RESOLUTION NO. 2018-104

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ELK GROVE APPROVING THE SOLID WASTE AND RECYCLING PROGRAM NEEDS ASSESSMENT AND LONG-RANGE STRATEGIC PLAN

WHEREAS, the City of Elk Grove sought to assess its long-range solid waste needs and prepare a twenty-year strategic plan to provide recommendations of future programs, facility needs, and implementation strategies; and

WHEREAS, in August 2016, the City of Elk Grove posted a formal Request for Proposals for consultant services to create the long-range strategic plan and the City received three submittals; and

WHEREAS, the City Council determined that HF&H Consultants, LLC offered the most responsive proposal and met all of the criteria for the Request for Proposals; and

WHEREAS, the City of Elk Grove contracted with HF&H Consultants, LLC for preparation of a comprehensive Solid Waste and Recycling Program Needs Assessment and Long-Range Strategic Plan (the "Strategic Plan", Contract Numbers C-16-621 and 18-159); and

WHEREAS, the Strategic Plan is now complete and is attached hereto as Exhibit A.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Elk Grove approves the Solid Waste and Recycling Program Needs Assessment and Long-Range Strategic Plan completed by HF&H Consultants, LLC, attached hereto as Exhibit A.

PASSED AND ADOPTED by the City Council of the City of Elk Grove this 23rd day of May 2018.

STEVE LY, MAYOR of the
CITY OF ELK GROVE

ATTEST:

JASON LINDGREN, CITY CLERK

APPROVED AS TO FORM:

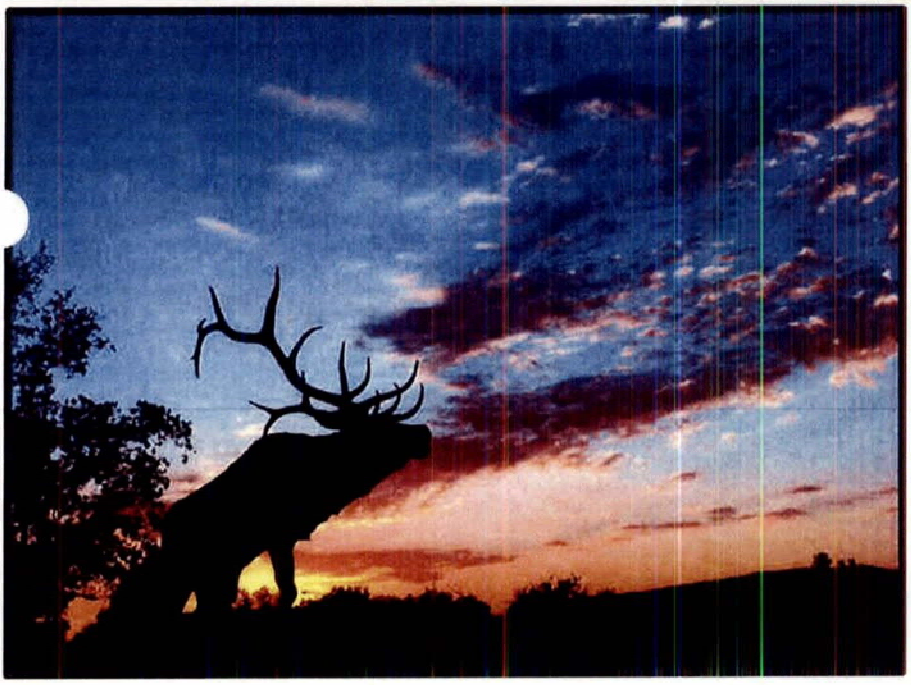
JONATHAN P. HOBBS,
CITY ATTORNEY

EXHIBIT A

CITY OF ELK GROVE

City of Elk Grove

Solid Waste and Recycling Program Needs Assessment and Long-Range Strategic Plan



Revised Plan

February, 12, 2018

HF&H

HF&H Consultants, LLC

HF&H CONSULTANTS, LLC
Managing Tomorrow's Resources Today

201 N. Civic Drive, Suite 230
Walnut Creek, California 94596
Telephone: 925/977-6950
Fax: 925/977-6955
www.hfh-consultants.com

Robert D. Hilton, CMC
John W. Farnkopf, PE
Laith B. Ezzet, CMC
Richard J. Simonson, CMC
Marva M. Sheehan, CPA
Rob C. Hilton, CMC

February 12, 2018

Ms. Heather Neff
Integrated Waste Manager
City of Elk Grove
8401 Laguna Palms Way
Elk Grove, CA 95758

Subject: Solid Waste and Recycling Program Needs Assessment and Long-Range Strategic Plan, Revised Report

Dear Heather,

The City of Elk Grove (City) engaged HF&H Consultants, LLC (HF&H) to conduct an assessment of its solid waste and recycling needs and prepare a 20-year strategic plan. This Needs Assessment and Long-Range Strategic Plan (Strategic Plan) report presents an assessment of current conditions, projection of material streams through 2036, and assessment of needs and program and facility options to meet those needs. It includes recommendations for future programs and facility development along with an implementation plan for the recommendations.

In the Near-Term Period from present through 2025, the focus of the Strategic Plan is on implementation of organics recycling programs to comply with the State of California (State) requirements to reduce the amount of organics materials disposed pursuant to SB 1383 (Lara, Chapter 395, Statutes of 2016), Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reductions. October 2017 SB 1383 draft regulations served as the basis for the SB 1383 program recommendations. When regulations are finalized in late 2018 or early 2019, the recommendations in this Strategic Plan should be reviewed to confirm alignment with the final SB 1383 requirements. The Near-Term recommendations also include consideration of the next steps for the residential franchise agreement and assessment of the optional arrangements for the commercial franchise system. Lastly, the Near-Term Period considers development of a transfer station on City property on Grant Line Road to provide the City flexibility in managing its waste and recycling streams into the future.

At the conclusion of the Near-Term Period, it is anticipated that the City will reach a diversion rate of nearly 90%. For the subsequent Mid-Term and Long-Term Periods (covering 2026 through 2036), the Strategic Plan identifies several program options. Exactly which program options the City may want to implement and what tasks will flow from the programs selected will depend on a number of factors that are difficult to determine now. Factors that will impact the future include: evolving regulations at the State and federal levels; development of new processing infrastructure; changes in market conditions for recyclables materials; and, changes in technology (such as changes in packaging materials and methods) that will impact material generation rates and characterization of the future material streams. As a result, the implementation plan recommends reassessment of the City's solid waste and recycling needs and

program options in 2026 and 2031 to prepare concrete action plans for the Mid-Term and Long-Term Periods.

Many thanks to you, Jason Behrmann, Bob Murdoch, Traci Goularte, and Christian Punsal for working closely with us on the project. The team's input and guidance was valuable in the development of this Strategic Plan. If you would like to discuss this report, I can be reached at (925) 977-6952 or rhilton@hfh-consultants.com or you can contact Tracy Swanborn at (707) 246-4803 or tswanborn@hfh-consultants.com.

Very truly yours,
HF&H CONSULTANTS, LLC

Robert D. Hilton, CMC
Senior Vice President

Tracy A. Swanborn, P.E.
Senior Project Manager

cc: Tracy Swanborn, P.E.

Enclosures

TABLE OF CONTENTS

TABLE OF FIGURES

EXECUTIVE SUMMARY

In 2017, the City of Elk Grove (City) identified the need to conduct an assessment of its solid waste and recycling needs and prepare a long-range strategic plan. The City expressed three objectives: (1) complying with State regulations; (2) increasing diversion beyond State mandates, if it can be done cost effectively; and, (3) examining options for development of a solid waste, recycling, and/or organics processing facility at a site owned by the City (currently containing the Special Waste Collection Center at 9255 Disposal Lane, hereinafter referred to as "City Site"). HF&H Consultants, LLC (HF&H) was retained to prepare this Needs Assessment and Long-Range Strategic Plan (Strategic Plan) to address the City's interests. It presents an assessment of current conditions, projection of material streams through 2036, and assessment of needs and program and facility options to meet those needs. The Strategic Plan presents recommendations for future programs needed to comply with State regulations, evaluation of hauler service options, and a transfer facility development option for the City Site.

Over the past 5 years, the City's current diversion rate has been relatively constant, averaging 77% as calculated using the State of California (State) reporting methodology. The average diversion rate is reflective of waste prevention and reuse efforts as well as hauler diversion programs. The waste generated in the City and disposed averages more than 80,000 tons per year. In total, 80% of this disposal stream is comprised of organics, paper, and plastics, and a significant fraction of those materials have potential for diversion. Recoverable organic materials, including yard trimmings, food scraps, wood, papers, cardboard, textiles, carpet, and manure, account for 61% of the total waste disposed.

The City's focus on development of a Strategic Plan at this time is advantageous particularly to plan compliance with recent State legislation to reduce Short-Lived Climate Pollutants (SB 1383, 2016), which requires State-wide reduction from landfill disposal of organic material (including paper, cardboard, and other fibers) volumes by 50% by 2020, 75% by 2025, and recovery of 20% of edible food by 2025. SB 1383 regulations, which are in draft form, will require the City's implementation of several new or expanded organics programs. Additionally, the Strategic Plan includes program recommendations that will result in diversion of materials from landfill disposal, which will reduce greenhouse gases to support the City's Climate Action Plan goals.

Below is a summary of program and facility development recommendations.

Near-Term Program Recommendations (2018 through 2025)

In the Near-Term Period through 2025, the focus of the Strategic Plan centers around compliance with State requirements to reduce the amount of organics materials disposed pursuant to SB 1383 (Lara, Chapter 395, Statutes of 2016), Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reductions. This involves implementation of: mandatory organics collection for all generators; weekly residential food scraps collection; food recovery programs to recovery edible food from commercial generators for human consumption; and, more. In addition, Near-Term program recommendations include consideration of the next steps for the residential franchise agreement and assessment of the optional arrangements for the commercial franchise system. Figure ES-1 presents a list of the recommended programs and the timeframe for planning, implementation, and on-going program operation.

The Strategic Plan process included a robust diversion analysis that estimated the recommended SB 1383 organics programs may bring the City from a current diversion rate of 77% to 86% if the programs are implemented with a high level of commitment and performed at the high end of the estimates. Factors that will impact the actual diversion level include program design, the manner in which programs are implemented, the level of participation by residents and businesses in the programs, the ongoing commitment of the City to the programs, and changes in demographic conditions, number and types of businesses, product design and packaging, collection and processing technology, federal and State legislation and regulations, and more.

The Strategic Plan process also included preparation of planning-level estimates for City implementation costs, on-going City annual costs, annual hauler costs, and potential cost impacts on customers. Furthermore, estimated staffing needs are also provided as a guide for the City's planning purposes.

Note that the program recommendations have been prepared based on an understanding of SB 1383 requirements pursuant to CalRecycle's October 27, 2017 Draft Regulation Text. Actual jurisdiction and generator requirements in the final regulations may differ somewhat (or significantly) compared to the draft requirements. After the SB 1383 rule-making process is completed in late 2018 or early 2019, it is strongly advised that the City review the program recommendations in this Strategic Plan and modify the Strategic Plan, if needed, to align with the final SB 1383 regulations.

Furthermore, the Strategic Plan focused on identifying the significant changes required by SB 1383. It does not provide a comprehensive list or action plan for complying with detailed SB 1383 requirements such as providing expanded reporting, achieving minimum public education requirements, and complying with container labeling requirements.

Mid-Term and Long-Term Programs (2026 through 2036)

At the conclusion of the Near-Term Period, it is anticipated that the City will reach a diversion rate of nearly 90%. For the subsequent Mid-Term and Long-Term Periods (covering 2026 through 2036), the Strategic Plan identifies several program options. The exact set of program options that the City chooses to implement in these later periods and the tasks related to the programs selected will depend on a number of factors that are difficult now to determine. Factors that will impact the future include: evolving regulations at the State and federal levels; development of new processing infrastructure; changes in market conditions for recyclables materials; and, changes in technology (such as changes in packaging materials and methods) that will impact material generation rates and characterization of the future material streams.

Several suggested program options for the Mid-Term and Long-Term Periods (2026 through 2036) are presented in Figures 5-10 and 5-11 for future consideration, yet the City will have the flexibility to modify this list eliminating some options and selecting others based on future developments.

