinded rather than being placed directly into the landfill. In CY 2013 approximately 200 tons of lumber waste was used as alternative daily cover.

## **5.3 Landfill Growth and Development**

Five cells are designated for land disposal activities at CLL. The cells (also known as sequences) are labeled in the existing design as A through E (Figures 8-11). Sequence A thru C (110 acres) is where MSW has been historically disposed since 1965. Even though the cells are not lined, the landfill is permitted to continue placing MSW within Sequence A thru C until they reach capacity. When the sequences are completed, they will have to be finished off with a cap that falls within regulatory guidelines. Sequence A thru C will last another 9 to 13 years (depending on growth rates). Expanding the operation to Sequences D and E (136) will require the facility to follow guidelines for design and construction of landfills with an approved liner. The expected closure of Sequence E will occur sometime near the year 2054.

## **5.4 Phasing and Construction Plans**

The existing design shows an overall plan for the development of the landfill. However, it does not specify the manner in which each sequence should be phased over time. Over the next fiscal year MSW will be placed at the maximum design elevations within the northern portions of Sequence B. When constructing the maximum design elevations, it is essential to have a clear strategy for the placement of MSW. Therefore project managers will be working with the landfill manager and supervisor to design the roadways, stormwater controls, and an overall plan for

phasing each cell within the sequence. The relevant portions of sequencing and phasing will continue to be noted and diagrammed in the SWP.

## **5.5 Gaining Efficiencies in Future Sequences**

Although the closure of Sequences A thru C will not occur for approximately 9 years, it is necessary to start planning for future infrastructure needs. In consideration of the future cell construction, project managers are exploring innovative concepts involving the use of existing resources to either save on operation costs or extend the closure date of the facility.

- Expansion of future cells beyond the existing design
- Alternative landfill cap designs for the cells A, B, and C
- Alternative liner designs for cells D and E



Figure 8-Existing Aerial Photo of Cinder Lake Landfill (spring, 2011) Not to Scale





Figure 9-Cinder Lake Landfill color elevation map of existing topography

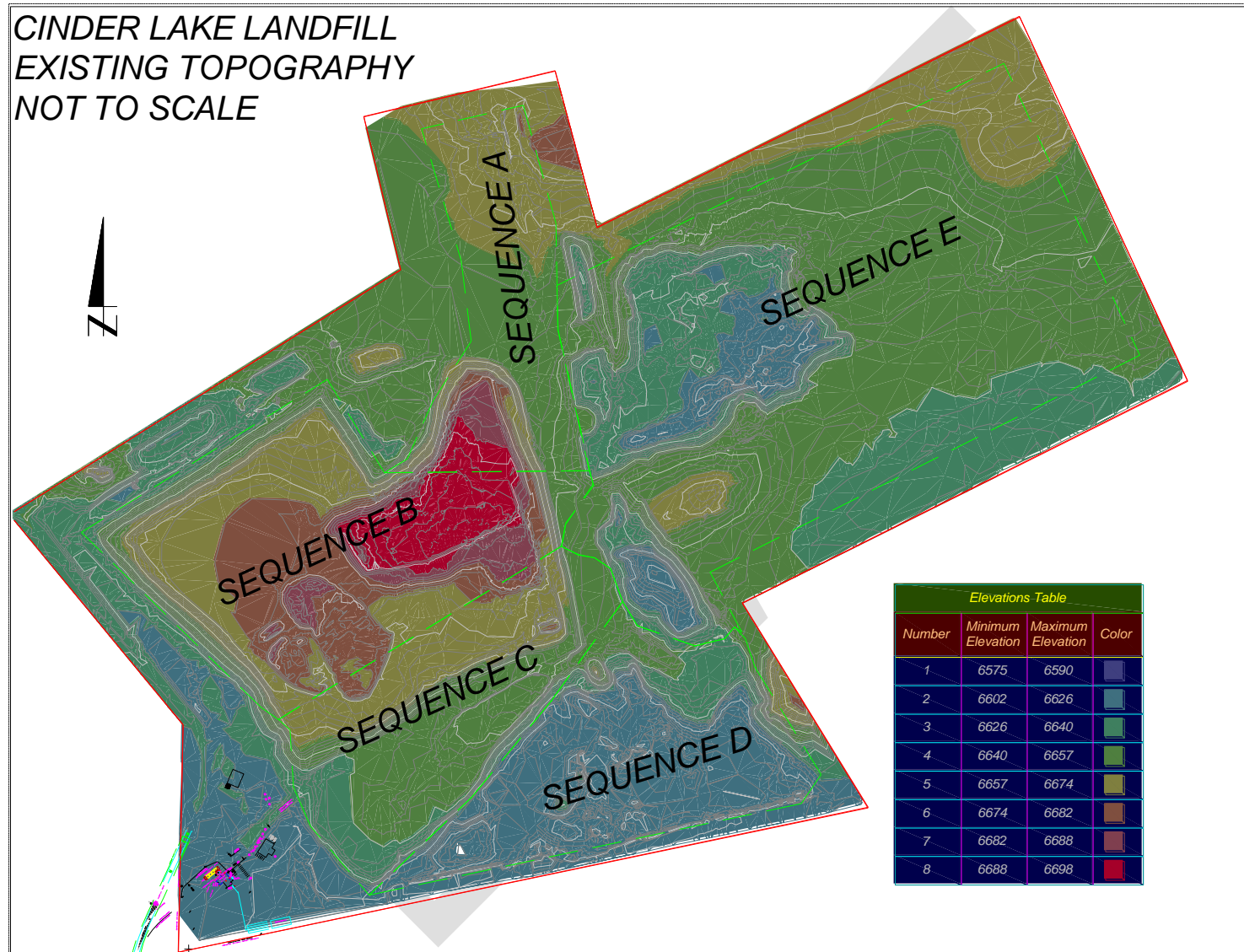


Figure 10-Cinder Lake Landfill approved design with color elevation map

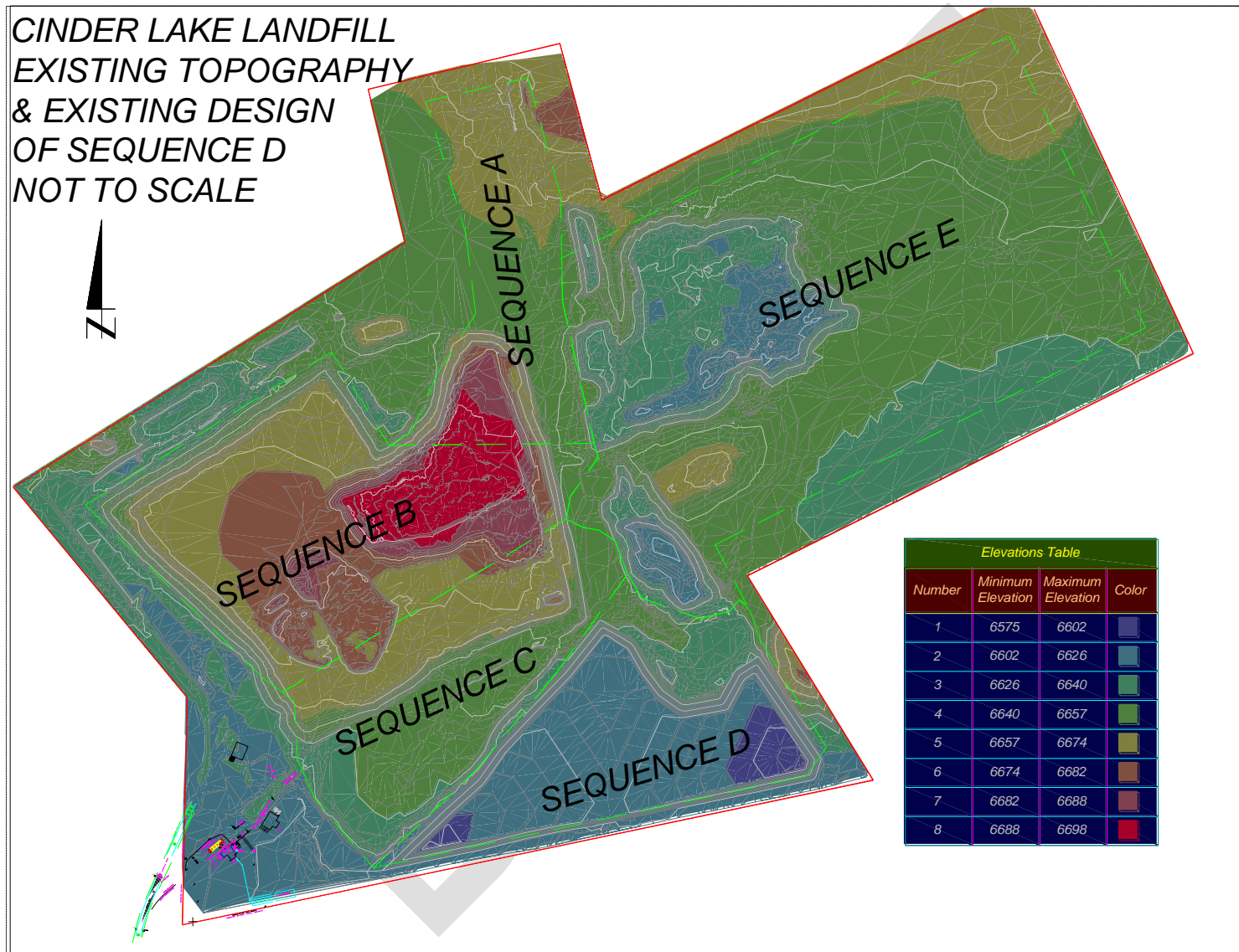
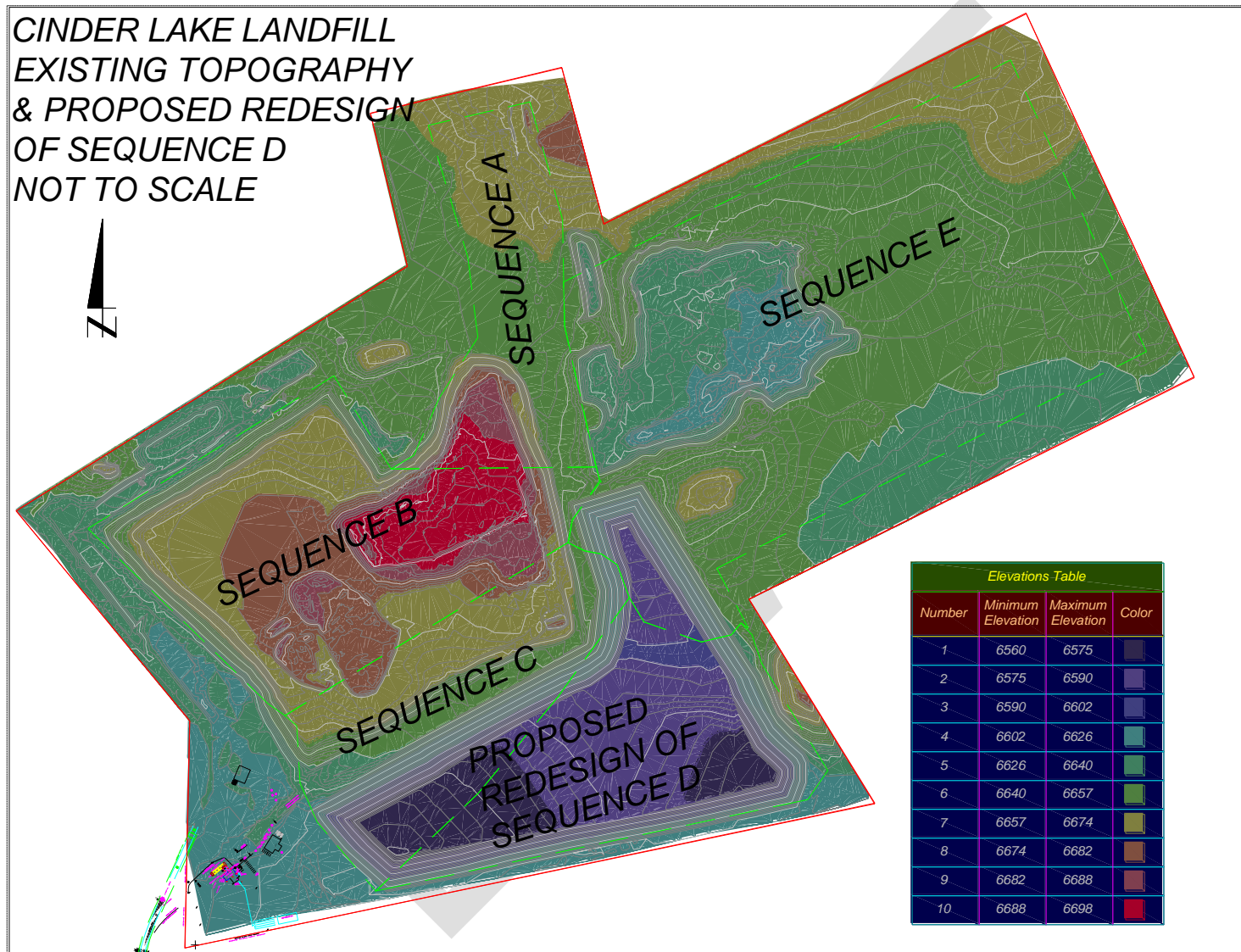