Figure ES-1: Program Implementation Timeline

	Program/Policy	2018	2019	2020	2021	2022	2023	2024	2025
	SB 1383 Programs								
1A	Mandatory residential organics including food scraps collection	Negotiate/ Adopt policies	---	---	Implement	On-going operation	On-going operation	On-going operation	On-going operation
1B	Mandatory commercial organics including food scraps collection	Amend policies	---	---	Implement	On-going operation	On-going operation	On-going operation	On-going operation
2A	Enforcement of mandatory organics and contamination: Residential (b)	Adopt policies	---	---	---	---	---	On-going operation	On-going operation
2B	Enforcement of mandatory organics and contamination: Commercial (c)	Amend policies	---	---	---	On-going operation	On-going operation	On-going operation	On-going operation
3	Organics collection for City facilities	---	---	---	---	On-going operation	On-going operation	On-going operation	On-going operation
4	Food recovery program for edible food generators	---	Adopt policies	---	Implement	On-going operation	On-going operation	On-going operation	On-going operation
5	Food recovery grant program (optional)	---	---	---	---	---	Reassess Needs	Implement if desired	On-going
6	Food recovery center sponsored by City (optional)	---	---	---	---	---	Reassess Needs	Implement if desired	On-going
7	Food recovery program for City facilities	---	---	Reassess Needs	Implement if needed	On-going if needed	On-going if needed	On-going if needed	On-going if needed
8	Food recovery program for large venues and events	---	Adopt policies	Implement	On-going operation	On-going operation	On-going operation	On-going operation	On-going operation
9	Carpet and textiles recycling program support	---	On-going operation	On-going operation	On-going operation	On-going operation	On-going operation	On-going operation	On-going operation
10	"Other" organic materials programs	---	---	Reassess Needs	Implement if needed	On-going if needed	On-going if needed	On-going if needed	On-going if needed
	Hauler Service Option Programs								
11	Residential franchise negotiation or competitive procurement	---	---	---	Evaluate Options	Negotiate or RFP process	Negotiate or RFP process	Negotiate or RFP process	---
12	Evaluation of commercial hauling system	---	Evaluate Options	---	---	Amend policies if needed	Negotiations or RFP if needed	Negotiations or RFP if needed	Implement if needed

(a) Enforcement of residential generators may need to occur in 2022 and 2023 (subject to review of future SB 1383 regulations) with a focus on inspection and issuance of notices of non-compliance in these years. In 2024, progressive enforcement action including assessment of penalties.

(b) Enforcement of commercial generators begins in 2022 and 2024 with a focus on inspection and issuance of notices of non-compliance in these years. In 2024, progressive enforcement action including assessment of penalties.

Near-Term Hauler Transfer Facility Development

The Strategic Plan included a survey of processing, transfer, and disposal facilities in the region, which indicates that several facilities are available in the region and additional organics facilities are planned. While there are options in the region and the City has historically relied on the residential and commercial haulers to secure facility services, there can be many benefits to owning a transfer or processing facility. The City identified the City Site as a possible location for development of a facility to meet its solid waste, recycling, and/or organics management needs. The Strategic Plan process included identification of possible uses for the facility, which lead to preparation of conceptual facility plans for two options. The first option is a Public Use Recovery and Transfer Station designed to provide a receiving and transfer facility for use by residents and businesses that self haul their materials to the facility. The second option considers a Hauler Transfer Facility designed for use by one or more hauling companies for receipt and transfer of solid waste, recyclables, and/or organic materials collection from residents and businesses. Construction cost estimates and financing options and costs were prepared for both options.

Of the two options, the development of the Hauler Transfer Facility provided more advantages than the Public Use Option and may be more advantageous than relying on the hauling companies to provide transfer services. In particular, it may: provide opportunities to reduce costs by reducing the distance travelled by the residential franchise hauler, commercial haulers, businesses, and residents; create opportunities for competition in the provision of collection, transfer, processing, and disposal services and thereby reduce costs; maximize City's future flexibility in responding to economic and regulatory challenges; minimize rates to residents and businesses; reduce traffic and greenhouse gas emissions; and, provide employment opportunities.

SECTION 1. WASTE CHARACTERIZATION ANALYSIS

An analysis of the characterization of solid waste disposed by the City was conducted to determine whether any diversion opportunities for particular waste types exist and identify any gaps or needs (i.e., public education about a particular waste type or a need to find a vendor to accept a particular waste type, etc.).In conducting this analysis, HF&H:

- Obtained waste volume data from City staff who in turn received it from the following service providers:
  - ✓ Single family residential franchise hauler (franchisee) – Republic Services (Republic), also known as Allied Waste Services;
  - ✓ Permitted haulers; and,
  - ✓ Permitted C&D (roll-off box) haulers.
- Obtained waste volume information from CalRecycle's Disposal Reporting System.
- Obtained waste characterization data from CalRecycle for the Central Valley Region and applied it to waste volume information collected from the City.
- Obtained a list of larger commercial waste sources from the City to identify any unique characteristics that could make the regional data less applicable to Elk Grove.
- Identified opportunities for additional diversion of particular waste streams and material types.

This Section presents historical solid waste disposal volumes, the characterization of the City's solid waste stream with a focus on quantification of recoverable materials, and a list of the largest commercial waste generators. It concludes with identification of key material recovery opportunities and strategies. **Note that in this Strategic Plan "commercial" includes multi-family.**

1.1 Historical Disposal Volumes

Figure 1-1 presents hauler-reported solid waste disposal volumes for the past five years and self-haul information for the past three years. Residential disposed tonnage has been relatively stable; however, self-haul tonnage increased significantly during the period from 2014 to 2016.

Figure 1-1: Historical Solid Waste Disposal Volumes (Annual Tons)

	Residential	Commercial and Multi-Family Front Roll Off	Front Loader	Total	Self-Haul	Total
2016	40,333	7,028	24,239	31,268	12,414	**84,014**
2015	38,382	7,849	25,125	32,974	5,599	**76,955**
2014	37,328	9,115	24,474	33,589	4,528	**75,445**
2013	37,855	13,966	25,701	39,666	---	**77,522**
2012	37,871	10,294	24,452	34,746	---	**72,617**
Average	38,354	9,650	24,798	34,449	7,514	80,316

The hauler-reported disposed tonnages (exclusive residential hauler and non-exclusive commercial and multi-family haulers) were compared to residential and commercial disposed tonnages estimated by CalRecycle for 2016. In 2016, CalRecycle reported residential disposal volume of 39,391 tons compared to 40,333 reported by the City's exclusive residential hauler (less than a 3% difference). The commercial and multi-family volumes reported by CalRecycle were 29,465 tons compared to 31,268 reported by the non-exclusive haulers (a 6.1% difference). The difference between the CalRecycle estimated tons and the Hauler Reported tons is small and to be expected when comparing estimates to actual tonnages. The CalRecycle residential disposal estimate is based on the per capita disposal rate for the Central Valley Region (as determined in CalRecycle's most recent 2014 Waste Characterization Study) multiplied by the estimated 2016 household population for Elk Grove (which was 167,296 people). The CalRecycle commercial and multi-family disposal estimate is based on the per employee disposal rate for each of 17 specific business groups (one of which includes multi-family) multiplied by Elk Grove's specific mix of businesses. Comparing the CalRecycle estimates against the hauler-reported tonnages provides confirmation of the reasonableness of the hauler-reported tonnages. With this confirmation, the hauler-reported tonnages were used as the basis for the characterization of the waste disposed and material flow projections in this Strategic Plan.

Self-haul disposal tons were calculated by subtracting the hauler-reported disposed tons from the total disposed tons reported for the City in CalRecycle's Disposal Reporting System.

1.2 Characterization and Recoverability of Waste Disposed

To determine the characterization of the solid waste disposed, HF&H relied upon CalRecycle's 2014 Waste Characterization Study. This Statewide study is comprised of regional data collected over each of the four seasons of the year from a variety of facilities within each region. The study involved sorting the solid waste disposed into numerous material categories (e.g., paper, glass, metal, plastic, etc.) and material types (for the paper category: paper bags, newspaper, white ledger paper, etc.) to determine the percentage of disposed material by material type.

The percentage of material types from the 2014 CalRecycle Waste Characterization Study were then multiplied by the five-year average tonnage reported by the City's haulers and the three -year average self-haul tonnage, not including the tonnage of residue from processing of recyclables and organic

materials. Figure 1-2 below provides the characterization of the solid waste disposed (excluding residue) by material category.

Figure 1-2: Characterization Solid Waste Disposed (Excluding Residue) by Material Category (Tons per Year)

Material Category	Single-Family		Multi-Family		Commercial		Self-Haul		Total	
	Tons	%	Tons	%	Tons	%	Tons	%	Tons	%
Paper	7,659	20%	768	24%	5,618	26%	284	4%	14,329	20%
Glass	925	2%	98	3%	476	2%	103	1%	1,603	2%
Metal	1,228	3%	116	4%	837	4%	447	6%	2,629	4%
Electronics	448	1%	51	2%	140	1%	105	1%	743	1%
Plastic	5,082	13%	360	11%	2,748	13%	479	6%	8,670	12%
Organic	18,087	47%	1,440	44%	8,755	41%	1,197	16%	29,478	42%
Inerts and Other	2,436	6%	199	6%	2,429	11%	3,354	45%	8,418	12%
HHW	178	0%	3	0%	43	0%	3	0%	227	0%
Special Waste	225	1%	120	4%	326	2%	1,510	20%	2,181	3%
Mixed Residue	2,086	5%	113	3%	159	1%	31	0%	2,389	3%
Total	38,354	100%	3,267	100%	21,531	100%	7,514	100%	70,667	100%

* Annual tonnages reflect average tons disposed for five years (2012 to 2016) with the exception of self-haul annual tonnages with reflect average tons disposed for three years (2014 to 2016). Tonnages exclude 9,650 tons of roll-off solid waste.

Key observations from the characterization analysis include:

- Organic materials (food, prunings and trimmings, branches, and stumps commonly processed to produce mulch and compost) represent 42% of the materials currently being disposed. Approximately 66% of this material is disposed by the residential sector (single-family and multi-family) and 30% by the commercial sector.
- Paper (cardboard, newspaper, magazines, catalogues, and miscellaneous other paper commonly recycled; and, compostable composite paper and other paper commonly processed to produce mulch or compost) represents 20% of the materials currently being disposed. Approximately 59% of this material is disposed by the residential sector and 39% by the commercial sector.
- Plastic (PET, HDPE, plastic containers commonly recycled; and, hard-to-recycle plastic bags, film, and durable plastic items commonly disposed) represents 12% of the materials currently being disposed. Approximately 63% of this material is from the residential sector and 32% from the commercial sector.
- Inerts (wood waste, dimensional lumber, engineered wood, other wood waste commonly processed to produce mulch or compost; and, concrete, asphalt, rock, and soil commonly recovered for reuse) represent 12% of the materials currently being disposed. Approximately 32% of this material is from the residential sector, 29% from the commercial sector, and 39% from the self-haul sector.
- Special waste (reusable bulky items and tires, which are sometimes recycled) represents 20% of the self-haul materials disposed.
- All other materials represent approximately 11% of the materials disposed.

CalRecycle has characterized the recovery of various materials disposed as "Easily Recoverable," "Hard-to-Recover," and "Non-Recoverable." Analysis, presented in Figure 1-3, determined that approximately 41,000 tons (58%) of the materials disposed annually are Easily Recoverable; 8,000 tons (12%) are Hard to Recover; and, 21,000 tons (30%) are Non-Recoverable.

{Remainder of page intentionally left blank}

Figure 1-3: Recoverability by Solid Waste Disposed by Material Category (Annual Tons)

Material Category	Material Type	Recoverability Group	Recoverability Type	DISPOSAL TONNAGE					DISPOSAL COMPOSITION				
				SFD	MFD	Carts/Bins	Self-Haul	Total	SFD	MFD	Carts/Bins	Self-Haul	Total
Paper	N/A	N/A	Easily Recovered	7,253	732	4,872	235		18.9%	22.4%	22.6%	3.1%	
Glass	N/A	N/A	Easily Recovered	840	83	386	35		2.2%	2.5%	1.8%	0.5%	
Metal	N/A	N/A	Easily Recovered	590	38	164	49		1.5%	1.2%	0.8%	0.7%	
Plastic	N/A	N/A	Easily Recovered	1,022	66	328	29		2.7%	2.0%	1.5%	0.4%	
Other Organic	N/A	N/A	Easily Recovered	11,833	932	6,611	570		30.9%	28.5%	30.7%	7.6%	
Inerts and Other	N/A	N/A	Easily Recovered	1,010	122	1,492	1,496		2.6%	3.7%	6.9%	19.9%	
Subtotal - Easily Recovered	**N/A**	**N/A**	**Subtotal - Easily Recovered**	**22,548**	**1,974**	**13,853**	**2,413**	**40,788**	**58.8%**	**60.4%**	**64.3%**	**32.1%**	**57.7%**
Metal	N/A	N/A	Hard-to-Recover	431	50	365	132		1.1%	1.5%	1.7%	1.8%	
Electronics	N/A	N/A	Hard-to-Recover	448	36	109	90		1.2%	1.1%	0.5%	1.2%	
Plastic	N/A	N/A	Hard-to-Recover	973	40	202	63		2.5%	1.2%	0.9%	0.8%	
Other Organic	N/A	N/A	Hard-to-Recover	3,186	264	845	563		8.3%	8.1%	3.9%	7.5%	
Household Hazardous Waste (HHW)	N/A	N/A	Hard-to-Recover	56	1	29	2		0.1%	0.0%	0.1%	0.0%	
Special Waste	N/A	N/A	Hard-to-Recover	173	0	6	198		0.5%	0.0%	0.0%	2.6%	
Subtotal - Hard-to-Recover	**N/A**	**N/A**	**Subtotal - Hard-to-Recover**	**5,267**	**391**	**1,555**	**1,048**	**8,261**	**13.7%**	**12.0%**	**7.2%**	**13.9%**	**11.7%**
Paper	N/A	N/A	Non-Recoverable	406	36	747	49		1.1%	1.1%	3.5%	0.7%	
Glass	N/A	N/A	Non-Recoverable	86	15	90	68		0.2%	0.5%	0.4%	0.9%	
Metal	N/A	N/A	Non-Recoverable	207	28	308	267		0.5%	0.9%	1.4%	3.6%	
Electronics	N/A	N/A	Non-Recoverable	0	15	31	14		0.0%	0.5%	0.1%	0.2%	
Plastic	N/A	N/A	Non-Recoverable	3,087	254	2,218	387		8.0%	7.8%	10.3%	5.2%	
Other Organic	N/A	N/A	Non-Recoverable	3,067	244	1,298	65		8.0%	7.5%	6.0%	0.9%	
Inerts and Other	N/A	N/A	Non-Recoverable	1,425	77	937	1,858		3.7%	2.4%	4.4%	24.7%	
Household Hazardous Waste (HHW)	N/A	N/A	Non-Recoverable	122	1	14	1		0.3%	0.0%	0.1%	0.0%	
Special Waste	N/A	N/A	Non-Recoverable	52	120	321	1,312		0.1%	3.7%	1.5%	17.5%	
Mixed Residue	N/A	N/A	Non-Recoverable	2,086	113	159	31		5.4%	3.4%	0.7%	0.4%	
Subtotal - Non-Recoverable	N/A	N/A	Subtotal - Non-Recoverable	10,538	902	6,123	4,053	21,616	27.5%	27.6%	28.4%	53.9%	30.6%
TOTAL				**38,354**	**3,267**	**21,531**	**7,514**	**70,666**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

* Excludes 9,650 tons of roll-off solid waste.

1.3 Large Volume Customers

Based on information provided by Atlas Disposal, Republic Services, and Waste Management (the three largest permitted haulers operating in the City), the 10 largest customers include the following business types:

- Warehouses (Apple's warehouse);
- Multi-family properties (Stonelake Apartments, Geneva Pointe Apartments, Siena Villa Apartments, the Ridge, Bella Vista Apartments, and Waterman Square);
- Commercial retail (Laguna Pavilion);
- Government (City of Elk Grove); and,
- Schools (Elk Grove School District).

Of these, due to its size and unique nature, HF&H recommends that the City provide special attention to Apple's warehouse and future logistics center to ensure an emphasis is placed on recycling and composting the unique material types handled at the facility and potentially large volumes of materials.

1.4 Material Recovery Opportunities and Strategies

The four material types identified in Figure 1-3 above – organics, paper, plastic, and inerts (mostly wood) – represent the greatest opportunities for increased diversion because of their volume. These materials are generated in comparable amounts by both residential and commercial generators.

Capitalizing on these opportunities may result from:

- Increased public education related to existing programs (e.g., residential recycling of paper);
- Increased penetration of existing programs (residential organics and commercial recycling) through technical assistance, economic incentives, and City regulations and enforcement;
- Implementation of new programs (inclusion of food waste in residential green waste collection program, a commercial food waste/organics program for all commercial generators, and more);
- Changes in technology in producing materials (replacing non-recyclable plastics with recyclable plastics) or recovering organic materials (anaerobic digesters); and,
- New facilities designed to process materials that are not currently able to be processed (see Section 3).

SECTION 2. INVENTORY OF FACILITIES IN THE REGION

Research was conducted to identify facilities in the region that may be available to accept Elk Grove's materials. Facilities identified included transfer stations (TS), landfills, material recovery facilities (MRF), material transformation facilities, household hazardous waste (HHW) facilities, and other special waste facilities.

In performing this research, HF&H:

- Obtained from the Sacramento Regional Solid Waste Authority (SWA) its April 2015 inventory of facilities within a 100-mile radius;
- Updated a similar inventory of facilities conducted by HF&H February 2014 for the County of San Joaquin;
- Researched CalRecycle facilities databases (Solid Waste Information System (SWIS) and Facility Information System (FacIT)) to identify operating and planned facilities (within economic distances of the City); and,
- Reviewed Elk Grove's 2009 Transfer Station Master Plan and the information developed during the design and construction of the SWCC to identify opportunities and constraints associated with use of the City Site.

2.1 Existing Facilities Used By Elk Grove

Elk Grove's residential franchisee, Republic, collects solid waste, recyclables, and green waste and transports the materials to the Elder Creek Recovery and Transfer Station located at 8642 Elder Creek Road, Sacramento, CA (8.1 miles away). At the Elder Creek facility, which is owned and operated by Republic, Republic performs the following activities:

- Transfers residential recyclable materials into long-haul vehicles and hauls the material to the Newby Island Resource Recovery Park (owned by a Republic affiliate) at 1601 Dixon Landing Road, San Jose, CA.
- Transfers recyclable materials collected at City facilities into long-haul vehicles and hauls the material to Recycling Industries Sacramento located at 3300 Power Inn Road, Sacramento, CA.
- Transfers residential green waste into long-haul vehicles and hauls the material to the Silva Ranch Green Material Land Application Site located at 11540 Clay Station Road, Herald, CA.
- Transfers residential solid waste materials into long-haul vehicles and hauls the material to the Forward Landfill (owned by a Republic affiliate) located at 9999 S. Austin Road, Manteca, CA.

In Elk Grove, commercial solid waste, recyclables, and organic materials is collected by approximately 14 registered commercial haulers and 13 County-approved recycling haulers.

Figure 2-1 shows the facilities used by the City's residential and commercial haulers for processing and disposal.

Figure 2-1: Processing and Disposal Facilities Used by City's Current Haulers

Name	Type	Operator	Location	Miles
Elder Creek Transfer and Recovery	Large Volume Transfer/Processing Facility	Republic Services of Sacramento	Elder Creek Road, Sacramento	8.1
Sierra Waste Recycling & Transfer Station	Large Volume Transfer/Processing Facility	Sierra Waste Recycling and Transfer Inc.	Berry Avenue, Sacramento	8.6
L & D Landfill	C&D Processing and Solid Waste Landfill	L & D Landfill, LLP	Fruitridge Road, Sacramento	9.3
Golden State Crushing	C&D Processing	N/A	Outfall Circle Sacramento	9.3
CleanWorld SATS BioDigester	Medium Volume In-Vessel Digestion	CleanWorld SATS BioDigester, LLC	Fruitridge Road, Sacramento	9.6
Ming's Recycling Corp.	Transfer/Processing Facility	Mings Recycling Corp	47th Avenue, Sacramento	9.6
South Area Recycling & Transfer Station	Large Volume Transfer/Processing Facility	County of Sacramento	Fruitridge Road, Sacramento	9.6
Recycling Industries Sacramento	Recyclables Processing Facility	Recycling Industries	Power Inn Road, Sacramento	10.0
Florin Perkins Public Disposal Site -T/P	Large Volume Transfer/Processing Facility	Zanker Road Resources Management, Ltd.	Florin Perkins Road, Sacramento,	10.7
Granite Construction – Bradshaw Aggregates	C&D Processing	Granite Construction Co	Bradshaw Road, Sacramento	11.8
California Waste Recovery Systems MRF	Material Recovery Facility	California Waste Recovery Systems	Enterprise Court, Galt	12.2
Sacramento County Landfill (Kiefer)	Solid Waste Landfill	County of Sacramento	Kiefer Blvd., Sloughhouse	13.7

Name	Type	Operator	Location	Miles
International Paper Recycling	Paper Stock Processing	Not Available	Cebrian Street, West Sacramento	17.9
Silva Ranch Green Material Land Application Site	Green Waste Land Application Operation	Silva	Clay Station Road, Herald	19.6
North Area Recycling & Transfer Station	Large Volume Transfer/Processing Facility	County of Sacramento	Roseville Road, North Highlands	20.8
Davis Waste Removal Recycling Center	Transfer Station	Not Available	2nd Street, Davis	26.9
East Stockton Recycling & Transfer Station	Large Volume Transfer/Processing Facility	Stockton Recycling Inc.	East Weber Avenue, Stockton	33.8
Forward Landfill and Resource Recovery Facility	Landfill and Composting Facility	Republic Services	9999 S. Austin Road, Manteca	42.0
Recycling Industries, Inc.	Intermediate Processing Transfer Station	Recycling Industries Inc.	Epley Drive, Yuba City	55.6

2.2 Alternative Existing and Planned Facilities

Elk Grove is fortunate to have many alternative facilities available to it. HF&H identified facilities within an economic range of the City, assuming collection vehicles could transfer materials to long-haul vehicles for trips longer than 15 miles. The facility information does not include the currently-available capacity or cost per ton of these facilities because such information is not readily available.

In addition to the facilities shown above, Figures 2-2 through 2-6 list additional facilities that are available (or are planned) to the City.

Figure 2-2: Additional Transfer Stations

Name	Operator	Address	Miles
RockTenn	RockTenn CP, LLC	Florin Perkins Road, Sacramento	9.6
Central Valley Waste Services TS	Central Valley Waste Services	1333 East Turner Road, Lodi	21.2

Figure 2-3: Additional Disposal Facilities

Name	Operator	Address	Miles
Silva Ranch Biosolids Project	Synagro	Twin Cities Road, Herald	18.1
Yolo County Central Landfill	County of Yolo	44090 Co Rd 28H, Woodland	27.5
North County Landfill & Recycling Center	County Of San Joaquin	17720 East Harney Lane, Lodi	31.8
Foothill Sanitary Landfill	County Of San Joaquin	6484 North Waverly Road, Linden	47.3

Figure 2-4: Additional Recyclable Materials Processing Facilities

Name	Operator	Address	Miles
Strategic Materials (Glass)	Strategic Materials, Inc.	5850 88th Street, Sacramento	8.4
Right Way Recycling	Not Available	5750Alder Avenue, Sacramento	8.4
Sacramento Recycling & Transfer Station	Sacramento Recycling and T/S	8491 Fruitridge Road, Sacramento	9.7
K and M Recycling	WM Recycle America	3562 Ramona Avenue, Sacramento	11.1
Central Valley Waste Services	Central Valley Waste Services	1333 East Turner Road, Lodi	21.2
Western Placer Waste Mgmt. Authority MRF	Nortech Waste LLC	3033 Fiddyment Road, Roseville	41.4
Recology Yuba Sutter MRF	Recology Yuba Sutter	3001 N. Levee Road, Marysville	59.7

Figure 2-5: Additional Composting Facilities

Name	Operator	Address	Miles
CleanWorld SATS BioDigester	CleanWorld SATS BioDigester, LLC	8550 Fruitridge Road, Sacramento	9.6
Lopez Ag Service	Lopez Ag Service, Inc.	11499 Florin Road & Eagles Nest Road, Sacramento	10.5
Howe Operations	Howe Operations	5260 Bradshaw Road, Sacramento	10.9
Waste Management Recycle America	WM Recycle America	3562 Ramona Avenue, Sacramento	11.1
GP Landscapes	George Procida/GP Landscapes	2867 Heinz Street, Sacramento	11.7
Nilsen Farms Composting	Nilsen Farms	13790 Meiss Road, Sloughhouse	17.7
Clean World Anaerobic Digester	Synergex Ventures/ Clean World	4225 Pell Drive, Sacramento	23.1
Yolo County Composting Facility	County of Yolo	44090 Co Rd 28H, Woodland	27.5
SKS Enterprises	SKS Enterprises	23709 East Brandt Road, Clements	28.3
Vicini Brother Green Materials Recycling Operation	Vicini Brother Green Materials Recycling	15850 Willow Creek Road, Plymouth	30.4
Greenbelt Carriers	Greenbelt Carriers	Thomsen Road, Dixon	35.5
Mallard Creek	Mallard Creek, Inc.	4095 Duluth Avenue Rocklin	36.9
Western Placer Waste Management Authority MRF	Western Placer Waste Management Authority	3195 Athens Avenue, Lincoln	41.4
Forward Landfill, Inc. and Resource Recovery Facility	Republic Services	9999 S. Austin Road Manteca	42.0
Scotts Regional Composting Facility	O.M. Scotts and Sons Company	23390 Flood Road, Linden	42.9
Harvest Power	Harvest Power California LLC	916 Frewert Road, Lathrop	45.2
Northern Recycling Compost - Zamora	Northern Recycling	11220 County Road 94, Zamora	46.1
Jepson Prairie Organics Composting Facility	Recology	6426 Hay Road, Vacaville	46.3
Green Solutions	Green Solutions	3712 Feather River Blvd., Olivehurst	51.6
Green Earth Recovery	Yayo Enterprises	20500 Holly Drive, Tracy	55.5

Name	Operator	Address	Miles
Feather River Organics	Recology	3001 North Levee Road, Marysville	59.2
Tracy Material Recovery & Transfer Station	Tracy Material Recovery & Solid Waste Transfer, Inc.	30703 S. Macarthur Drive, Tracy	59.6

Figure 2-6: Additional Anaerobic Digestion Facilities

Name	Operator	Address	Miles
Clean World Anaerobic Digester	Synergex Ventures/Clean World Partners	8550 Fruitridge Road, Sacramento	9.2
Clean World Anaerobic Digester	Synergex Ventures/Clean World Partners	4225 Pell Drive, Sacramento	23.6
Yolo County Digester (Planned)	County of Yolo	44090 Co Rd 28H, Woodland	27.5
UC Davis READ Facility	Clean World	28068 County Road 99, Davis	32.5

Additionally, there are approximately 50 C&D processing facilities; 11 chipping and grinding facilities, and 6 biomass conversion facilities within 60 miles of the City.