Figure 11-Cinder Lake Landfill proposed design of Sequence D



### 5.5.1 Excavation of Sequence D

The CLL Solid Waste Facility Plan acts as the guiding construction document and prescribes excavation depths within the future expansion area known as Cell D as shown in Figure 8 (33 Acres). The depths established by the engineer of record were based on the elevations for marginally rippable (extractable) rock, as determined by drillers' logs and geophysical surveys. The engineer assumed that the desirable method of excavation was through mechanical removal by bulldozers and excavators with minimal blasting. Since that time there have been multiple excavations performed on-site. Project managers determined drilling and blasting will be a more practical method to successfully extracting rock and soil from the site.

In fall 2012, CLL embarked on an extensive drilling and sampling operation. The mission of the project was to determine whether it was feasible to drill and blast below the prescribed elevation within Cell D. Results from the study indicate that excavation below the design elevation is potentially feasible based on the following considerations:

- The *in situ* rock is a potentially valuable resource to consider as aggregate for future applications in roadway construction for the region. The nearest source of aggregate is located approximately 40 miles north of Flagstaff at the CEMEX Gray Mountain Plant.
- The "slag" generated from processing rock would decrease the existing soil deficit, which is approximately 1.2 to 2.6 million cubic yards.

The potential excavation would not conflict with the aquifer, as it lies in excess of 1,600 feet below the landfill footprint. Project managers concluded that the existing design could be exceeded by as much as 20 feet (Figures 9 thru 12). However, the operation would involve mining portions of buried MSW within Cell C to achieve such elevations (additional discussions in Section 7 pertain to landfill mining). The additional airspace gained over that time is likely to result in another substantial landfill life as shown in Table 2. Although growth rates in the long-range cannot be accurately predicted, the results from this study have already demonstrated that additional investigation is warranted.

Table 2-Comparison of Closure Dates with Potential Expansion in the Cell D

Condition	Approximate Closure Date
Existing Design with Disposal rate increase of 3% per year	2054
Existing Design with Disposal rate increase of 1% per year	2081
Expansion with Disposal rate increase of 3% per year	2059
Expansion with Disposal rate increase of 1% per year	2086

The next stage will be to prepare a phasing and staging diagram for processing aggregate and soil. The study will result in a comprehensive proposal to consider for future development of the site. Although excavation is not required for another decade, the task of planning and marketing of aggregate and soil could take years to develop.

### **5.5.2 Alternative Cap and Liner Designs**

The volumes of paper sludge delivered every day to CLL are large enough (80 to 120 cubic yards per day) to warrant its use as an alternative liner and cap material since future sequences will require the implementation of landfill liners and caps that meet federal and state standards. The cost for traditional cap is approximately \$55,000 per acre (includes all infrastructure).

In 2012 the City collaborated with Northern Arizona University College of Engineering and Natural Sciences to conduct preliminary studies on the use of paper pulp millings as a primary component for an alternative landfill cap (see Section 6). The material was deemed favorable when mixed with binders such as fly ash. The students arrived at the following results:

- Paper pulp millings alone do not create a viable cap or liner
- When mixed with smaller particle size materials (and larger surface area), the mixture can successfully be used as a barrier
- Cost analysis will require further investigation
- Additional research is warranted to determine if the product has any structural limitations.

CLL is also in the process of studying the use of polymers to optimize the performance of paper pulp millings as a liner. Preliminary results demonstrate that certain long-strain polymers are likely to perform successfully. However, additional research will be conducted to qualify the validity of the product.

Both the liner and the cap systems will require additional lab testing under controlled conditions. If either or both of them prove favorable in the lab, Cell D will be used as a pilot study area for the implementation of the products in the field. The pilot study would likely consist of multiple acre-sized plots of MSW to be placed atop the alternative liner. The alternative liner would be constructed on top a conventional liner system. The conventional liner would collect any leakage that occurred through the alternative liner.

It would be most efficient to conduct the study in cells where the final design elevation is achieved. Regardless of whether the City pursues deeper cells as previously discussed, it would be most efficient to excavate to whichever elevation is decided upon when constructing the multiple acre-sized cells.

## 6 Waste Utilization and Conversion Technologies

There are many developing waste utilization and conversion technologies being accepted by the solid waste industry. Some have been proven in large scale commercial applications and others have yet to be scaled up from a bench model. CLL is apprised of most of these technologies either through industry contacts or scientific literature, and they have been reviewed in varying detail to determine which of the technologies would be feasible to deploy. When analyzing the technology, the first consideration we analyze is whether investing in the technology has the ability to provide a reasonable return period. There is little benefit in saddling Solid Waste operations with ongoing additional expenditures just for the sake of being at the forefront of technology. A sample criterion of factors is as follows:

- The ability and longevity of the technology to continuously produce a sellable commodity
- A buyer willing to enter into contract to purchase and take possession of the commodity over the lifetime of the project
- Complies with all federal, state and local regulations that govern Solid Waste Section operations

### 6.1 Traditional Landfill Gas Extraction

Over the past three years studies have been conducted to determine the viability of landfill gas extraction at Cinder Lake Landfill. This type of technology has been in use in the United States for over 25 years at over 500 landfills. The process involves drilling and installing landfill gas extraction wells throughout the existing footprint of the landfill. A network of surface piping is used to convey landfill gas collected from wells to an area where the gas can either be processed for conversion to beneficial energy use or can be flared off to the atmosphere. In both processes methane is converted to carbon dioxide and energy, thereby reducing the global warming potential of the gas by a factor of 21. This would reduce the amount of carbon dioxide equivalents that CLL would have to disclose in its annual green house gas emissions report to the Environmental Protection Agency. The energy derived from these conversion processes can be used to offset the use of fossil fuels. The results of the studies indicate the following:

- CLL is not required to place landfill gas extraction and control systems in place because the facility falls below the EPA New Source Performance Standards threshold of 50 megagrams of Non Methane Organic Compounds per 40 CFR 60 Subpart WWW (EPA, 1999)
- There is adequate potential methane gas flow rates and concentrations at CLL to warrant pursuing landfill gas to energy opportunities
- Selling the gas to an industrial end user yielded a very low return on investment with very long payback periods
- Sending the gas to Wildcat Waste Water Treatment Plant would yield significant cost savings as compared to paying for natural gas for a sludge drying operation
- The option with the best return on investment and the shortest payback period was to convert landfill gas into fuel that can be used by the City fleet

Traditional landfill gas extraction has been demonstrated favorably over many years at many landfills in the United States. However, in order for this technology to be successful over the life

of the project there has to be a guarantee that the organic fraction of the waste stream will not be diverted from the landfill. This means that any new technologies utilizing organics outside of a traditional landfill operation will not be able to be deployed; even if these technologies can make better use of the organic fraction of the waste stream.

## **6.2 Alternative Technologies**

The City has been working with Northern Arizona University College of Engineering and Natural Sciences students during FY 13 to determine the viability of using paper pulp millings as alternative cap for CLL (NAU, 2013).

Various components of the waste stream that enter the landfill have potential economic value. These include but are not limited to:

- Organics
- Plastics
- Precious Metals (i.e. Copper)
- Aluminum
- Steel
- Office Paper
- Cardboard
- Newspaper
- Magazines
- Paper Pulp and Alternative Cover

One way to develop beneficial uses of these resources is to separate the waste stream into individual components. The advantage of this is to create relatively homogenous feedstock which in turn can either be fed into a waste conversion technology process or sent to Norton Environmental for recycling.

Organics can be used to generate natural gas and/or compost. Older, traditional organic waste conversion technologies forced managers to choose between these two end products. Now a promising technology called Organic Waste Recycling Biomodule purports to do both. Natural gas generated from this process could be sold to an industrial end user. Revenue from the sale of gas would pay for the implementation and life of the organic waste conversion project. In addition compost can be made available to businesses and residents. The compost can also be used as cover material at CLL (see Section 6 regarding soil deficiencies). A cursory investigation of the feasibility of this technology concluded that more investigation is warranted.

Plastics 3-7 can be converted to crude oil by utilizing a process that volatilizes organic compounds found in plastics (Plastics-to-Oil). The vapor generated from this process is then condensed into crude oil which could then be transported to a refinery (i.e. Ciniza Refinery in Gallup, New Mexico) for further processing. This technology is also being investigated for its feasibility.

Waste-to-Energy is a process by which MSW is directly converted to energy. Deployed in its traditional form, this process is accomplished through combustion of MSW to generate electricity. Through investigating traditional landfill gas utilization technologies, the local electric utility is not interested in purchasing electricity from small scale power generation projects at this

time. Also the net return on investment of waste utilization projects that generate electricity is generally substantially less than deploying a waste conversion technology that generates a solid, liquid or gas fuel. Given these considerations, project managers are reviewing non-traditional forms of Waste-to-Energy conversion processes that can generate a solid, liquid or gas fuel commodity. This is done by limiting oxygen and adding heat to the waste conversion process to avoid combustion. Project managers are in the initial stages of investigating this new technology.

Sometimes separation of feedstock is essential for deploying any of previously mentioned waste conversion technologies. For example, in a Plastics-to-Oil operation, separation of MSW is essential. In an Organic Waste Recycling Biomodule, ensuring a continual input of homogenous feedstock is less essential (but still favorable). Finally, waste segregation is minimal for a Waste-to-Energy facility.

There are many benefits to waste separation. Any precious metals derived from the separation process can be sold within the recycling market. Plastics 1 and 2, aluminum, steel, office paper, cardboard, newspaper, and magazines can be taken to Norton Environmental for recycling. Recovering recyclables from the waste stream would likely help bridge the gap between the guaranteed minimum daily tonnage requirements the City is obligated to provide through 2023 to Norton Environmental. Since waste separation provides a mechanism for diverting more material away from the landfill, additional airspace will be conserved thereby extending the life of the landfill.

Landfill mining can provide feedstock for all the process described above, while substantially increasing the life of the landfill. Although the operation is likely to be financially prohibitive by itself, when paired with other perspective projects it may prove to be more attractive. Therefore the feasibility of landfill mining, in compilation with the expansion of sequence D (see Section 6) is being investigated.

### **6.3 Future Outlook for Alternative Technologies**

More than likely the processes described above will be successful if they are implemented in a suite of technologies over time. Since MSW consist of a multitude of valuable resources, a comprehensive approach must be taken to develop these assets. The outlook of solid waste is paradoxical when compared with traditional public perception. It is in the best interest of the City to view solid waste as a resource that has ever-changing value (financial and environmental) for society over time. There are many commodities that can be extracted and created from MSW. As conversion technologies continue to mature, certain variables may generate financial returns that outweigh the existing model, which supports burying trash in the landfill. It's likely that there will always be some residual material from the conversion processes needing to be disposed in a landfill.

Project Managers have explored reasonable mechanisms that maximize the conversion or reuse of solid waste into valuable materials. Therefore a set of potential goals have been proposed that are in alignment with the Project Manager's role (discussed in Section 1.3).

## 7 Conclusion

The key purpose of a SWP is to provide the community, and perhaps the region, with an outlook on the existing conditions, challenges, and opportunities that are likely to be faced in the future. The only known solid waste plan for the region was drafted in 1979 by NACOG.

The level service currently provided by the City rival larger cities in Arizona. CLL is one of many assets owned by the City that helps maintain a high level of service with a reasonable budget. Because CLL assumes the role as a regional landfill, it is only fitting that the City paves the way for the future growth by preparing a comprehensive SWP for the municipality and the region.

The framework of the Solid Waste Section demonstrates a multitude of services that are offered within the community and the region. The financial outlook for the program remains optimistic, and continuous adjustments will be made as necessary to accommodate the local and regional economy. Environmental compliance is also essential to assure the program will remain a viable disposal option for the region for years to come. Meanwhile managers will continue to remain committed to balancing fiscal responsibility and environmental stewardship for the City and the region. The SWP is expected to be a mechanism for communication to the public how it intends to achieve this balance over coming years.

Municipalities commonly tout increased waste diversion (reduce, re-use, and recycling) as a solid waste goal within their communities. However, for goals to become reality, the costs for implementation need to be clearly outlined. For instance recycling rates could be improved with the incorporation of more state of the art technologies at the MRF or by instituting a pay as you throw system at the residential level. But can the costs for implementation can be outweighed by the benefits in a reasonable period? Future challenges also lie in the decision to justify a program that has a payback period greater than ten years. This is a classic dilemma that is experienced for communities deciding whether to implement recycle programs today so that landfill life can be extended many years from now.

Staff will continue to examine more efficient methods of operation under the current level of service. In addition project managers are working with Northern Arizona University and qualified consultants to explore how landfill life can be extended using innovative approaches to capturing resources and converting them usable products rather than just solid waste.



## 8 References

- Anderson, A. Hamil, D. Jowers, J. Lail, N. Murray, G. O'Toole A. (May 2013). *SCA Tissue Paper Pulp Sludge Investigations and Determination of Beneficial Use for Cinder Lake Landfill*. Unpublished Manuscript. Northern Arizona University, College of Engineering and Natural Sciences
- Arizona, State of. (March 1981) King, P. and Weiss N. *Division of Environmental health Services Bureau of Waste Control*. Retrieved from [http://www.azdeq.gov/envIRON/waste/solid/download/aswmp\\_1981.pdf](http://www.azdeq.gov/envIRON/waste/solid/download/aswmp_1981.pdf)
- Flagstaff, City of. (July, 2013). *Flagstaff Regional Plan*. Retrieved from <http://www.flagstaff.az.gov/DocumentCenter/View/42601>
- Geosyntec (June, 2013). *Final Landfill Gas to Energy Feasibility Report*.
- R.W. Beck, (October, 2010). *Gas Generation Evaluation Review, Cinder Lake Landfill*. Unpublished Letter
- Towler, B. et al. (September 2003). *Coconino County, Coconino County Comprehensive Plan*. Retrieved from <http://www.coconino.az.gov/DocumentCenter/View/2992>
- Towler, B. et al. (July, 1979). *Northern Arizona Council of Governments. Solid Waste Management Plan*
- U.S. EPA. (1997) Measuring Recycling, A Guide for State and Local Governments. (EPA-530-R-97-011). Washington, DC. Retrieved from <http://www.epa.gov/waste/conserve/tools/recmeas/docs/guide.pdf>
- U.S. EPA. (1995). Methodology for Characterization of municipal Solid Waste in the United States: 1994 Update. Report Prepared by Franklin Associates, LTD. Washington, DC. Retrieved from <http://www.epa.gov/waste/nonhaz/municipal/pubs/msw95.pdf>
- U.S. EPA. (1999). *Municipal Solid Waste Landfills, Volume 1: Summary of the Requirements for the new Source performance Standards and Emission Guidelines for municipal Solid Waste Landfills (EPA-435R/95-004) Washington, DC.*
- U.S. EPA. (2012). *Municipal Solid Waste Generation, Recycling and Disposal in the United States, Facts and Figures 2012*. (EPA-F530-14-001) Washington, DC. Retrieved from [http://www.epa.gov/waste/nonhaz/municipal/pubs/2012\\_msw\\_fs.pdf](http://www.epa.gov/waste/nonhaz/municipal/pubs/2012_msw_fs.pdf)

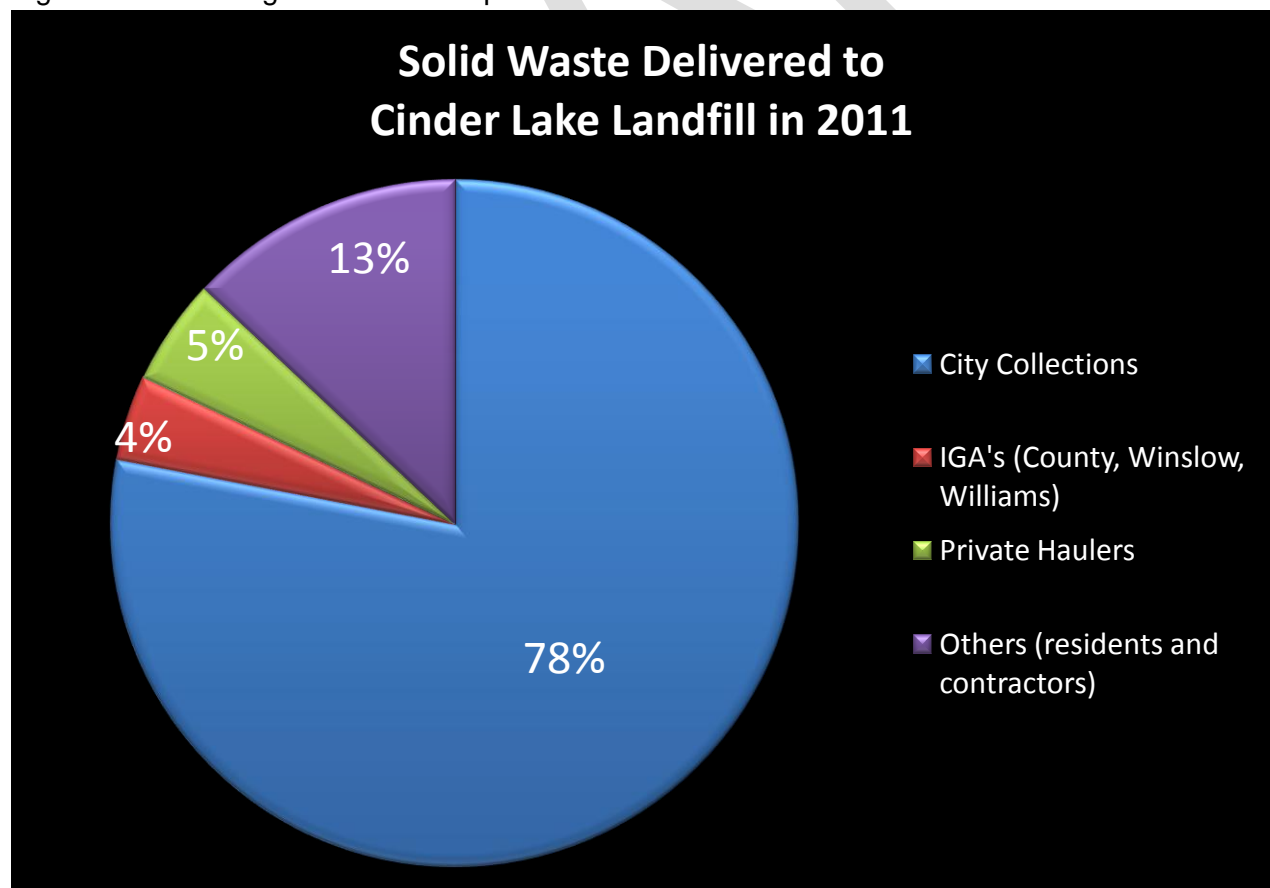
## Appendix A

### Identification of Stakeholders and their Role in Solid Waste

The Solid Waste section provides solid waste collections for intergovernmental agreement (IGA) partners when necessary. For instance the County relies on the City for collection services at two transfer stations located toward the southern boundaries of Flagstaff (Willard Springs and Mormon Lake transfer stations). Residents in outlying areas can deliver solid waste to the transfer stations at their convenience. On the north end of Flagstaff, CLL acts as the main receptacle for City and County residents delivering solid waste on their own.