2.3 Opportunities and Constraints on Uses of the City Site

The majority of solid waste generated by the residents and business in the City is transported approximately 18 miles (round trip) to the Republic owned and operated Elder Creek Transfer Station in South Sacramento. In 2008, the City proposed development of a transfer station at the City Site for residents and businesses to more conveniently and cost-effectively drop off their waste and recyclable materials. At that time, a transfer station was considered to reduce traffic, air pollutants, and greenhouse gas emission to help the City comply with the California Global Warming Solutions Act of 2006 (AB 32). It was also believed that a transfer station at the City site would provide more cost-effective recovery of recyclable materials, which would help the City meet the State's Integrated Waste Management Act (AB 939) diversion goals. Additionally, it was believed the City would gain more financial and operational control over its solid waste and recyclables management programs by creating a more competitive environment for these services through the public ownership and private operation of this facility. This facility would also provide employment opportunities for residents of the City and the surrounding areas.

To explore the feasibility of developing a transfer station, the City conducted a siting study in 2008 and prepared a transfer station master plan in 2009. It proceeded with development of the SWCC at the City Site in 2012, and performed a Phase I Environmental Site Assessment in 2015. This section describes these efforts. No significant environmental barriers to the development of the City Site have been identified.

A. 2008 Siting Study

In January 2008, a siting study[1] was prepared that included site identification, analysis, and recommendation for a HHW facility, transfer station, material recovery facility, and drop off center (City Project), which was estimated to cost $24.5 million to $36.2 million. The study short-listed and evaluated 7 sites (from among 180 potential sites) in the City for this City Project use (including the City Site, which was ranked as the top site). The 2008 siting study found that the City Site:

- Was potentially compatible with the City Project.
- Was 1.4 miles from the nearest school, 0.75 miles from residences, and 0.45 miles from a proposed shopping center; therefore, the furthest distance from sensitive receptors of the sites evaluated.
- Was free from observed wetlands or endangered species.
- Has a parcel of sufficient size to accommodate the City Project.
- Was zoned correctly for the intended use of the site and according to the General Plan Use Map.
- Has a leaking underground, diesel tank (recorded in a previous Negative Declaration) and soil at the site that needs to be studied.
- May necessitate acquisition of more property to support traffic circulation and site access, depending on project design issues that were yet to be determined.

B. 2009 Transfer Station Master Plan

The City continued exploring the idea of developing a transfer station at the City Site, which resulted in the preparation of the October 1, 2009 Transfer Station Master Plan[2]. This plan anticipated facility development and implementation in phases that might include:

- A 60,000 square foot transfer station building with a capacity of handling 2,000 tons per day of material. Solid waste and green waste would be off loaded from franchise and authorized commercial hauler collection vehicles, and self-haul vehicles. The materials would then be processed and loaded into transfer trucks and trailers for shipment to a landfill (e.g., Keifer Landfill in Sacramento County, Forward Landfill in San Joaquin County, Potrero Hills Landfill in Solano County, and other regional landfills).
- A 60,000 square foot material recovery facility with a capacity of handling 500 tons per day of materials. Recyclable materials would be received, processed, and loaded into transfer trailers for shipment to other facilities for further processing and remanufacturing.
- A 30,000 square foot permanent HHW collection, processing, and storage building. Residential and small business customers would deliver their materials for processing, temporary storage, and shipment to regulated disposal facilities or other processing centers.

[1] The 2008 siting study was prepared by HDR/BVA and can be found here:
http://www.elkgrovecity.org/UserFiles/Servers/Server_109585/File/cityclerk/citycouncil/2008/attachments/02-13-08_8.2.pdf

[2] Transfer Station Master Plan can be found here:
http://www.elkgrovecity.org/UserFiles/Servers/Server_109585/File/City%20Government/City%20Clerk/Resolutions/2009/11-18-09_8.05_2009-237.pdf

- A 10,000 square foot office building and educational center.
- A 500 square foot scale house.
- Other potential diversion uses including:
  - A recyclables drop-off/buy back center;
  - Green waste/wood waste drop-off center;
  - A white goods and scrap metal yard;
  - A second hand store;
  - Electronic waste drop-off;
  - Tire acceptance; and,
  - 30,000 square foot storage yard that could be used for a variety of purposes, including stockpiling inert materials such as soil, concrete and asphalt.
- Other uses including:
  - A repair shop, and,
  - A truck and equipment maintenance center with a fueling facility.

In order to implement the 2009 Transfer Station Master Plan, the Plan identified that the City would be required to obtain a variety of permits and approvals from agencies including, but not limited to:

- CalRecycle (Solid Waste Facilities Permit);
- US Army Corps of Engineers (Clean Water Act Section 404 permit);
- US Fish and Wildlife Services (Endangered Species Act – Section 7);
- Regional Water Quality Control Board (Clean Water Act Section 401 Certification, Construction Activity Storm Water Permit, National Pollutant Discharge Elimination System Permit); and,
- Metropolitan Air Quality Management District (Authority to Construct/Permit to Operate).

The City proceeded with implementation of one element of the Master Plan – the SWCC – as further described in Section 2.3.D below. The SWCC was developed as the first phase, rather than a transfer station, because the City's residential and commercial franchisees were already making use of existing transfer and material processing facilities. No other elements of the Master Plan have been developed as of the date of this Strategic Plan.

C. 2009 Environmental Impact Report

Based on the Transfer Station Master Plan, the City developed a Final Environmental Impact Report (EIR)[3] in 2009 for the City Site, which was prepared for CEQA review. The EIR included the transfer station as well as the SWCC.

[3] The Final EIR can be found here:
http://www.elkgrovecity.org/UserFiles/Servers/Server_109585/File/City%20Government/City%20Clerk/Resolutions/2009/11-18-09_8.05_2009-236.pdf

D. Special Waste Collection Center (SWCC) Development

To support construction of the SWCC, a geotechnical investigation was conducted at the City Site. The resulting March 2011 geotechnical report stated:

- The site could be developed for the SWCC using conventional grading and foundation construction techniques; however, due to the presence of near-surface expansive soils and existing construction, minor modifications in the schedule, site grading, and possibly to structures and pavements may be required; and,
- Various recommendations regarding the geotechnical aspects of project design and construction.

Construction began in 2012 and the SWCC opened to the public on April 22, 2014. The SWCC operates Sunday through Wednesday from 9:00 am to 4:00 pm. It accepts special waste materials including batteries, paint, household cleaners, pool chemicals, pesticides/herbicides, sharps, over-the-counter pharmaceuticals, used cooking oil, used motor oil, fluorescent light bulbs, gasoline, and electronic waste. It is also the site for a recyclable materials drop-off area and periodic City-hosted tire collection events for residents of Elk Grove.

E. 2015 Phase I Environmental Site Assessment

In 2015, a Phase I Environmental Site Assessment was prepared to document known and potential hazardous materials conditions located within the boundary of the SWCC. The assessment found:

- While adequate site characterization and remediation has been conducted, proper soil management of contamination found during future site development will require incidental cleanup activities;
- There is no indication or recorded evidence of accidental release from the storage and/or mixing areas of the SWCC and no further action is recommended;
- There is no indication that there has been an extensive or on-going release from any of the SWCC storage tanks; and,
- There is no recorded evidence that soil and/or groundwater contamination exist at this parcel and/or off site.

{This page intentionally left blank}

SECTION 3: EMERGING TECHNOLOGY AND TRENDS

As part of the strategic planning efforts, a review of emerging and alternative technologies that may affect future material generation rates, facility design, or other factors was performed. This review included consideration of innovative, successful management initiatives and practices that may be used in waste and recycling handling, processing, and reclamation and that may be replicated for Elk Grove to aid in diversion or long-term financial stability. HF&H combined our project team's knowledge of emerging technologies and practices with a review of available literature, including recent industry workshops on such topics, to identify technology and trends that are not currently utilized by the City. Key findings of the review include the following:

- There are emerging practices and technologies that could affect future waste generation rates (extended producer responsibility, phone applications that connect food generators to those in need, etc.) or material recovery rates (e.g., use of recyclable thermoset plastics in lieu of non-recyclable composite plastics).
- There are emerging technologies that may allow large-generator onsite management of materials before being delivered to the waste stream (e.g., mobile C&D shredders, onsite dehydrators, and onsite anaerobic digestion facilities).
- There are existing practices and technologies that may be used in material handling and processing (e.g., direct recyclables transfer, mixed materials processing, modular anaerobic digestion facilities).

More detailed findings are presented in Sections 3.1 through 3.4 for the following topic areas: transfer, recycling, organics processing, and other policies and practices.

3.1 Transfer Technologies

Direct Transfer Method

Direct transfer is a process where solid waste, recyclables, or organic materials are directly transferred from collection vehicles into long-haul transfer trailers for transport to a processing facility. This technology is in use at Waste Connections' Charles Street facility in San Jose, CA and at Livermore Sanitation's National Drive facility in Livermore, CA. This method can reduce the cost of designing and constructing a transfer station and typically simplifies the permitting process. Under State permitting regulations, the method can only be used for small volumes of materials (up to 150 tons per day or less).[4]

3.2 Recycling Technologies

Mixed Materials Processing Facility

Mixed materials processing facilities mechanically and manually sort solid waste or mixed materials to separate organics and recyclable materials. This technology can be utilized in combination with a source-separated collection program to help high-diversion municipalities close the remaining gap to their zero waste goals as is planned in Alameda County at Waste Management's Davis Street (Oakland) processing

[4] CalRecycle's transfer/processing facilities permit tier table from the following webpage: http://www.calrecycle.ca.gov/swfacilities/permitting/FacilityType/Transfer/

and transfer facility where the company's soon-to-be-completed organics materials recovery facility (OMRF), will be able to target for recovery the remaining organic and recyclable content in solid waste headed to landfill. The processing line at the OMRF is a complex system of screens and optical sorting projected to divert 61% of the City of Oakland's current solid waste stream.

Another option is to reduce the level of separation required by generators to two "wet" and "dry" streams rather than the current three streams (solid waste, recyclables, and organics). For example, Newby Island Materials Recovery Facility in San Jose, California has several sorting lines including commercial wet and dry lines, which only require commercial customers to sort into two (wet and dry) containers. The wet stream is processed to remove recyclables and other unsuitable materials. The resulting material is mostly food waste and food-soiled paper and is sent to an anaerobic digester for processing. The dry stream is sorted to remove typical recyclable items, sending the residual material to landfill. Combined, the mixed material processing of wet and dry commercial streams reported a diversion rate of 78.2% in 2014 (after the second year in operation).

Waste to Solid Fuel

Waste to Solid Fuel refers to the process of combusting various forms of solid material to release energy and create heat and light that are then harnessed to generate electricity and sometimes cogenerate useful heat energy. Common examples of this technology are "biomass" and "mass burn" facilities. Less common are "engineered municipal solid waste (MSW)" facilities.

Currently, there are about 24 direct-combustion biomass facilities in operation Statewide, down from a peak of 66 facilities only 25 years ago. These facilities convert agricultural wastes, wood wastes captured in C&D recovery facilities, and other processed biomass products to generate electricity. Of these 24, 6 are within 60 miles of Elk Grove, the closest being Woodland Biomass in Woodland, CA.

There are some 800 mass burn facilities consuming MSW worldwide (3 are in California). The nearest facility is Covanta Stanislaus, Inc., located 80 miles south of Elk Grove in Stanislaus County, California. The other two California mass burn MSW facilities are the Commerce Refuse to Energy Facility in Commerce, CA; and the Southeast Resource Recovery Facility in Long Beach, CA.

Engineered MSW facilities use a pelletized, engineered waste product to fuel the cement kilns. These pellets are produced by material recovery facilities, and can be used to offset fossil fuels in processes like cement manufacturing.

Gasification/Syngas Facilities

Gasification converts MSW to a usable synthetic natural gas (syngas) that can be used to generate electricity, similar to using MSW as a solid fuel to create electricity. Gasification is a different chemical process, which creates different byproducts. Another difference is that syngas can be processed further into additional commercial products such as transportation fuels, chemicals, and fertilizers, and can even substitute natural gas.