Commercial and residential solid waste collection services are also offered by private haulers within the County. Approximately 5% of the total waste delivered to CLL is from private haulers (Figure 12). It is likely that much of the residential and commercial waste collected on the far southern and northern boundaries of the County are ultimately delivered to landfills in other counties. For instance, private haulers working south of Flagstaff are likely to use the Waste Management transfer station in Flagstaff for their disposal needs. The solid waste from the Waste Management transfer station is typically delivered to their Painted Desert Landfill located in Joseph City, AZ. We do not know how much of the waste is being taken to other disposal locations outside the County.

Figure 12-Percentages of Waste Disposed at Cinder Lake Landfill in 2011

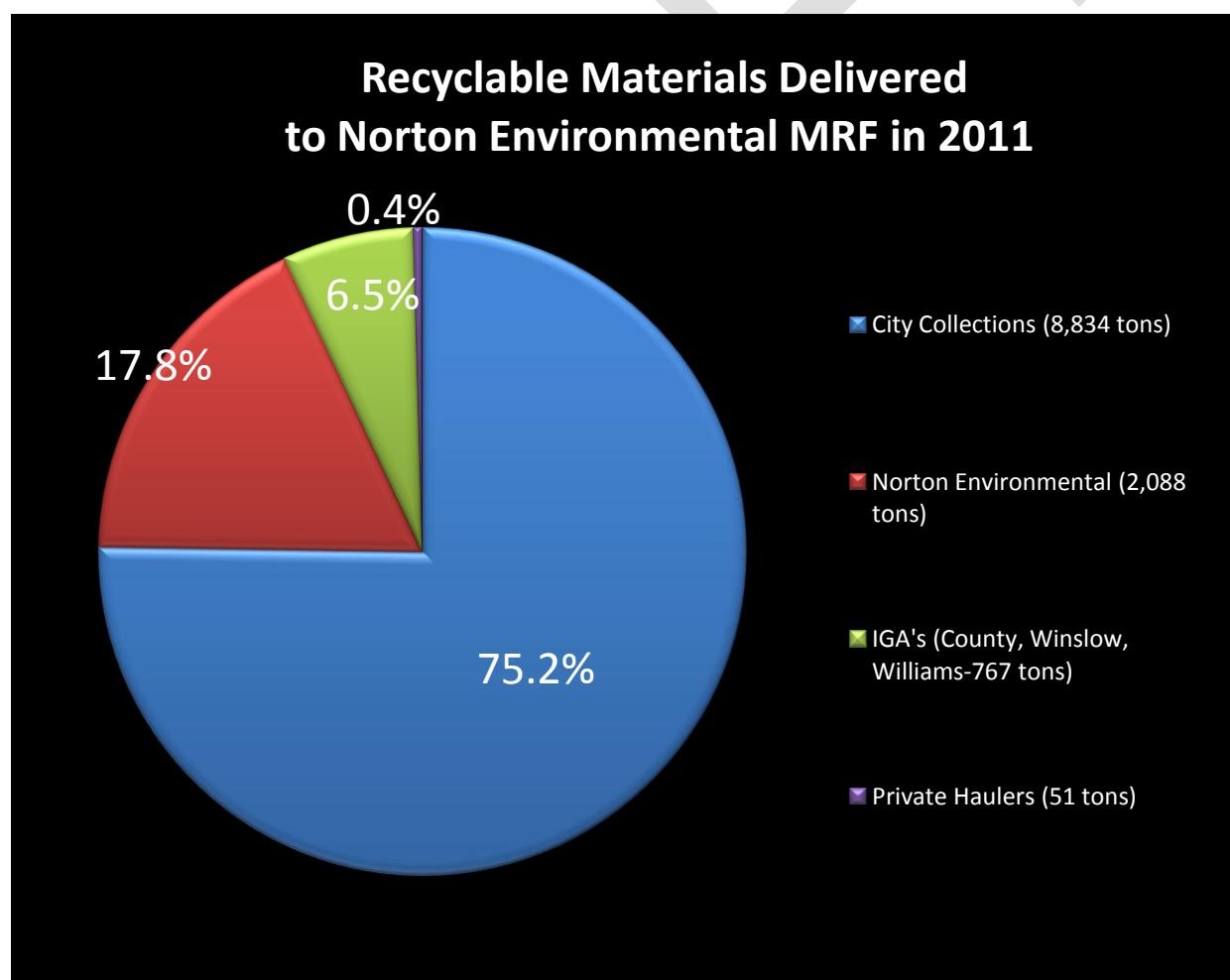


The four entities listed in Figure 12 provide the most reliable sources of feedstock to Cinder Lake Landfill. Within each of these entities lies a subset of integral parts to the equation. The City relies on IGA's, contracts, general agreements, and private haulers as discussed below:

## IGA's

Ultimately it is the responsibility of the County and municipalities to ensure that adequate solid waste services are offered to the public (ARS 49-741). Although the contribution of solid waste by IGA's is minimal (Figure 12), the County Solid Waste Department is a vital partner for the City. The County currently contributes approximately \$30,000 per year to provide County residents a safe method to dispose of household hazardous products. In addition, the County provides recycle bins at the Willard Springs and Mormon Lake transfer stations. However the transfer stations serve rural communities and this creates limitations to the optimizing the capture of recyclables within the County. The amount of recyclables received at the MRF reflects those challenges (Figure 13).

Figure 13-Percentages of Recyclables Delivered to Norton Environmental MRF in 2011



The Solid Waste recycle program provides financial incentives for IGA's to participate in the recycle program at the Norton Environmental Material Recovery Facility (MRF) through the profit share program (Table 3).

Table 3-FY 12 IGA-Contributions for recycling

<b>IGA</b>	<b>Tonnage</b>	<b>Revenue</b>
City of Flagstaff	12,277	\$222,010
City of Williams	314	\$7,200
City of Winslow	114	\$2,400
Coconino County	231	\$5,190
<b>Total</b>	<b>12,936</b>	<b>\$236,800</b>

Table 3 demonstrates that the cost for site maintenance and transporting of goods to the MRF likely outweigh financial benefits for sites located away from the City; especially when the volumes of recyclables are low compared to the City's contribution. Solid Waste will continue maintaining the agreements as a means of good stewardship to the surrounding communities.

## **Contracts**

Formal contracts that have been established typically guarantee consistent revenue and resources for MSW for Solid Waste. Four contracts that are worth noting include the following:

### **SCA Tissue**

The terms of this contract provide for the City of Flagstaff's Solid Waste Section to provide waste sludge hauling and snow removal services to SCA Tissue for a 10-year term. The paper sludge is hauled to the City of Flagstaff's Cinder Lake Landfill. The paper sludge is mixed with green waste and crushed glass gravel and used as an Alternative Daily Cover (ADC). The Arizona Department of Environmental Quality (ADEQ) has approved of the use of these materials as an ADC. The paper sludge makes up approximately 90% of the ADC used at the Landfill.

Using paper sludge as an ADC saves valuable landfill airspace as well as defers the need for the City to import cover for landfill operations. The use of paper sludge as an ADC helps to keep landfill fees down which is a benefit that is passed onto the citizens and businesses that use our services. Reasonable fees are a factor in maintaining a competitive service in the Northern Arizona market.

### **Norton Environmental**

The City has a contractual obligation to provide Norton Environmental, Inc. (Norton) Materials Recovery Facility (MRF), with an annual minimum of recyclable tonnage. If and when this tonnage is not achieved, the City of Flagstaff is required to pay the MRF a compensation fee that is calculated according to the shortage of material. It is in the benefit of both the City of Flagstaff and the MRF to meet the contractual standards, as 50% of

profits generated from the sale of Recovered Materials are paid back to the City from the MRF. Source-separated recycling tonnage has been decreasing slowly since 2008. The profit sharing program should continue to bring positive net financial returns to the City of Flagstaff. However, additional revenue could be realized by meeting the contractual obligation of 15,600 tons per year.

### **Educational Institutions**

Northern Arizona University and the Flagstaff Unified School District make substantial contributions to the solid waste and the recycle program. Their contracts expire in 2015 and 2016 respectively.

### **General Agreements**

Previous agreements were established long ago informally or as understandings. The following agreements are currently in place:

#### **Ralston Purina**

Purina's plant creates high volumes of MSW every year. Therefore previous management provided the plant with a volume discount.

#### **City of Flagstaff, Solid Waste Cooperative Management on Flagstaff Ranger District**

The City and the Forest Service continue with cooperative efforts to manage illegal dumping, monitor litter at and adjacent to the Cinder Lake Landfill, and enforce litter and dumping regulations within Forest Service Boundaries (Figure 14).

Figure 14-Typical example of wildcat dumping occurring within Forest Service boundaries



### **Solid Waste Providers within the County**

Although private solid waste companies contribute minimal volumes of MSW, the Solid Waste program can experience shifts in financial stability if the resource were to be sent to a facility

other than CLL. Table 4 demonstrates the major contribution of heavy haulers providing solid waste services in the region.