Gasification of MSW is much more limited in California than incineration, with CalRecycle identifying a half dozen gasification facilities of which half are private agricultural gasification facilities managing agricultural wastes and converting them to energy and/or biofuels for use onsite such as the Dixon Ridge Farms in Winters, CA. The other half of the California facilities are research scale facilities such as the UC Riverside Hydrogasifier in Riverside, CA, which is developing a "wet gasification" process that reduces the

need for the preprocessing of waste materials. One final example is a large scale gasification facility that accepts waste materials from the public at Foothill Sanitary Landfill in Linden, CA (less than 50 miles from Elk Grove).

Mobile C&D Shredders

Mobile shredders are becoming more and more prevalent in California as a result of CALGreen's increased recycling requirements (≥65% diversion effective 1/1/2017) and the adoption of local recovery requirements. Currently, mobile shredders and other onsite processing equipment are most often found on larger demolition sites, where the job site is large enough to logistically allow for placement of additional processing equipment and the volume of materials make source separation very attractive. In practice, mobile shredders, crushers, and other onsite processing equipment allows contractors to source separate and recover more C&D materials, but also changes the quality of the material. With increased onsite processing, more of the recoverable (and profitable) materials are being captured before that material reaches a mixed C&D recovery facility. This makes it more and more difficult for these facilities to achieve local recovery mandates as a greater percentage of the mixed materials they receive are not easily recoverable. Additionally, when C&D projects use onsite shredders and crushers, the resulting composition of the material reduces the potential value and makes separating the mixed material much more difficult. The result is an overall reduction in recoverability for reuse or recycling at the mixed C&D facilities and an increase in beneficial reuse and ADC.

Examples of mobile shredders are hard to identify, but, in general, due to the capital requirements and required onsite footprint, mobile shredders and other onsite processing and source separating equipment for C&D materials are reserved for larger projects and/or projects, especially demolitions, being performed by larger companies. In addition, the most common materials for shredding are wood and metals, while onsite crushers are used to reduce the volume of concrete and asphalt. The impact of mobile C&D shredders has been a topic of conversation among the California Resource Recovery Association C&D Technical Council and municipalities across the State as agencies seek to review and update C&D practices, facilities, and local ordinances to comply with the recent change to CALGreen mandates.

Residuals Use

Despite best efforts, even high-diversion municipalities face the challenge of removing 100% of recyclable and organic materials from the disposal stream. One option is to mechanically separate out the remaining organic fraction from processing residue for processing through anaerobic digestion (known as mechanical biological treatment). This approach is being done in the Zero Waste Energy Development Company facility in San Jose and is planned for the Santa Barbara Tajiguas Resource Recovery Project.

3.3 Organic Processing

Onsite Dehydrators

Onsite dehydrators reduce waste volume as well as process food waste, compostable disposable, and cardboard for medium- to large-size foodservice operations into compostable material or a biomass solid fuel. Benefits to foodservice operators include lessening a potentially costly source separated collection costs and the logistical challenges associated with collection and odor management of large quantities of food waste.

Dehydrators are used at several large scale food waste generators such as hospitals, grocers, universities, sports arenas, and casinos. A California example is Costco in Irvine, CA, where over 220 pounds per day are processed through their onsite dehydrator. Another example project is the dehydrator at the Chumash Casino Resort in Santa Ynez, CA. Over 40% of waste at the resort is processed through a combination of onsite equipment including a pulper, dehydrator, and liquefier.

Modular Anaerobic Digestion Facilities

Anaerobic digestion is used as part of the process to treat biodegradable waste to reduce waste volumes and produce methane (to produce electricity or compressed natural gas) and compost. A modular system can be moved from location to location. This modular anaerobic digestion technology is in use at the Monterey Regional Waste Management District facility in Marina, CA.

Onsite Anaerobic Digestion Facilities

Similar to onsite dehydrators, onsite anaerobic digestion facilities allow large organics generators to reduce the cost and logistics associated with these waste streams. In California, small- to medium-sized, self-contained digesters are found in a variety of wineries. This is the ideal context for onsite digesters. Wineries not only manage large amounts of agricultural food waste, but wineries also have effluent discharge and water consumption problems. Onsite anaerobic digestion eliminates the need for wineries to truck effluent and agricultural waste to specialized treatment and processing facilities, and allows them to generate their own onsite power and create a safe alternative water source for irrigation and cleaning. This technology is also being used by haulers and processors. For example, anaerobic digestion facilities are located at the Zero Waste Energy Development Company facility in San Jose, CA and the Blue Line Transfer Station facility in South San Francisco, CA. Such a facility is also planned for use as part of the Tajiguas Resource Recovery Project in Santa Barbara, CA.

Food Waste to Animal Feed Processors

Diverting food waste to feed animals is not a new practice but, since 1954, the practice has been regulated in California. Current requirements are to cook/sterilize all meat containing food waste or food waste that may have come into contact with meat products prior to feeding to animals. This regulation is managed by the California Department of Food and Agriculture. One interesting solution is the type of processing method offered by Sustainable Organic Solutions. Sustainable Organics Solutions collects residential and commercial food waste from customers in Sunnyvale and San Jose, processes out contaminants and excess moisture, and creates three high-value products. From each ton of material, products created include 400 pounds of shelf-stable dry meal, 200 gallons of reclaimed water, and 25 gallons of fats, oil, and grease (FOG). The FOG can be used not only as a feed additive, but it can also be used as a feedstock for bio-fuel production.

3.4 Other Policies and Practices Supporting Diversion

Plastics Manufacturing

Certain rigid plastics are either difficult or impossible to process for recycling. The plastics industry is working at modifying the structure of these materials to allow them to be recovered and reprocessed. It is anticipated that these new types of plastics will begin to replace the unrecyclable plastics within five years and will see widespread use by 2025.

Extended Producer Responsibility

Extended producer responsibility (EPR) results from federal, State, and local regulations on producers to take back and pay for the reuse, recycling, or final processing of products. California regulations mandated programs covering products such as mercury thermostats, paint, carpet, mattresses, e-waste, and photovoltaic modules. Several California counties (Alameda, Los Angeles, Marin, San Francisco, and Santa Cruz), have mandated pharmaceutical and "sharps" take-back programs requiring some drug manufacturers to pay and distributors to accept/manage drug take-back programs at pharmacies. CalRecycle is looking at EPR as an approach for reducing and making more recyclable packaging waste.

Education and Technical Assistance

Education is the practice of designing and distributing materials and information that explain to a class of generators the benefits of a particular program, as well as the procedures required to comply with the program. Effective public education programs can significantly and cost effectively increase the effectiveness of existing programs.

Technical assistance is the process of working with a particular generator to assess its waste stream (types, amounts, etc.), identify appropriate specific diversion services (on-site or contractor-provided), quantify the benefits of implementing the services (economic and environmental), work with the generator's staff and the service provider to design the application of the services to the particular generator (types and sizes of containers, frequency of service, signage, etc.), train (both initial and continuing) and motivate generator staff in the performance of the necessary procedures, monitor the implementation and operation of the services, communicate results, and adjust behavior.

Customer Pricing and Incentives

The common practice in California is for the solid waste and recycling collection, processing, and disposal system costs to be financed from charges to customers based on the volume of solid waste disposed (rather than charges tied to volumes of materials recycled or composted). As generators reduce the volume of solid waste disposed through recyclables and organics diversion and waste prevention, the overall system costs are then allocated to a smaller solid waste rate base, thereby increasing solid waste rates.

A key benefit of such pricing is that it creates an incentive to reduce the volume of waste subscribed to by customers. This is usually accomplished by separating recyclable and organic materials from the solid waste going to the landfill. However, some customers may achieve this by simply contaminating their recyclable and organic materials containers with the excess solid waste intended for disposal so they can pay for a smaller solid waste container. This reduces the volume and value of material recycled because contaminated recyclables are less valuable and may not even be recyclable.

Different agencies are taking different approaches to this problem. Some agencies have moved to having rates for recycling and organics as well as solid waste. On the other hand, the senior staff at one agency with a zero waste policy is considering recommendation of a flat rate (e.g., rate per residence) to deal with contamination problems.

When discussing rate structures, it is always appropriate to confer with City Council regarding the applicability of Proposition 218 property-related fee requirements.

Hauler Compensation and Incentives

Incentives have been incorporated in some franchise agreements and permit systems with the intent of motivating the hauler to increase the volume and quality of the materials recycled. These incentives can be regulatory or contractual requirements with fines for failing to achieve a certain level of diversion. Alternatively, the incentive can be a payment to the hauler from the increased revenues resulting from recycling.

Collection Method

Agencies are experimenting with different forms of collection to increase the volume and/or value of recyclables. For example, a three-cart system with two split carts (one cart with fibers and containers and a second cart with yard waste and organics) is being experimented with to determine if the volume and value of recyclables can be increased with additional separation of the materials. Alternatively, a one-cart system combined with a mixed material processing system is being pilot tested.

Food Recovery

The U.S. Department of Agriculture estimated that 31 percent of food produced in 2010 was not available for human consumption.[5] With this perspective, a significant portion of food waste disposed is edible. Recognizing the waste and the opportunity to feed hungry people, many food rescue and recovery programs have been implemented by local governments, non-profits, and others to recover edible food for human consumption, and more and more programs are coming on line. The programs include: food banks; food pantries; generator education programs; grant programs for food rescue organizations; development and use of software applications that improve the ease at which food waste generators can connect with food rescue organizations to provide food to those in need; and, more.

[5] Source: https://www.epa.gov/sustainable-management-food/sustainable-management-food-basics#what

SECTION 4. PROJECTIONS OF MATERIAL STREAMS

The purpose of projecting future material streams is to estimate the annual quantities of single-family, commercial (which includes multi-family), roll-off, and self-haul materials generated by residents and businesses and estimate specific quantities of various material streams. The material streams included in the analysis are single-stream recyclables, yard trimmings, food scraps, bulky items, C&D inerts and wood wastes, hard-to-recycle materials, and solid waste. These projections are used to support the assessment of the City's future collection, processing, and disposal needs and the analysis of various options to address the City's unmet needs (which are presented in Sections 6 and 7). In particular, the projections of various material streams and types is useful in identifying facility needs and capacity requirements.

4.1 Projection Methodology

HF&H created a Material Projection Model customized to the City's unique conditions. It provides estimates of the materials generated for three sectors: single-family, commercial, and self-haul. Commercial includes commercial and multi-family cart, bin, and roll-off customers.[6]

For each sector, annual tonnages are projected for a 20-year period (2017 to 2036) for several material streams and some specific material types. Projections are based on the City's 5-year historical annual solid waste, recyclables, organics, and C&D tonnage data for 2012 to 2016.[7] Self-haul data was extrapolated from CalRecycle's disposal reporting system. A five-year historical self-haul disposal tonnage average was calculated by HF&H using CalRecycle's total annual disposal tonnage for the City netting out residential, commercial, and roll-off solid waste tonnage. Additional material streams were quantified using the waste characterization analysis performed under Task 2.1. Projection results are presented in Section 4.2.

The projections consider a variety of factors – population, job growth, potential impacts on material generation, and potential changes in program participation. Sensitivity analyses were performed modeling a range of assumptions for these factors.

4.2 Future Material Streams

Figure 4-1 presents a summary of the total material stream projections for single-family and commercial sectors showing annual tonnage estimates for 2017, 2026, and 2036 under a "base" case scenario. The analysis of the material streams assumes continuation of the City's current three-stream collection system (recyclables, organics, and solid waste) with no additional participation or diversion above the current level. Bulky items, C&D, and other recoverable material streams included in Figure 4-1 reflect material types that are (or may be) handled outside of the three-stream collection system.

For single-family materials streams, the projections anticipate increases due to single-family population growth ranging from 2.6% to 3.9% for 2017 through 2025 and 2.7% from 2026 to 2036.[8] For the commercial material stream, the projections assume increases due to job growth (based on a 5-year

[6] Multi-family is included with commercial because these customers are serviced on commercial collection routes and tonnage is reported by haulers with the commercial tonnage data.

[7] Annual solid waste, recyclables, organics, and C&D tonnage for 2012 through 2016 was reported by the City's haulers and compiled by the City. This tonnage data has not be reviewed or audited by HF&H or the City.

[8] Population projections through 2025 were provided by the City, which obtained data from the Department of Finance Demographic Research Unit. HF&H adjusted the projections to reflect single-family units only.

average of the most recently available job data ending in2013) using a factor of 6.2% annually for 2017 through 2036.[9] Growth assumptions for the self-haul materials were projected based on overall population projections ranging from 2.8% to 4.3% for 2017 through 2025 and 3% from 2026 to 2036.[10]

Figure 4-1: Projection Summary, 3-Stream System, Growth Only (Case 1)

	2017 (a)	2026 (a)	2036 (a)
Residential and Commercial			
Single Stream Recyclables Collected	25,026	37,981	61,550
Organics Collected	21,686	28,682	39,081
Bulky Items Collected	2,061	2,657	3,482
Solid Waste Collected	76,447	114,255	182,069
C&D Materials Recovered (b)	4,635	7,965	14,536
Other Recovered Materials	0	0	0
Total Materials	129,854	191,540	300,718
Disposal (c)	80,859	120,822	192,487
Net Diverted	48,995	70,717	108,231
Diversion of Total Materials	38%	37%	36%
Self-Haul			
Solid Waste Disposal	7,837	10,345	13,902

(a) Projected tonnages are estimates only. Actual results may vary significantly depending on numerous factors.
(b) C&D tonnages reflect C&D recovered net of processing residue. Processing capacity requirements may be considerably higher if mixed C&D is processed.
(c) Disposal includes Solid Waste Collected and Residue for Single Stream, Organics and Bulky Items.