Table 4-Regional Private Solid Waste Providers

<b>Company</b>	<b>Services</b>	<b>CLL Users</b>
Bleaker Boxes	City and County Construction Debris (large trash bins)	Regular
Norton Environmental	City Commercial and County Trash and Recycle Services	Regular
Ash Fork Sanitation	County Solid Waste Services	Regular
Auerbach Waste	City Commercial and County Solid Waste Services	Regular
Navajo Sanitation	City Commercial and County Solid Waste Services	Occasional
Waste Management	City Commercial and County Trash and Recycle Services	Occasional (Wood Waste Only)
Republic Services	City of Page Trash and Recycle Services	Never

DRAFT



**Attendees at the November, 2013 Stakeholder Meeting (Next Page)**

DRAFT

DRAFT

City of Flagstaff-

Public Works

Solid Waste Plan Meeting-November 18,



Solid Waste Section 2013 at 10:30am

Name	Organization or Company	Address (if we don't already have it)	Phone	Email Address
RAY SELLAARDS	NOXTER		216 701 0916	RSSELLAARD@NOXTERGROUP.COM
Ken Hollman	Cocaine County	-	928-525 41766	Hollman@coconino.gov
Willie Block	WJM.		602- 592-6948	
STEVE BURGEMAN	COF		213-2110	sburgeman@flagstaffaz.gov
Matt Morales	COF		(928) 775-9800	
Jay Eby	Patriot Disposal	P.O. Box 26296 Phoenix Valley		Jayeb@patriotdisposal.com
Les Baker	" "	" "	" "	LB@PatriotDisposal.com
Cindy Ruelas	Navajo Sanitation	P.O. Box 237 Window Rock AZ 86515	928-871. 41395	Cindy@navajosanitation.com
Mike LORNER	Cocaine County		928 679-8300	MLORNER@COCONINO.AZ GOV

DRAFT

**Letters Drafted by Stakeholders (Next Page)**

DRAFT

DRAFT



Waste Management  
Four Corners Market Area  
222 S. Mill Ave, Suite 333  
Tempe, AZ 85281  
(480) 457-4700

December 16, 2013

Matt Morales, Environmental Project Specialist  
City of Flagstaff  
211 West Aspen Avenue  
Flagstaff, AZ 86001

Re: *Requested Comments on Flagstaff's Solid Waste Plan*

Dear Matt:

I would like to thank you for the opportunities to not only review the Solid Waste Plan, but also to provide comments that may be considered for inclusion into the document. As a significant partner to and service provider of the City of Flagstaff (City) area, below is a list of comments and concerns that are of importance to Waste Management (WM). As such, WM requests the following changes:

Item #1: In the Executive Summary, additional information WM requests that the City include all of the options for solid waste disposal in the area, including WM's transfer station located at 508 S Flagstaff Ranch Rd, Flagstaff, AZ. It should be noted that this site has easy access of Interstate 40 and that the solid waste is loaded onto large transfer trailers and delivered to the WM landfill in Joseph City just 86 miles away off Interstate 40.

Item #2: In Section 1.3 Goals, WM suggests adding a goal of exploring opportunities to utilize the WM transfer station for City collection vehicles. The City could potentially reduce its carbon footprint, save money and increase efficiencies for the Solid Waste Division. The distance from the City yard to the WM transfer station is less than 5 miles away. The CLL is more than 12 miles away. This possible public-private partnership is a win-win for the City.

Item #3: In Section 2.2, please add the WM transfer station as an option for disposal in Coconino County, as should any other option that is available to residents or business.

Waste Management has been part of the Flagstaff and Coconino County (County) for many years and we employ 15 people in the area, as such we value the partnership with City and the County. In fact, it is our sincere desire to be a valued member of this community for many years to come. As such, WM would like to reiterate that we would be interested in working with the City to extend the life of the Cider Lakes Landfill (CLL).





Waste Management  
Four Corners Market Area  
222 S. Mill Ave, Suite 333  
Tempe, AZ 85281  
(480) 457-4700

Thank you for the opportunity to review the City's Solid Waste Master Plan. I look forward to working with you and City staff to explain the opportunities and benefits with utilizing WM facilities.

Please contact me if you would like to discuss any of the information I have provided in this letter. We look forward to continuing a strong partnership with the City and once again appreciate the opportunity to work with the City on the future of solid waste in Flagstaff.

Sincerely

A handwritten signature in black ink, appearing to read "William Black". The signature is fluid and cursive, with a large, sweeping "W" and "B".

William Black  
Public Sector Solutions Manager  
Waste Management of Arizona  
C: 602-592-6948  
wblack@wm.com



Andrew L. Bertelsen  
Director

City of Flagstaff  
211 Aspen Av.  
Flagstaff Arizona 86001

12/18/2013

Mike Lopker  
Deputy Director

Lucinda Andreani  
Deputy Director

Att. Matt Morales

Dustin Woodman  
Engineering Division  
Manager

Dear Matt,

Ted Wolff  
Maintenance  
Superintendent

We would like to thank you for inviting the county to the stakeholders meeting on November 18<sup>th</sup>. The meeting was very informative and we understand your concerns for extending the lifespan of the landfill. We also agree that it is important to divert recyclable waste from entering the landfill.

Ron Hollamon  
Solid Waste Manager

Byron Browning  
Fleet Services Manager

Robert Rowley  
Emergency Manager

Minerva Ramirez-Lopez  
Administrative Manager

Marc Della Rocca  
Community Relations  
Manager

The County currently has an IGA with the City of Flagstaff for the Hazardous Waste Products Center, and for this the County pays the City approximately \$30,000.00 a year to give county residents a safe and proper way to dispose of hazardous waste. The County also placed two roll off bins at the City landfill for county residents to drop off paper and plastic free of charge. The two transfer stations we operate at Willard Springs and Mormon Lake have a metal bin and paper/plastic bins for residents in outlying areas to properly dispose of recyclable goods free of charge, and the site operators do an outstanding job of monitoring the waste disposal to minimize the recyclables from entering the household waste streams. We also operate the only Waste Tire Collection site in Coconino County which collects almost 70,000 tires per year. The City of Williams also has an IGA with us in which the County pays to provide a service to county residents, and several recycle bins are located at this site. There are several facilities owned by Coconino County that generate scrap metal. We have bins at these locations so the metal can be recycled. The City of Flagstaff and the county have worked together for many years providing residents with a Community Cleanup Day, and during this event county employees help separate and sort waste to minimize recyclables from entering the landfill.

Coconino County is very grateful for the working partnership it has with the City of Flagstaff and we hope this partnership will continue far into the future. In the recent draft Solid Waste Plan, it was suggested the County could be doing more to reduce the amount of solid waste entering the landfill. As I have described we have a recycle program in our solid waste plan, but we are more than happy to sit down and discuss options or alternatives to improve.

Sincerely,

Mike Lopker  
Deputy Director  
Coconino County Public Works

DRAFT

## Appendix B

### Federal Laws and Regulations that Govern Cinder Lake Landfill

#### Resource Conservation and Recovery Act

The [Resource Conservation and Recovery Act](#) — commonly referred to as RCRA — is the nation's primary law governing the disposal of solid and hazardous waste. Congress passed RCRA on October 21, 1976 to address the increasing problems the nation faced from our growing volume of municipal and industrial waste. RCRA, which amended the Solid Waste Disposal Act of 1965, set national goals for:

- Protecting human health and the environment from the potential hazards of waste disposal.
- Conserving energy and natural resources.
- Reducing the amount of waste generated.
- Ensuring that wastes are managed in an environmentally-sound manner.

Regulatory authority for enforcement of regulations promulgated under the RCRA by the Environmental Protection Agency (EPA) comes from 40 CFR Chapter I – EPA, Subchapter I – Solid Waste, Parts 239-282.

#### Clean Air Act

Landfills are required to sample, monitor, and control airborne contaminants ranging from fugitive dust to landfill gas. CLL gas levels currently fall below the regulatory thresholds which require the installation of a landfill gas collection and control system. Airborne contaminants are regulated through the [Clean Air Act](#).

The [Clean Air Act](#) is designed to control air pollution on a national level. It requires the EPA to develop and enforce regulations to protect the public from airborne contaminants known to be hazardous to human health. The 1963 version of the legislation established a research program, expanded in 1967. Major amendments to the law, requiring regulatory controls for air pollution, passed in 1970, 1977 and 1990.

Regulatory authority for enforcement of landfills is promulgated under the Clean Air Act by the EPA comes from 40 CFR Chapter I – EPA, Subchapter C – Air Programs, Parts 50-98.

#### Clean Water Act

Landfills are typically required to install groundwater monitoring wells with up-gradient and down-gradient wells per 40 CFR § 258.50 to 258.51. However the elevations of the aquifer below Cinder Lake Landfill are unique in that the depth to the aquifer is approximately 1,600 feet below the facility. The City explored more cost-effective alternatives to monitoring the vadose zone (the zone between the bottom of the landfill and the aquifer). The vadose zone monitoring system, which was installed in the fall of 1995, consists of five monitoring stations consisting of a sampling device (lysimeter) and a monitoring device to measure moisture migration (neutron probe access tube). Since the inception of the monitoring program, the facility has remained below the Maximum Contaminant Levels as promulgated by the Clean Water Act. In addition there has never been a noticeable migration moisture front moving across the vadose zone.

Regulatory authority for enforcement of regulations promulgated under the Clean Water Act by the EPA comes from 40 CFR Chapter I – EPA, Subchapter C – Water Programs, Part 122.

As authorized by the [Clean Water Act](#), the [National Pollutant Discharge Elimination System \(NPDES\)](#) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. CLL and the Dry Lakes Inert Material Pit are monitored quarterly for any illicit discharges from either site.

## **State Enforcement of Federal Law and Regulations**

The Arizona Department of Environmental Quality has been granted authorization by the EPA to enforce certain federal law and regulatory rules, which allows for state oversight of some environmental regulations.

Provisions provided in RCRA, Clean Air Act and the Clean Water Act allow for the delegation of enforcement of regulations promulgated under each of these acts from EPA to the state.

## **Arizona State Laws that Govern Cinder Lake Landfill**

### **Regulatory Authority for Collection and Disposal of Municipal Solid Waste**

Arizona Revised Statutes (ARS) § 49-741 requires that each County, city or town shall:

1. Provide or otherwise ensure proper arrangements are made for public facilities at such intervals and as conveniently as the governing body deems necessary for the safe and sanitary disposal of solid waste generated within its jurisdiction but need not duplicate a service provided by a private enterprise or another political subdivision.
2. Comply with regulations adopted by the director (director of environmental quality) in the administration of solid waste management programs.

### **Regulatory Requirement for a Solid Waste Facility Plan**

ARS Section 49-762 requires that the owner or operator of the following solid waste facilities shall obtain approval of a solid waste facility plan in accordance with sections 49-762.03 and 49-762.04:

1. Solid waste land disposal facilities.
2. Biosolids processing facilities.
3. Medical waste facilities.
4. Special waste facilities.
5. Municipal solid waste landfills.
6. Commercial or government-owned household waste composting facilities.
7. A site at which five hundred or more waste tires are stored on any day and any tire is stored for more than twelve months unless the site is a waste tire collection site owned by a municipality or a county.

## **City Laws that Govern Cinder Lake Landfill**

Solid waste rules and regulations within the City of Flagstaff are guided by City Code Chapter 07-04. Many of the ordinances within the code are a reflection to the needs of the community to provide improved definitions. There is no change in City Code that is expected to come from the future operations Solid Waste in the next ten years. However the City Manager and Council may want to revisit this annually with revisions to the SWP.

DRAFT

## **Appendix C**

### **Cinder Lake Landfill Compliance Requirements**

#### **Greenhouse Gas Reporting Rule**

CLL is required to estimate its methane emissions to the atmosphere and report them annually to EPA.

#### **Air Quality Class I Permit**

Issued by ADEQ, CLL is required to create an estimate of its emissions of air pollutants and submit the estimate annually to ADEQ. Twice a year CLL must submit a report to certify that it is following the requirements of its Air Quality Class I Permit. Every two weeks a Visible Emission Survey must be completed to determine the opacity of air borne dust that is generated by vehicular traffic. Annual inspections are performed by representatives of ADEQ as well.

#### **Solid Waste Facility Plan**

Approved by ADEQ, CLL is required to monitor soil moisture beneath the landfill foot print and to monitor subsurface landfill gas migration at the perimeter of the landfill quarterly. The monitoring information is compiled and submitted annually to ADEQ.

#### **NPDES Permit**

CLL maintains an Emergency Response Plan, Spill Prevention Countermeasures Control Plan, and Stormwater Pollution Prevention Plan. The permits for all three plans are guided by the Multi-Sector General Permit under the Arizona Pollutant Discharge Elimination System (AZPDES) program. Dry Lake Inert Material Pit is also guided by the Multi Sector Construction permit under AZPDES. The program requires quarterly monitoring, seasonal water sampling, and annual reporting. The reports for both facilities are stored at CLL and do not require submittal to ADEQ until an annual inspection occurs.



## **Appendix D**

### **Infrastructure**

#### **Cinder Lake Landfill**

##### **Power**

Currently CLL uses single phase power that is provided by APS. In FY 2012, all operations at CLL used approximately 89,000 kWh of power which cost approximately \$14,000. Three phase power would have to be installed at CLL if a landfill gas extraction system or any type of waste conversion technology is deployed. Arizona Public Service has provided an initial cost estimate of approximately \$750,000 to connect the landfill to three-phase power. A cost-benefit analysis has been completed within the Landfill Gas Feasibility Study (Geosyntec, 2013).

##### **Water**

Currently CLL relies on potable water to be delivered to the facility weekly for its domestic needs. If more aggressive industrial activities are to occur, it will be necessary to have a reliable source of on-demand water on site. This will especially be the case for any landfill gas collection and control systems. The costs to connect to a potable water line to the facility would be approximately \$290,000.

## **Appendix E**

### **Other Programs Supported by Solid Waste**

The Solid Waste program provides ancillary benefits to programs within the City limits and beyond. The following activities or programs are some of the examples of support the Solid Waste program provides to the community:

#### **County Cleanup Day**

On one Saturday in May, the County will provide free trash disposal at CLL to its residents. The City provides the necessary manpower for the entire day. The program requires all of the staff at CLL to be present during County Cleanup Day.

#### **Free public mulch**

The public is free to pick up wood chips at the City Public Works Yard and CLL. The mulch is provided by various contractors who occasionally dispose of clean wood chips. The wood chip pile is maintained by Solid Waste throughout the year.

#### **Sustainability and Environmental Management Section**

Projects that receive (or have received) direct support from Solid Waste include the following:

- Hazardous Product Center
- Promotional mailings for recycling
- Manpower for collection and cleanup wildcat dump sites
- Public service events involving a community cleanup day
- All other SEMS related events involving the need for solid waste and recycle bins

#### **Flagstaff Fire Department Fuels Management Program**

CLL has provided multiple levels of service for the fuels reduction program throughout the past. Subsequent to tree thinning, CLL operators have provided heavy equipment for grading, site access, and tree chipping and removal. Equipment provided in the past included:

- Motor Grader
- Front End Loader with grapples
- Tree Chipper/Shredder
- Dump Truck

## Appendix F

### Cinder Lake Landfill MSW Disposal Trends

#### Waste Delivery Tonnages for 2011

Source of Solid Waste	Tonnage
-----------------------	---------

City Residential	13,832
------------------	--------

City Commercial	26,916
-----------------	--------

Rejected Recycle	2,469
------------------	-------

City Private Hauler	2,675
---------------------	-------

Paper Sludge	43,736
--------------	--------

City Streets Projects	1,954
-----------------------	-------

City Bulk	3,034
-----------	-------

City Private Hauler Construction	5,708
-------------------------------------	-------

City Hoist and Haul	10,153
---------------------	--------

City Residential Construction	206
-------------------------------	-----

City Homeowner	3,193
----------------	-------

Sub total	113,876
-----------	---------

Recycle	8,588
---------	-------

Total	122,464
-------	---------

Population of Flagstaff	65,000
-------------------------	--------

Per Capita Solid Waste Rate	1.8	lb/person/day
-----------------------------	-----	---------------

Per Capita Recycle rate	0.1	lb/person/day
-------------------------	-----	---------------

Total Per Capita Disposal Rate	1.9	lb/person/day
--------------------------------	-----	---------------

Table 5-Breakdown of Municipal Solid Waste Disposed at Cinder Lake Landfill over the Past Two Fiscal Years

FY 13			FY 12				
Product Name	# Loads	Adj Net Wgt	Product Name	# Loads	Adj Net Wgt	Variance	Percent
Bulky Residential MSW	498	3,038.76	Bulky Residential MSW	475	3,046.99	(8.23)	-0.27%
Carcass (Animals) Commercial MSW	47	17.72	Carcass (Animals) Commercial MSW			17.72	100.00%
CARCASS RESIDENTIAL HOUSEHOLD	18	7.75	CARCASS RESIDENTIAL HOUSEHOLD			7.75	100.00%
CHRISTMAS TREE'S CITY RESIDENTIAL	7	22.32	CHRISTMAS TREE'S CITY RESIDENTIAL	5	17.47	4.85	21.73%
City of Flagstaff Streets/Clean Sweepings	101	1,236.22	City of Flagstaff Streets/Clean Sweepings	63	869.84	366.38	29.64%
City of Flagstaff Water Distribution	32	401.12	City of Flagstaff Water Distribution	65	822.39	(421.27)	-105.02%
CITY RESIDENTIAL CONSTRUCTION	928	455.50	CITY RESIDENTIAL CONSTRUCTION	556	556.44	(100.94)	-22.16%
CITY RESIDENTIAL WOOD WASTE	109	54.75	CITY RESIDENTIAL WOOD WASTE	107	61.00	(6.25)	-11.42%
CNTY RESIDENTIAL CONSTRUCTION	1,207	626.50	CNTY RESIDENTIAL CONSTRUCTION	638	679.06	(52.56)	-8.39%
CNTY RESIDENTIAL WOOD WASTE	205	104.75	CNTY RESIDENTIAL WOOD WASTE	157	88.50	16.25	15.51%
Commercial MSW	4,587	36,734.63	Commercial MSW	5,571	41,485.38	(4,750.75)	-12.93%
Filter Waste	72	508.94	Filter Waste	144	1,012.05	(503.11)	-98.85%
Green Waste	923	580.01	Green Waste	214	394.73	185.28	31.94%
H&H Construction & Demolition	1,270	6,372.50	H&H Construction & Demolition	1,177	4,895.55	1,476.95	23.18%
H&H COUNTY RES. TRASH	113	594.79	H&H COUNTY RES. TRASH	102	552.09	42.70	7.18%
In Bound Dirt	686	14,264.65	In Bound Dirt			14,264.65	100.00%
Inert Waste (Rock/Concrete/Dirt)	302	3,291.43	Inert Waste (Rock/Concrete/Dirt)			3,291.43	100.00%
Landscaping Debris Commercial MSW	44	76.18	Landscaping Debris Commercial MSW			76.18	100.00%
LANDSCAPING DEBRIS RESIDENTIAL	75	37.50	LANDSCAPING DEBRIS RESIDENTIAL			37.50	100.00%
Metal Only	96	259.52	Metal Only	51	157.37	102.15	39.36%
Norton Enviro Crushed Glass	29	291.05	Norton Enviro Crushed Glass	23	393.60	(102.55)	-35.23%
Paper Filter Waste	2,043	42,251.98	Paper Filter Waste	2,105	44,080.51	(1,828.53)	-4.33%
Pine Needles/Leaves Commercial MSW	342	271.84	Pine Needles/Leaves Commercial MSW			271.84	100.00%
PINE NEEDLES/LEAVES RESIDENTIAL	989	488.40	PINE NEEDLES/LEAVES RESIDENTIAL			488.40	100.00%
Pvt Hauler Construct & Demo	4,167	12,550.43	Pvt Hauler Construct & Demo	4,201	12,760.80	(210.37)	-1.68%
RESIDENTIAL HOUSEHOLD TRASH	9,262	3,978.96	RESIDENTIAL HOUSEHOLD TRASH	5,348	5,210.50	(1,231.54)	-30.95%
Residential MSW	2,503	16,493.55	Residential MSW	2,862	20,026.56	(3,533.01)	-21.42%
Snow Plowing	5	0.00	Snow Plowing	6	0.00	0.00	#DIV/0!
Special Handle Waste	25	240.64	Special Handle Waste	56	302.84	(62.20)	-25.85%
Whitegoods	726	-0.02	Whitegoods	472	-0.01	(0.01)	46.67%
WOOD CHIPS	52	504.61	WOOD CHIPS			504.61	100.00%
Wood Waste	181	296.42	Wood Waste	184	401.57	(105.15)	-35.47%
<b>Grand Total:</b>	<b>31,644</b>	<b>146,053.41</b>	<b>Grand Total:</b>	<b>24,582</b>	<b>137,815.23</b>	<b>8,238.18</b>	<b>5.64%</b>
<b>Average Daily</b>	<b>101.10</b>	<b>466.62</b>		<b>78.54</b>	<b>440.30</b>	<b>26.32</b>	<b>5.64%</b>
<b>Minus Paper Sludge and other cover</b>	<b>28,725</b>	<b>87,395</b>		<b>22,343</b>	<b>92,042</b>	<b>-4,648</b>	<b>-5.32%</b>
<b>Average Daily</b>	<b>91.77</b>	<b>279.22</b>		<b>71.38</b>	<b>294.07</b>	<b>-14.85</b>	<b>-5.32%</b>