4.3 Factors Impacting Projections

A wide range of external factors will impact the material streams including: growth in population; changes in demographics; economic trends; changes in the composition of materials; changes in the number and types of new businesses; product design and packaging changes; collection and processing methods and technologies; changes in federal and State legislation and regulations; and, more. The Material Projection Model was designed to calculate the impact of changes to assumptions regarding key factors related to population, generation rates, program participation, and material capture (diversion) rates. Using these factors, alternative assumptions can be modeled to provide a range of results with which to support the needs assessment and long-term facility functions and capacity requirements. To describe the results of changes in these factors, HF&H presents 4 alternative cases for single-family, commercial, single-family

[9] Job data was obtained by the City from the 2016 Elk Grove Employment Dynamics Report.
[10] Population projections through 2025 were provided by the City, which obtained data from the Department of Finance Demographic Research Unit. HF&H used the overall projections, without adjustment for self-haul. After 2025, self-haul projections were based on 3% annually, which reflects the 5-year average for 2021 to 2025.

and commercial combined, and self-haul projections in Figures 4-2, 4-3, 4-4, and 4-5, respectively. The four cases are described below.

A. Case 1, Growth Only

This case presents the "base" case 3-stream scenario, which was presented in summary in Figure 4-1. It calculates the potential impact of the population and job growth assumptions on the tonnage projected.

B. Case 2, Growth + 25% Capture of Recyclables Disposed by 2020

For single-family and commercial 3-stream tonnage projections, this Case 2 assumes increased diversion over current levels calculated as: (1) a 10% capture rate from disposed materials in 2019 of single-stream recyclables, yard trimmings, bulky items, inerts, C&D wood waste, other hard-to-recycle materials, and HHW materials disposed; and, (2) a 25% capture rate of recyclables disposed in 2020 and beyond.[11]

For the self-haul tonnage projections, Case 2 assumes the same capture rates from disposed materials described above (10% and 25%) anticipating additional source separation programs for self-haulers for single stream recyclables, yard trimmings, wood waste, concrete, asphalt paving, rock, soil, inert fines, asphalt roofing, gypsum board, bulky items, and other hard-to-recover recyclables.

The projections reflect the same population and job growth assumptions used in Case 1.

This type of increased diversion performance may be stimulated by, or result from, several drivers such as: current and future State and local regulations; increased education and outreach; new collection programs; changes in processing methods for materials; and, enforcement of mandatory diversion requirements.

C. Case 3, Growth + Mandatory 2018 to 2024

Case 3 calculates the potential impact of responding to existing mandatory State diversion requirements resulting in significantly higher diversion of materials than Case 2, which anticipates lower diversion levels for voluntary programs.

In this Case 3, disposal of single stream recyclables, yard trimmings, bulky items, inerts, C&D wood waste, other hard-to-recycle materials, and HHW was assumed to decrease by 20% for 2021, 40% for 2022, 60% for 2023, and 75% for 2024 through 2036.

For commercial tonnage projections, the additional diversion of recyclable materials was assumed to commence in 2018 to reflect CALGreen's C&D 65% diversion requirements and CalRecycle's increasing diversion requirements for commercial organics (AB 341).

Case 3 does not calculate a specific mandatory policy, but rather calculates the potential impacts of some combination of the State's requirements and future City or County requirements.

It also reflects the same population and job growth assumptions modeled for Case 1.

[11] For the purposes of the material flow projections, inerts includes concrete, asphalt paving, asphalt roofing materials, gypsum board, rock, soil, and soils. C&D wood waste includes clean dimensional lumber, clean engineered wood, and clean pallets and crates. Other hard-to-recycle materials includes textiles, carpet, film plastics, manure, electronics, appliances, tires, and some metals.

D. Case 4, Growth + Mandatory + Reduced Generation

Case 4 replicates Case 3 assumptions for growth and mandatory programs, but includes an assumption that less materials will be generated by single-family and commercial customers and self-haulers. Specifically, Case 4 assumes that material generation rates will decline 0.5% annually from 2022 through 2036 resulting in a 7.5% decline by 2036 (e.g., 0.5% for 2022, 1.0% for 2023, 1.5% for 2024, etc.).

4.4 Two-Stream Materials Projections

The material projection information provided in Sections 4.2 and 4.3 focuses on a three-stream collection system that the City currently has in place for separate collection of recyclables, organics, and solid wastes. At some point, the City may analyze the option of a two-stream collection approach for collection of wet and dry materials. For this reason, Figure 4-6 provides an estimate of a two-stream collection system program that projects annual tonnages for separate collection of compostable "wet" materials and "dry" recyclable materials. The material projection includes bulky items and C&D materials separately from the wet and dry materials to reflect that these material types are likely to be handled separately from the two-stream collection system.

(Remainder of this page intentionally left blank)

Figure 4-2: Projection Sensitivity Analysis for Single-Family

Single-Family	2017 Projection (a)	2026 Projection (a)				2036 Projection (a)			
	5-year Average + Growth	Case 1: Growth Only	Case 2: Growth+25 % Capture by 2020	Case 3: Growth + Mandatory 2021 to 2024	Case 4: Growth + Mandatory + Reduced Generation	Case 1: Growth Only	Case 2: Growth+25 % Capture by 2020	Case 3: Growth + Mandatory 2021 to 2024	Case 4: Growth + Mandatory + Reduced Generation
Three-Stream System									
Single Stream Recyclables Collected	11,703	15,087	17,435	22,131	20,559	19,771	22,848	29,002	15,928
Organics Collected	19,995	25,777	30,795	40,830	37,929	33,780	40,355	53,506	29,385
Bulky Items Collected	2,061	2,657	2,663	2,675	2,485	3,482	3,489	3,505	1,925
Solid Waste Collected	39,862	51,389	42,063	23,413	21,749	67,343	55,123	30,684	16,849
Other Recovered Materials (c)	0	0	1,952	5,855	5,439	0	2,557	7,672	4,214
Total Materials	73,621	94,909	94,907	94,903	88,160	124,375	124,373	124,369	68,300
Disposal (d)	42,225	54,435	45,471	27,541	25,584	71,335	59,588	36,094	19,820
Net Diverted	31,396	40,474	49,437	67,362	62,576	53,040	64,785	88,275	48,480
Diversion of Total Materials	43%	43%	52%	71%	71%	43%	52%	71%	71%

(a) Projected tonnages are estimates only. Actual results may vary significantly depending on numerous factors.
(b) C&D tonnages reflect C&D recovered and are net of processing residue. Processing capacity requirements may be considerably higher if mixed C&D is processed
(c) Other Recovered Materials is net residue.
(d) Disposal includes Solid Waste Collected and Residue for Single Stream, Organics, and Bulky Items.

Figure 4-3: Projection Sensitivity Analysis for Commercial

Commercial	2017 Projection (a)	2026 Projection (a)				2036 Projection (a)			
	5-year Average + Growth	Case 1: Growth Only	Case 2: +25% Capture by 2020	Case 3: Growth + Mandatory 2021 to 2024	Case 4: Growth + Mandatory + Reduced Generation	Case 1: Growth Only	Case 2: +25% Capture by 2020	Case 3: Growth + Mandatory 2021 to 2024	Case 4: Growth + Mandatory + Reduced Generation
Three-Stream System									
Single Stream Recyclables Collected	13,323	22,894	25,532	30,808	28,689	41,780	46,594	56,222	31,502
Organics Collected	1,691	2,905	9,308	22,113	20,592	5,302	16,986	40,354	22,611
Bulky Items Collected	0	0	175	525	489	0	319	958	537
Solid Waste Collected	36,584	62,866	51,442	28,594	29,750	114,726	93,880	52,187	32,667
C&D Materials Recovered (b)	4,635	7,965	9,055	11,233	10,461	14,536	16,524	20,500	11,486
Other Recovered Materials (c)	0	0	1,117	3,352	0	0	2,039	6,117	0
Total Materials	56,233	96,630	96,628	96,624	89,981	176,343	176,341	176,337	98,804
Disposal (d)	38,634	66,387	55,605	34,042	34,823	121,152	101,477	62,128	38,238
Net Diverted	17,600	30,243	41,023	62,583	55,158	55,191	74,864	114,209	60,567
Diversion of Total Materials	31%	31%	42%	65%	61%	31%	42%	65%	61%

(a) Projected tonnages are estimates only. Actual results may vary significantly depending on numerous factors.
(b) C&D tonnages reflect C&D recovered and are net of processing residue. Processing capacity requirements may be considerably higher if mixed C&D is processed.
(c) Other Recovered Materials is net residue.
(d) Disposal includes Solid Waste Collected and Residue for Single Stream, Organics, and Bulky Items.

Figure 4-4: Projection Sensitivity Analysis for Single-Family and Commercial Combined

Single-Family + Commercial	2017 Projection (a)	2026 Projection (a)				2036 Projection (a)			
	5-year Average + Growth	Case 1: Growth Only	Case 2: Growth+25 % Capture by 2020	Case 3: Growth + Mandatory 2021 to 2024	Case 4: Growth + Mandatory + Reduced Generation	Case 1: Growth Only	Case 2: Growth+25 % Capture by 2020	Case 3: Growth + Mandatory 2021 to 2024	Case 4: Growth + Mandatory + Reduced Generation
Three-Stream System									
Single Stream Recyclables Collected	25,026	37,981	42,967	52,939	49,248	61,550	69,442	85,224	47,430
Organics Collected	21,686	28,682	40,102	62,943	58,521	39,081	57,341	93,860	51,997
Bulky Items Collected	2,061	2,657	2,838	3,200	2,973	3,482	3,809	4,463	2,462
Solid Waste Collected	76,447	114,255	93,506	52,007	51,499	182,069	149,003	82,871	49,516
C&D Materials Recovered (b)	4,635	7,965	9,055	11,233	10,461	14,536	16,524	20,500	11,486
Other Recovered Materials (c)	0	0	3,069	9,207	5,439	0	4,596	13,789	4,214
Total Materials	129,854	191,540	191,536	191,528	178,140	300,718	300,714	300,706	167,104
Disposal (d)	80,859	120,822	101,076	61,583	60,407	192,487	161,066	98,222	58,058
Net Diverted	48,995	70,717	90,460	129,945	117,734	108,231	139,649	202,484	109,047
Diversion of Total Materials	38%	37%	47%	68%	66%	36%	46%	67%	65%

(a) Projected tonnages are estimates only. Actual results may vary significantly depending on numerous factors.
(b) C&D tonnages reflect C&D recovered net of processing residue. Processing capacity requirements may be considerably higher if mixed C&D is processed.
(c) Other Recovered Materials is net residue.
(d) Disposal includes Solid Waste Collected and Residue for Single Stream, Organics, and Bulky Items.

Figure 4-5: Projection Sensitivity Analysis for Self Haul

Self-Haul	2017 Projection (a)	2026 Projections (a)				2036 Projection (a)			
	5-year Average + Growth	Case 1: Growth Only	Case 2: +25% Capture by 2020	Case 3: Growth + Mandatory 2021 to 2024	Case 4: Growth + Mandatory + Reduced Generation	Case 1: Growth Only	Case 2: +25% Capture by 2020	Case 3: Growth + Mandatory 2021 to 2024	Case 4: Growth + Mandatory + Reduced Generation
Source Separated Materials (b)									
Single Stream Recyclables	0	0	127	380	353	0	170	510	281
Yard Trimmings	0	0	111	334	310	0	149	448	247
Wood Waste	0	0	258	775	720	0	347	1,042	573
Concrete, Asphalt Paving, Rock, Soil, and Fines	0	0	57	171	159	0	77	230	126
Other Inerts - Asphalt Roofing, Gypsum Board	0	0	199	598	556	0	268	804	442
Bulky Items	0	0	451	1,354	1,258	0	607	1,820	1,001
Other Recycling/Hard to Recover	0	0	406	1,217	1,131	0	545	1,636	900
Total Source Separated Material Streams	0	0	1,610	4,829	4,487	0	2,163	6,490	3,570
Residue	0	0	(118)	(354)	(329)	0	(159)	(476)	(262)
Net Diversion	0	0	1,492	4,475	4,158	0	2,005	6,014	3,308
Solid Waste	7,837	10,345	8,853	5,870	5,454	13,902	11,898	7,889	4,339
Total Materials	7,837	10,345	10,345	10,345	9,611	13,902	13,902	13,902	7,647
Diversion	0.0%	0.0%	14.4%	43.3%	43.3%	0.0%	14.4%	43.3%	43.3%

(a) Projected tonnages are estimates only. Actual results may vary significantly depending on numerous factors.
(b) Source separated tonnages reflect recovered materials net of residue. Processing capacity requirements may be considerably higher if materials are not source separated.