## **Appendix G**

### **Solid Waste Operating Capital and Capital Expenditures- Ten Year Plan**

DRAFT

### Table 6-Existing Budget Projections

		Budget 2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2021-2023	2021-2024
Sources of Funds												
Beginning Fund Balance		4,922,416	4,157,932	2,887,573	1,193,602	1,141,668	3,693,553	2,811,026	4,912,616	7,345,381	9,063,471	11,142,883
Intergovernmental Revenues												
	County	-	-	-	-	-	-	-	-	-	-	-
	Federal Grant	-	-	-	-	-	-	-	-	-	-	-
	Federal Grants	-	-	-	-	-	-	-	-	-	-	-
Revenues:												
1004+1005+8001	Commercial Refuse	2,430,415	2,479,023	2,528,603	2,579,175	2,630,759	2,683,374	2,737,041	2,791,782	2,847,618	2,904,570	2,962,661
	Commercial Recycling	426,145	434,668	443,361	452,228	461,273	470,498	479,908	489,506	499,296	509,282	519,468
	Residential	2,468,307	2,517,673	2,580,615	2,632,227	2,684,872	2,738,569	2,793,340	2,849,207	2,906,191	2,964,315	3,023,601
	Curbside Recycling Revenue	1,057,734	1,078,889	1,100,467	1,122,476	1,144,926	1,167,825	1,191,182	1,215,006	1,239,306	1,264,092	1,289,374
	Revenue Share	239,846 ( 5,202	244,643 ( 5,306	249,536 ( 5,412	254,527 ( 5,520	259,618 ( 5,630	264,810 ( 5,743	270,106 ( 5,858	275,508 ( 5,975	281,018 ( 6,095	286,638 ( 6,217	292,371 ( 6,341
	IGA Allocation Rev Share	)	)	)	)	)	)	)	)	)	)	)
	Hoist & Haul	155,102	158,204	161,368	164,595	167,887	171,245	174,670	178,163	181,726	185,361	189,068
4001+4007+4008	Landfill Fees	4,611,980	4,635,040	4,681,390	5,909,243	5,997,882	6,087,850	6,209,607	6,333,799	6,460,475	6,589,685	6,721,479
	Inert matls Landfill	-	-	-	-	-	-	-	-	-	-	-
	Environmental Service Fee	-	-	-	-	-	-	-	-	-	-	-
5004+5003+6001+4004	Hazardous Waste	-	-	-	-	-	-	-	-	-	-	-
6001 + 4004	Reclamation Chg	-	-	-	-	-	-	-	-	-	-	-
	Miscellaneous	-	-	-	-	-	-	-	-	-	-	-
	Other Financing Sources	3,950,000	250,000	2,000,000	250,000	550,000	3,250,000	1,750,000	1,750,000	250,000	250,000	250,000
	Unrestricted Interest	47,044	47,750	48,705	49,923	51,171	52,450	53,761	55,105	56,483	57,895	59,342
	Restricted Interest	-	-	-	-	-	-	-	-	-	-	-
	Total Revenue	15,381,371	11,840,584	13,788,633	13,408,874	13,942,758	16,880,878	15,653,757	15,932,101	14,716,018	15,005,621	15,301,023
	Total Sources of Funds	20,303,787	15,998,516	16,676,206	14,602,476	15,084,426	20,574,431	18,464,783	20,844,717	22,061,399	24,069,092	26,443,906
Uses of Funds												
Operations:												
1+45	General Administration	555,790	569,351	583,243	597,474	612,052	626,986	642,284	657,956	674,010	690,456	707,303
	Indirect Costs	1,299,173	1,331,652	1,364,943	1,399,067	1,434,044	1,469,895	1,506,642	1,544,308	1,582,916	1,622,489	1,663,051
2&5	Residential	1,671,421	1,712,204	1,753,982	1,796,779	1,840,620	1,885,531	1,931,538	1,978,668	2,026,947	2,076,405	2,127,069
3&6	Commercial Refuse	2,143,362	2,195,660	2,249,234	2,304,115	2,360,335	2,417,927	2,476,924	2,537,361	2,599,273	2,662,695	2,727,665
14	Commercial Recycling											

[illegible]



[illegible]

**Appendix H**  
**Cinder Lake Landfill Closure Projections**

DRAFT

CLOSURE OF CINDER LAKE LANDFILL WITH 1,350 LB/CY										
All disposal rates up to 2006 were taken from the documented disposal rates taken from "Estimate of in place MSW.xls"						In-Place Density		ton/cu.yd =	0.68	
						Refuse/Soil Ratio		l/total vol =	0.75	
		Approximate Closure Year				Refuse Growth Rate		%/year =	3.00%	
		Estimated remaining landfill fill capacity (after 12/31/97)					25,256,711	(Cu. Yd)		
		Estimated remaining refuse capacity (after 12/31/97)					18,942,533	(Cu. Yd)		
					Tonnage after	Volume after				
	Disposal	Compacted Disposal	Paper Sludge <sup>4</sup>	Paper Sludge	Sludge	Sludge	Total Remaining	Total Remaining	Remaining Refuse	Remaining Refuse
Year	Tonnage (Tons) <sup>1</sup>	Volume (Cu. Yd) <sup>1</sup>	Tons	(Cu.Yd.)	(Tons)	(Cu.Yd.) <sup>2</sup>	Capacity (Tons) <sup>3</sup>	Capacity (Cu. Yd) <sup>3</sup>	Capacity (Tons) <sup>2</sup>	Capacity (Cu. Yd) <sup>2</sup>
1997							17,048,280	25,256,711	12,786,210	18,942,533
1998	139,477	206,633	6,636	9,831	132,841	196,801	16,871,159	24,994,309	12,653,369	18,745,732
1999	140,502	208,151	29,589	43,836	110,913	164,316	16,723,275	24,775,222	12,542,456	18,581,416
2000	117,597	174,218	26,727	39,596	90,870	134,622	16,602,115	24,595,725	12,451,586	18,446,794
2001	109,835	162,719	28,739	42,576	81,096	120,142	16,493,987	24,435,536	12,370,490	18,326,652
2002	126,650	187,630	28,686	42,498	97,964	145,132	16,363,368	24,242,027	12,272,526	18,181,520
2003	117,880	174,637	28,267	41,877	89,613	132,760	16,243,884	24,065,013	12,182,913	18,048,760
2004	134,367	199,062	32,332	47,899	102,035	151,163	16,107,837	23,863,463	12,080,878	17,897,597
2005	154,389	228,724	35,402	52,447	118,987	176,277	15,949,188	23,628,427	11,961,891	17,721,320
2006	153,120	226,844	34,650	51,333	118,470	175,511	15,791,228	23,394,412	11,843,421	17,545,809
2007	157,408	233,197	39,653	58,745	117,755	174,452	15,634,221	23,161,809	11,725,666	17,371,357
2008	155,470	230,326	39,714	58,836	115,756	171,490	15,479,880	22,933,156	11,609,910	17,199,867
2009	126,990	188,133	28,254	41,858	98,736	146,276	14,920,381	22,104,268	11,190,286	16,578,201
2010	135,162	200,240	32,416	48,024	102,746	152,216	14,783,386	21,901,313	11,087,540	16,425,985
2011	134,743	199,619	43,728	64,782	91,015	134,837	14,662,033	21,721,530	10,996,525	16,291,148
2012	136,947	202,884	32,935	48,793	104,012	154,092	14,523,350	21,516,075	10,892,513	16,137,056
2013	141,055	208,971	32,935	48,793	108,120	160,178	14,379,190	21,302,504	10,784,393	15,976,878
2014	145,287	215,240	32,935	48,793	112,352	166,447	14,229,388	21,080,574	10,672,041	15,810,431
2015	149,646	221,697	32,935	48,793	116,711	172,904	14,073,773	20,850,035	10,555,330	15,637,526
2016	154,135	228,348	32,935	48,793	121,200	179,555	13,912,174	20,610,628	10,434,130	15,457,971
2017	158,759	235,199	32,935	48,793	125,824	186,406	13,744,408	20,362,086	10,308,306	15,271,565
2018	163,522	242,255	32,935	48,793	130,587	193,462	13,570,293	20,104,137	10,177,720	15,078,103
2019	168,428	249,522	32,935	48,793	135,492	200,729	13,389,636	19,836,498	10,042,227	14,877,374
2020	173,480	257,008	32,935	48,793	140,545	208,215	13,202,243	19,558,878	9,901,682	14,669,158
2021	178,685	264,718	32,935	48,793	145,750	215,925	13,007,910	19,270,977	9,755,932	14,453,233
2022	184,045	272,660	32,935	48,793	151,110	223,867	12,806,430	18,972,488	9,604,822	14,229,366
2023	189,567	280,840	32,935	48,793	156,632	232,047	12,597,588	18,663,093	9,448,191	13,997,319
2024	195,254	289,265	32,935	48,793	162,319	240,472	12,381,163	18,342,463	9,285,872	13,756,848
2025	201,111	297,943	32,935	48,793	168,176	249,150	12,156,928	18,010,264	9,117,696	13,507,698
2026	207,145	306,881	32,935	48,793	174,209	258,088	11,924,649	17,666,146	8,943,487	13,249,610
2027	213,359	316,087	32,935	48,793	180,424	267,295	11,684,084	17,309,754	8,763,063	12,982,315
2028	219,760	325,570	32,935	48,793	186,825	276,777	11,434,984	16,940,717	8,576,238	12,705,538
2029	226,353	335,337	32,935	48,793	193,417	286,544	11,177,094	16,558,658	8,382,821	12,418,994
2030	233,143	345,397	32,935	48,793	200,208	296,604	10,910,150	16,163,186	8,182,613	12,122,389
2031	240,137	355,759	32,935	48,793	207,202	306,966	10,633,881	15,753,897	7,975,411	11,815,423
2032	247,342	366,432	32,935	48,793	214,406	317,639	10,348,006	15,330,379	7,761,004	11,497,784
2033	254,762	377,425	32,935	48,793	221,827	328,632	10,052,237	14,892,203	7,539,178	11,169,152
2034	262,405	388,748	32,935	48,793	229,469	339,955	9,746,278	14,438,930	7,309,708	10,829,197
2035	270,277	400,410	32,935	48,793	237,342	351,617	9,429,822	13,970,107	7,072,367	10,477,580
2036	278,385	412,422	32,935	48,793	245,450	363,629	9,102,556	13,485,267	6,826,917	10,113,951
2037	286,737	424,795	32,935	48,793	253,801	376,002	8,764,154	12,983,931	6,573,115	9,737,948
2038	295,339	437,539	32,935	48,793	262,404	388,746	8,414,282	12,465,603	6,310,712	9,349,202
2039	304,199	450,665	32,935	48,793	271,264	401,872	8,052,597	11,929,774	6,039,448	8,947,330
2040	313,325	464,185	32,935	48,793	280,390	415,392	7,678,744	11,375,918	5,759,058	8,531,938
2041	322,725	478,110	32,935	48,793	289,789	429,318	7,292,358	10,803,494	5,469,269	8,102,620
2042	332,406	492,454	32,935	48,793	299,471	443,661	6,893,064	10,211,946	5,169,798	7,658,960
2043	342,379	507,227	32,935	48,793	309,443	458,435	6,480,472	9,600,700	4,860,354	7,200,525
2044	352,650	522,444	32,935	48,793	319,715	473,651	6,054,186	8,969,165	4,540,640	6,726,874
2045	363,229	538,118	32,935	48,793	330,294	489,325	5,613,794	8,316,732	4,210,345	6,237,549
2046	374,126	554,261	32,935	48,793	341,191	505,468	5,158,872	7,642,774	3,869,154	5,732,081
2047	385,350	570,889	32,935	48,793	352,415	522,096	4,688,986	6,946,646	3,516,739	5,209,984
2048	396,911	588,016	32,935	48,793	363,975	539,223	4,203,685	6,227,682	3,152,764	4,670,762
2049	408,818	605,656	32,935	48,793	375,883	556,863	3,702,509	5,485,198	2,776,881	4,113,898
2050	421,082	623,826	32,935	48,793	388,147	575,033	3,184,979	4,718,487	2,388,734	3,538,865
2051	433,715	642,541	32,935	48,793	400,780	593,748	2,650,606	3,926,824	1,987,955	2,945,118
2052	446,726	661,817	32,935	48,793	413,791	613,024	2,098,885	3,109,459	1,574,163	2,332,094
2053	460,128	681,671	32,935	48,793	427,193	632,878	1,529,294	2,265,621	1,146,970	1,699,215
2054	473,932	702,121	32,935	48,793	440,997	653,329	941,298	1,394,516	705,974	1,045,887
2055	488,150	723,185	32,935	48,793	455,215	674,392	334,345	495,326	250,759	371,495
2056	502,794	744,881	32,935	48,793	469,859	696,088	-292,134	-432,791	-219,100	-324,593
2057	517,878	767,227	32,935	48,793	484,943	718,434	-938,724	-1,390,703	-704,043	-1,043,027
2058	533,415	790,244	32,935	48,793	500,479	741,451	-1,606,030	-2,379,304	-1,204,523	-1,784,478
2059	549,417	813,951	32,935	48,793	516,482	765,158	-2,294,673	-3,399,515	-1,721,005	-2,549,636
2060	565,899	838,370	32,935	48,793	532,964	789,577	-3,005,292	-4,452,284	-2,253,969	-3,339,213