Figure 4-6: Projection Summary, 2-Stream System

	2017 Projection (a)	2026 Projection (a)		2036 Projection (a)	
	5-year Average + Growth	Case 1: Growth Only	Case 4: Growth + Mandatory + Reduced Generation	Case 1: Growth Only	Case 4: Growth + Mandatory + Reduced Generation
Residential					
Wet Materials	38,752	49,957	46,407	65,467	35,954
Dry Materials	30,277	39,032	36,259	51,150	28,091
Bulky Items	2,061	2,657	2,468	3,482	1,912
C&D Materials (b)	2,531	3,263	3,032	4,277	2,349
Total	73,621	94,909	88,166	124,375	68,306
Commercial					
Wet Collected	18,800	32,306	30,084	58,956	33,034
Dry Collected	28,671	49,267	45,879	89,909	50,378
Bulky Items Collected (b)	0	0	0	0	0
C&D Materials Collected (c)	8,763	15,057	14,022	27,479	15,397
Total	56,233	96,630	89,986	176,343	98,810
Total Single-Family and Commercial					
Wet Collected	57,552	82,263	76,492	124,422	68,988
Dry Collected	58,948	88,299	82,138	141,059	78,470
Bulky Items Collected (b)	2,061	2,657	2,468	3,482	1,912
C&D Materials Collected (c)	11,294	18,321	17,054	31,755	17,746
Total	129,854	191,540	178,152	300,718	167,116
Self-Haul					
Source Separated Recoverable Materials (d)	0	0	4,487	0	3,570
Solid Waste Disposal	7,837	10,345	5,454	13,902	4,339
Total	7,837	10,345	9,941	13,902	7,909

(a) Projected tonnages are estimates only. Actual results may vary significantly depending on numerous factors.
(b) Commercial bulky item tonnages are included with Dry Materials.
(c) C&D tonnages reflect C&D recovered net of processing residue. Processing capacity requirements may be considerably higher if mixed C&D is processed.
(d) Self-haul source separation of recovered materials for diversion is anticipated for Case 4.

4.5 Key Observations

The four material projection cases provide insight into the effects of varying assumptions on the material stream projections over a 20-year period. These insights include:

- The annual tonnage of materials to be managed may increase approximately 130% over 20 years (from 130,000 tons in 2017 to 300,000 tons in 2026) anticipating population and job growth projections and constant material generation rates.
- Compliance with State mandates will result in significant increases in processing needs for recyclables, organics, C&D and other materials, particularly if mandatory programs are effective and enforced. For example, 3-stream collection in Case 3 calculations show single-family and commercial single stream recyclables volumes may increase approximately 240% over 20 years and organics volumes may increase approximately 330% over 20 years at current generation rates. Approximately 130% of the increase is due to growth and job projections and the remaining is due to increased diversion projections for recyclables and organics. In Case 3, solid waste collection volumes are projected to increase only 10% over 20 years at current generation rates, net of solid waste increases due to population/job growth and solid waste reductions through diversion.
- While increased diversion requirements will necessitate additional processing capacity and facilities, a decrease in material generation rates over time may offset some of the increased potential processing needs. For illustration, the 3-stream collection in Case 4 shows that a small reduction in generation rates annually from 2020 to 2036 could reduce the total materials managed by 55% in 2036 (e.g., 300,000 tons in 2036 at current generation rates compared to 167,000 tons in 2036 at reduced generation rates). Conversely, increased material generation rates will increase collection, processing, and disposal needs.

While these insights are instructive, it is important to recognize that actual tonnage levels for the various material streams and the characterization of materials may vary considerably from the estimates provided herein. As a result, the City will want to assess material stream quantities every few years and adjust its long-range plans over time.

SECTION 5. UNMET NEEDS

The City of Elk Grove identified compliance with State and local mandates and increasing diversion, to the extent such diversion can be accomplished cost effectively, as key objectives for its Long-Range Plan.[12] A review of State mandates is presented in Section 5.1 and a diversion rate analysis is presented in Section 5.2. This information along with: the scope of current City programs and policies; materials characterization information; material stream projections; local facility infrastructure; emerging technologies; and, other background information were considered in development of the unmet needs presented in the remainder of Section 5.

5.1 Overview of State Mandates

A key objective of the needs assessment is identification of what the City, its residents, and its businesses must do to comply with the State's Materials Management Mandates. The State's mandates are reflected in legislation and regulations that have established requirements for increased diversion of recyclables and organic materials. These requirements, which are summarized below, place responsibility on residents, multi-family properties, businesses, and C&D contractors to divert recyclables, organics, and C&D and on the City to support these efforts and proactively plan for compliance with State organics regulations.

In 1989, the State enacted the California Integrated Waste Management Act (commonly "AB 939"), which established a requirement for all cities and counties within the State to divert 25% of their waste by 1995 and 50% by 2000. In late 2011, the State started looking beyond the AB 939 diversion requirements and recently passed several pieces of legislation to increase diversion to 75% and beyond. Key legislation includes:

Diversion Milestones

1989 – State enacted AB 939 with 50% City requirement
1995 – City to achieve 25% diversion per AB 939
2000 – City to achieve 50% diversion per AB 939
2011 – State enacted AB 341 with a 75% State-wide goal and mandatory recycling for multi-family and businesses
2016 – State passed SB 1383 requiring 75% reduction of organic disposal volumes by 2025 and recovery of 20% of edible food by 2025
2016 – State CALGreen Building Standards Code requires 65% C&D diversion by 2017

- Mandatory commercial recycling (AB 341, 2011) – State-wide recycling goal of 75% by 2020; requires businesses and multi-family properties to recycle;
- Organics Waste Recycling Act (AB 1826, 2014) – Requires organic materials recycling by businesses and multi-family properties, phased in through 2020;
- Yard Trimmings Diversion (AB 1594, 2014) – Disallows diversion credit to agencies for processed yard trimmings that are used as landfill alternative daily cover (ADC);
- Organics Management Infrastructure Planning Act (AB 876, 2015) – Requires each county or regional agency to provide a 15-year estimate of organics processing generation and to identify

[12] The term "diversion" is used broadly to describe processes for reducing the amount of material landfilled including waste prevention, reuse, repair, recycling, composting, anaerobic digestion, and other forms of processing.

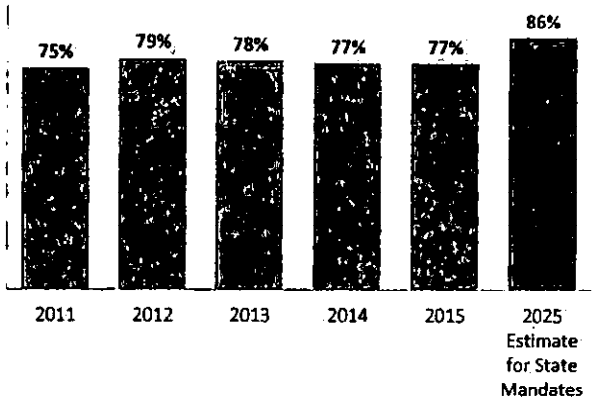
additional processing capacity needed to process this material, as well as areas for new or expanded processing capacity for the unincorporated areas and cities within each county;

- Disposal and Recycling Reporting Requirements (AB 901, 2015) – Establishes new disposal and recycling reporting to CalRecycle for waste, recycling, and compost facilities, as well as exporters, brokers, and transporters of recyclables or compost;
- Short-Lived Climate Pollutants: Organics Waste Methane Emissions Reductions (SB 1383, 2016) – Requires State-wide reduction from landfill disposal of organic material (including paper, cardboard, and other fibers) volumes by 50% by 2020, 75% by 2025, and recovery of 20% of edible food by 2025;
- 2016 California Green (CALGreen) Buildings Standards Code (Cal. Code Regs., Title 24) – Requires at least 65% diversion of C&D effective January 1, 2017 for new construction and demolition projects, additions, and alterations with some exemptions; and,
- Proposition 67 Ban on Single-Use Carryout Bag Ban (SB 270, 2016) – Dictates that most grocery stores, retail stores with a pharmacy, convenience stores, food marts, and liquor stores may not provide single-use plastic carry-out bags to their customers.

5.2 Diversion Rate Analysis

Annually, the City estimates its annual diversion rate in accordance with the State-established methodology. In 2003, the City's diversion rate was 47% and has increased since then reaching a high of 79% in 2012.[13] As shown in Figure 5-1, over the past 5 years, the diversion rate has been relatively constant, averaging 77%.

Figure 5-1: Annual Diversion Rates, Actual and Estimated



It is anticipated that the diversion rate will increase over the next 5 to 7 years as businesses, contractors, and the City implement changes to meet State mandates. HF&H estimates that a diversion rate of 86% by 2025 may be achieved complying with State mandates through diversion of approximately 29,000 tons (based on the City's most recent 5-year disposal average and achievement of 75% reduction in organics disposal). This will require diversion of food, compostable paper, yard trimmings and pruning, and nonhazardous wood waste.

The City is interested in increasing diversion beyond State mandates, if it can be done cost effectively. A 90% diversion scenario was examined to estimate needs at this high level. In this case, approximately 43,000 tons of additional diversion will need to occur above the current disposal volumes (based on a 5-year historical disposal average for 2012 to 2016). Reaching 90% diversion requires prevention or

[13] The City's first annual report, after City incorporation in July 2000, was for 2003 reporting year. For 2011 to 2015 diversion rates in Figure 5-1, the diversion rate was calculated using annual per capita disposal rate per resident and target per capita disposal rate from CalRecycle Jurisdiction Diversion/Disposal Rate Summary.

diversion of approximately 75% of the organic materials, single stream recyclables, C&D inerts and wood wastes, textiles, bulky items, carpet, and HHW currently disposed.

Figure 5-2 presents 3 diversion scenarios – current diversion, estimated diversion with State mandates, and estimated 90% diversion.

Figure 5-2: Diversion Tonnages and Rates

	5-Year Average (2011 - 2015)	State Mandate Estimate	90% Diversion Estimate
Estimated Disposal (tons/year)	77,000	48,000	34,000
Additional Diversion (tons/year)	---	29,000	43,000
Diversion rate	77%	86%	90%

Note: Tonnage amounts are rounded to nearest thousand. Estimates are +/- 5%.

5.3 Unmet Needs Shaped by SB 1383 and AB 1594

In Section 5.1, an overview of State mandates is provided. The City has already moved ahead with programs to support compliance with several of these mandates; however, it needs to plan and implement programs to comply with SB 1383 and AB 1594. SB 1383 requires significant diversion and procesing of organic materials. AB 1594 disallows diversion credit for use of organics as ADC. Because of their significance, additional background information on SB 1383 and AB 1594 is presented below to provide context for the identification of program and facility needs.

A. SB 1383, Organics Waste Diversion

In September 2016, the Governor of California signed SB 1383 (Lara, Chapter 395, Statutes of 2016) that established methane emissions reduction targets in a Statewide effort to reduce short-lived climate pollutants (SLCP). Among other things, SB 1383 focuses on organic waste methane emission reductions including definition of 3 Statewide targets: (1) 50% reduction in disposal of organic waste from 2014 levels by 2020; (2) 75% reduction by 2025; and, (3) recovery of not less than 20% of currently-disposed edible food for human consumption by 2025. SB 1383 grants CalRecycle the regulatory authority to achieve these 3 organic waste reduction targets. The legislation identifies key requirements and compliance milestones. The regulations, which will provide more specificity, are being developed by CalRecycle in late 2017 through early 2019. Figure 5-3 presents the timeline for developing the regulations and achieving the targets.