# Memorandum

7.

## CITY OF FLAGSTAFF

**To:** The Honorable Mayor and Council  
**From:** Walt Miller, Deputy Chief  
**Date:** 05/07/2014  
**Meeting Date:** 05/13/2014



---

### TITLE:

**Discussion of Coconino County Ordinance No. 2014 -03: Ban of Portable Communication Devices and Texting While Operating a Motor Vehicle**

### DESIRED OUTCOME:

Option one: Opt in: Approve by resolution the application or enforcement of such ordinance within the boundaries of the city.

- County Ordinance becomes effective on May 22, 2014; however there is a six (6) month “no enforcement” period to warn and education the public.
- This six month window will allow us to make changes to County Ordinance on issues that have been discussed.

Option two: Opt out of the ordinance and draft our own ordinance: Upon (30) thirty days’ notice to the County, the City may rescind such approval by resolution if the matter is governed or to be governed by the city.

- Draft our own ordinance to address the issues of local concern.

### INFORMATION:

On April 22, 2014 the Coconino County Board of Supervisors unanimously approved County Ordinance 2014-03 which states that; A person shall not drive a motor vehicle while using a portable communications device to engage in a call unless that device is specifically designed and configured to allow hands-free listening and talking. and is used exclusively in that manner while driving. Texting and typing are banned while operating a motor vehicle.

This Ordinance is effective 30 days after adoption by the Coconino County Board of Supervisors. However, for the purpose of informing and educating persons who operate motor vehicles and motor driven cycles any law enforcement office may only issue verbal warnings to persons who would be violating this Coconino County Ordinance for a six (6) month period after the Ordinance is adopted.

Under this ordinance enforcement may apply to the unincorporated and incorporated areas in the county.

Enforcement and penalties under this ordinance are as follows; A law enforcement officer may stop a motor vehicle or motor driven cycle if the officer has reasonable cause to believe a violation of this Ordinance is occurring (primary offense).

A violation of this article is a civil traffic violation and a person found to be in violation of this Ordinance and not involved in a motor vehicle collision is subject to a civil penalty of \$100 dollars.

A person found to be in violation of this Ordinance and involved in a motor vehicle collision is subject to a civil penalty of \$250 dollars.

The Ordinance does allow for exemptions such as when a driver has pulled off of the traveled portion of the roadway in a safe and legal location and placed the vehicle in park in order to operate a handheld portable communications device. (please refer to attachment for further exemptions)

---

**Attachments:**     County Ordinance

**COCONINO COUNTY ORDINANCE No. 2014 - 03**

**Ban of Portable Communication Devices and Texting While Operating a Motor Vehicle**

WHEREAS, the Coconino County Board of Supervisors is authorized in A.R.S. 11-251(17) to adopt provisions necessary to preserve the health of the county, and in A.R.S. 11-251 (31) to make and enforce all local, police, sanitary and other regulations not in conflict with the general laws;

WHEREAS, A.R.S 28-626(B) and 11-251.05 authorize the adoption of additional traffic regulations that are not in conflict with other state traffic or transportation regulations;

WHEREAS, texting while driving a motor vehicle and the use of portable communication devices has increased in recent years;

WHEREAS, the use of portable communication devices and texting while driving a motor vehicle have contributed to the increase of injuries, deaths, property damage, health care costs and auto insurance rates;

WHEREAS, motorists who operate portable communication devices and/or text while driving a motor vehicle are statistically more likely to become involved in a traffic accident;

WHEREAS, it is the desire of the Coconino County Board of Supervisors to promote and encourage healthy and safe behaviors for all by regulating certain traffic behaviors.

THEREFORE, be it resolved, that the Coconino County Board of Supervisors adopt this Ordinance to be effective in the unincorporated and incorporated areas of Coconino County, excluding sovereign tribal

## **SECTION I (1): DEFINITIONS**

“HANDS-FREE MOBILE DEVICE” shall mean:

- A device that has an internal feature or function, or that is equipped with an attachment or addition, whether or not permanently part of such device, which is not held by the driver during motor vehicle use. The device must not obstruct the driver’s view of the front or sides of the motor vehicle or interfere with the safety or operating equipment of the motor vehicle.
- A device that is programmed before a person begins to drive or operate a motor vehicle such as a Global Positioning Device (GPS).

“PORTABLE COMMUNICATIONS DEVICE” shall mean any handheld mobile telephone, personal digital assistant (PDA), handheld device with mobile data access, laptop computer, pager, broadband personal communications device, two-way messaging device, electronic game, or portable computing device.

“MOTOR VEHICLE”, “DRIVE” and “DRIVER” have the same meaning as those terms are defined in Title 28, Chapter 1, Arizona Revised Statutes, Transportation.

“USE” means:

- Holding a portable communications device and performing the illegal activities sated in Section II (2)

## **SECTION II (2): ILLEGAL ACTIVITIES**

Illegal motor vehicle driver activities include:

A person shall not drive a motor vehicle while using a portable communications device to engage in a call unless that device is specifically designed and configured to allow hands-free listening and talking, and is used exclusively in that manner while driving. Texting and typing are banned while operating a motor vehicle

## **SECTION III (3): EXEMPTIONS**

This Ordinance does not apply to any of the following:

- When the driver uses a hands-free mobile device.
- When the purpose of the call is to communicate an emergency to a police or fire department, a hospital or physician’s office, or an ambulance corps.
- When operating an authorized law enforcement or emergency vehicle in the performance of official duties.
- When a person who holds a valid amateur radio operator license issued or any license issued by the Federal Communications Commission and is operating an amateur radio under the direction of authorized first responders in the event of an emergency.



- When a person is driving a motor vehicle on private property.
- When a driver has pulled off of the traveled portion of the roadway in a safe and legal location and placed the vehicle in park in order to operate a handheld portable communications device.

#### **SECTION IV (4): ENFORCEMENT AND PENALTIES**

Enforcement shall be the responsibility of city, county and state of Arizona law enforcement representatives.

A law enforcement officer may stop a motor vehicle or motor driven cycle if the officer has reasonable cause to believe a violation of this Ordinance is occurring.

A violation of this article is a civil traffic violation.

A person found to be in violation of this Ordinance and not involved in a motor vehicle crash is subject to a civil penalty of \$100 dollars plus any other penalty assessment authorized by law.

A person found to be in violation of this Ordinance and involved in a motor vehicle crash is subject to a civil penalty of \$250 dollars plus any other penalty assessments authorized by law.

Violations of this Ordinance shall be administered pursuant to the procedures for civil traffic violations as set out in A.R.S. 28-1591 through 28-1601.

#### **SECTION V (5): EFFECTIVE DATE**

This Ordinance is effective 30 days after adoption by the Coconino County Board of Supervisors.

#### **SECTION VI (6): WARNING PERIOD**

For the purpose of informing and educating persons who operate motor vehicles and motor driven cycles any law enforcement office may only issue verbal warnings to persons who would be violating this Coconino County Ordinance for a six (6) month period after the Ordinance is adopted.

#### **SECTION VII (7): INTERPRETATION AND SEVERABILITY**

In the interpretation of this Ordinance, the singular may be read as the plural, the masculine gender as the feminine or neuter, and the present tense as the past or future, where context so dictates. In the event any particular clause or section of this Ordinance should be declared invalid or unconstitutional by any court of competent jurisdiction, the remaining portions shall remain in full force and effect. Toward that end, the provisions of these regulations are declared to be severable

ORDAINED BY ACTION OF THE COCONINO COUNTY BOARD OF SUPERVISORS on  
this\_\_\_\_\_ day of\_\_\_\_\_, 2014.

\_\_\_\_\_  
Matt Ryan, Chairman  
Board of Supervisors

Approved as to form:

ATTEST:

\_\_\_\_\_  
Deputy County Attorney

\_\_\_\_\_  
Wendy Escoffier, Clerk of the Board