Figure 5-3: CalRecycle's SB 1383 Implementation Timeline

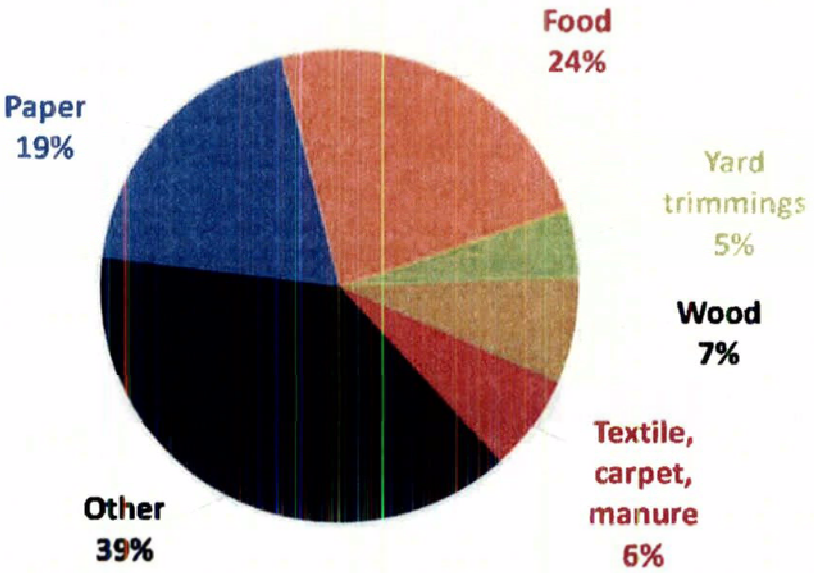
Timing	Activity
2017	CalRecycle holds informal workshops
Late 2017/Early 2018	CalRecycle initiates formal rule making
Late 2018/Early 2019	CalRecycle adopts regulations
2017-2019	Jurisdictions, haulers, and generators consider taking actions to implement programs to be in compliance with regulations on January 1, 2022

Timing	Activity
2019	CalRecycle develops tools to assist jurisdictions and provides technical assistance to support local efforts
1/1/2020	State goal to achieve 50% reduction in Statewide organic disposal from 2014 level
7/1/2020	CalRecycle, with Air Resources Board, completes assessment of progress, and, if warranted, adds new requirements or recommends new legislation
1/1/2022	Regulations take effect and are enforceable by CalRecycle against jurisdictions, facilities, and haulers. City programs must be in place.
1/1/2024	Jurisdictions shall take progressive enforcement actions against non-compliant regulated entities, including generators, haulers, and processors
1/1/2025	State goal to achieve 75% reduction in Statewide organic disposal from 2014 level; and, not less than 20% of currently disposed edible food must be recovered for human consumption

Source: Adapted from CalRecycle's Short-Lived Climate Pollutants: Organic Waste Methane Emissions Reductions webpage. http://www.calrecycle.ca.gov/Climate/SLCP/

SB 1383 is being compared to AB 939 in its magnitude and potential scope of requirements for jurisdictions and generators and in its inclusion of penalties for non-compliance. These penalties are likely different from AB 939 in that they will extend to generators, not just local jurisdictions. The SB 1383 organics definition differs significantly from definitions in AB 939 and AB 1826. While it encompasses "traditional" organics (yard trimmings, food scraps, and wood waste), it is much broader including fibers (paper, cardboard, cartons, coated paper), applicable textiles, applicable carpet, biosolids, digestate, and manure. As a result, SB 1383 impacts both recyclables and organics reduction, collection, and processing programs. Figure 5-4 illustrates that recoverable organic materials covered by SB 1383 make up approximately 61% of the waste disposed by the City of Elk Grove and its residents and businesses.

Figure 5-4: SB 1383 Organic Materials Characterization for Elk Grove



Note: Figure 5-4 includes organics materials that are categorized as recoverable in CalRecycle's waste characterization study. Organics categorized as non-recoverable are excluded.

Given the broad definition of organics, the 75% target reduction in organic waste disposed and 20% target for recovery of edible food will necessitate organics reduction by both residents and businesses. SB 1383 expands beyond AB 1826 mandatory commercial organics requirement through its broad organics definition and its applicability to all multi-family and commercial generators regardless of the amount of organics or solid waste generated. Achievement of the SB 1383 organics targets compels significant action by the City and its generators.

Based on HF&H's understanding of CalRecycle's interests as of the writing of this report, the following summary of compliant program requirements is provided.

- **Range of organic materials programs** - Compliant programs must address a broad range of organic materials including yard trimmings, food scraps, all grades of paper/cardboard, applicable textiles, applicable carpet, manures, biosolids, digestate, wood, and lumber. As further described below, the City will need to expand its existing recycling and organics collection programs with a particular focus on food scraps collection.

- **Mandatory organics services** - Compliant programs are intended to supply organics collection services (for most covered materials, not just food scraps and yard trimmings) automatically to every residential and commercial generator, with very limited provisions for exemptions and opt-outs. In particular, Elk Grove will need to: expand commercial recycling and organics collection requirements to all businesses (not those above certain thresholds); implement multi-family organics collection; and, implement residential food scraps collection. The City may also need to have special programs focused on recovery and diversion of textiles, carpets, manures, biosolids, and digestate. Wood and lumber recycling will primarily be addressed through the City's C&D ordinance, which was updated in 2017 to comply with CALGreen 2016 buildings standards.

- **Source separation vs. mixed waste processing programs** – Compliant programs will be based on source separation and processing of the various organic categories with the exception of mixed waste organics collection service and processing programs in place for organic waste generators prior to January 1, 2020. Elk Grove's existing organics programs are already source-separation programs, which is consistent with SB 1383, and any future programs that include mixed waste organics collection and processing will need to be in place by January 1, 2020.

- **Contamination** – CalRecycle will be focused on and expects reporting about the quality, contamination, and markets for various organic materials. Elk Grove will likely need to implement a contamination monitoring program for residential and commercial recycling and organics collection programs and increase its reporting to the State. The franchise hauler can take on some of these responsibilities.

- **Processing programs** – Given that some residential yard trimmings are used for ADC purposes and the City's registered commercial haulers may use yard trimmings for ADC, which is not supported by AB 1594, the City will need to secure organics processing services or require that its haulers provide SB 1383 compliant processing. In addition, the inclusion of food waste with the residential yard trimmings will require composting of these materials rather than the current practice of land application and/or ADC use.

- **Monitoring and enforcement** – SB 1383 compliant programs will include monitoring and enforcement by local jurisdictions upon generators of all sizes (i.e., single-family, multi-family,

commercial, institutional, etc.). CalRecycle is likely to offer more than one acceptable enforcement approach, but has clearly conveyed that agencies will need an enforcement program that includes random inspections as well as a complaint-based inspection/enforcement process. Under the legislation, this generator enforcement cannot be required before 2024; however, enforcement on local jurisdictions may start as soon as 2022. Elk Grove will need to plan and implement a compliant program.

- **Other** – Other compliant programs that Elk Grove will need to implement include the following:
  - Organics reduction programs for City facilities;
  - Food recovery programs for medium and large edible food generators including the requirement to enforce the SB 1383 requirements through a food recovery ordinance or other enforcement policies and procedures;[14]
  - Disposal reduction programs for "other" organics (applicable textiles, applicable carpet, biosolids, digestates, manure, etc.); and,
  - Reporting with a focus on metrics measuring effectiveness.

It is important to recognize that the final regulations will be shaped by public comment and additional consideration by CalRecycle. As a result, the actual jurisdicational and generator requirements may differ somewhat (or significantly) from the concepts summarized herein. After the rule-making process is completed in late 2018 or early 2019, it is advised that the program recommendations in the Long-Range Strategic Plan be reviewed and modified, if needed, to align with the final SB 1383 regulations.

B. AB 1594, Yard Trimmings Diversion, Not ADC

In September 2014, Governor Brown signed Assembly Bill (AB) 1594 (Williams, Chapter 719, Statutes of 2014), mandating that as of January 1, 2020, the use of green material as ADC will no longer constitute diversion through recycling and will instead be considered disposal in terms of measuring a jurisdiction's annual 50 percent per capita disposal rate (Public Resources Code (PRC) Section 41781.3).[15] While Republic is prohibited under the terms of its franchise agreement from relying on ADC uses for the residential yard trimmings collected in Elk Grove effective January 1, 2020, the City's registered commercial haulers, landscapers, and self-haulers may deliver yard trimmings to transfer, processing, and/or disposal facilities that use the materials for ADC. The City's establishment of processing requirements through modifications of the requirements for its registered commercial haulers is warranted to specify processing performance obligations.

5.4 Planning Periods

The City set a 20-year planning horizon for this Long-Range Strategic Plan. Three key milestones occur in the early portion of this planning period:

1. AB 1594 requires yard waste processing rather than ADC use by January 1, 2020;
2. SB 1383 compliance must occur by January 1, 2022; and,
3. The City's franchise agreement with Republic for residential collection services expires on June 30,

[14] October 24, 2017 CalRecycle Proposed SLCP (SB 1383) Regulation Text provides preliminary definitions for medium and larger edible food generators.
[15] AB 1594 description obtained from http://www.calrecycle.ca.gov/lgcentral/basics/ADCGreen/default.htm.

2025 unless extended for an additional 3 years at the City's option.

Given the significance of these three upcoming milestones, the unmet needs and the implementation options in this Long-Range Strategic Plan are organized into three planning periods: (1) Near-Term Period, which addresses needs from present through 2025 to coincide with AB 1594 and SB 1383 requirements and the end of Republic franchise agreement; (2) Mid-Term Period, which covers five years from 2026 to 2030; and, (3) Long-Term Period, which covers the final 6 years from 2031 through 2036.

5.5 Near-Term Needs and Possible Solutions

A. Programs

In 2017, CalRecycle, through a series of informal workshops, presented SB 1383 regulatory concepts including those related to definition of terms, methane emissions calculations, organic waste collection systems, solid waste facilities, edible food recovery, reporting, and enforcement. The concepts provide insight on the direction CalRecycle plans to take in the rule-making process, including proposed requirements for jurisdictions and generators. Through these CalRecycle workshops and HF&H's one-on-one discussions with senior CalRecycle management, HF&H learned what SB 1383 may mean for Elk Grove and its generators. Figure 5-5 identifies the unmet program needs that are recommended to the City to implement to have a "compliant" SB 1383 organics program. These programs focus on diversion of recoverable organic materials (including paper), which overall make up 61% of the materials currently being disposed as illustrated in Figure 5-4.

The SB 1383 programs, presented in Figure 5-5, will require significant staff resources to plan, implement, and monitor and may result in moderate to significant rate impacts for residents and businesses. HF&H estimated that these programs have the potential of increasing the City's current diversion level from 77% to 86% if the programs are implemented, managed, and enforced with a high level of commitment. Actual diversion results will depend on the level of program implementation, customer participation, and many other factors.

In addition to the SB 1383 program options, Figure 5-5 includes two options related to the City's hauling system. The first hauler program option addresses next steps for the expiration of the exclusive residential franchise agreement, which expires June 30, 2025 at the end of the Near-Term Period. This program option proposes evaluation of two choices – conducting sole source negotiations with Republic to extend or renew the current agreement or conducting a competitive procurement process. Depending on the City's choice, the City will need to proceed with negotiations or a procurement process to secure an agreement for the future residential franchise services during the Near-Term. The second hauler program option relates to examining the commercial hauler system and alternative approaches. Evaluation of the current system is advised in the Near-Term Period so that the City may plan changes.

Section 6.1 presents an analysis of each program option listed in Figure 5-5, providing an estimate of the diversion potential, annual costs, and potential impact on customer costs.

Other waste reduction and diversion program options, outside of those presented in Figure 5-5, have not been proposed for the Near-Term Period because the SB 1383 programs will require significant staff focus, have a high diversion potential, and impact customer rates. Additional program options are presented for the Mid-Term Period in Section 5.6.

Figure 5-5: SB 1383 Programs and Hauler Service Options for Further Analysis

	Unmet Need	Program Description
SB 1383 Program Options		
1	Mandatory organics program for residents and business including food scraps collection	Develop and adopt a Mandatory Organics Recycling Ordinance for residents and businesses (or amend Elk Grove's existing mandatory recycling ordinance); provide food scraps collection service to all single-family, multi-family, and commercial generators; educate generators at implementation and on an on-going basis; provide technical assistance to multi-family and commercial customers.
2	Enforcement of mandatory organics program	Expand the City's current enforcement program to include all generators that are non-compliant with the mandatory ordinance(s) and to monitor contamination.
3	Organics collection for City facilities	Implement a collection program for organics (including food scraps) at City facilities. Educate City employees at commencement of the program and on an-ongoing basis.
4	Food recovery programs for edible food generators	Develop list of medium and large edible food generators; provide targeted education and outreach to edible food generators including preparation of a food donation guide with a list of food recovery service providers and organizations; monitor edible food generator compliance with SB 1383 requirements. Develop and Implement a Mandatory Food Recovery Ordinance (or other enforcement policies and procedures) that may require: (1) edible food generators to develop and implement Food Recovery Plans and report to the City quantities of donated food (similar to the City's C&D waste management plan process), and, (2) food rescue organizations to report to the City.
5	Food recovery grant program (optional)	Establish a grant funding program to offer grants to businesses and organizations involved in food rescue to purchase vehicles, food storage equipment, and technology needed for recovery and distribution and to support services provided by non-profits engaged in food recovery efforts. (Optional Program)
6	Food recovery center (optional)	Develop a City-sponsored Food Recovery Center at the City Site for operation by City staff or a non-profit organization. (Optional Program)
7	Food recovery program for City facilities	Develop and implement an edible food recovery plan for City-owned facilities that meet SB 1383 definition of medium/large edible food generators. Educate City employees involved in food recovery at commencement and on an-ongoing basis.
8	Food recovery program for large venues and events	Ensure edible food recovery services are provided to large venues and events (e.g. farmers markets, stadiums, festivals) by including requirement in permitting or licensing for venues/events of a certain size.

	Unmet Need	Program Description
9	Carpet and textiles recycling program support	Educate generators on options for carpet/carpet pad recycling through the State's extended producer responsibility (EPR) program for carpet, and educate generators on textile donation options through the existing thrift store community.
10	"Other" organic materials programs	Design and implement programs to support reduction of disposal of biosolids and sludges (if any), and other organics included in the SB 1383 organics definition.
Hauler Service Options		
11	Residential franchise agreement negotiation or competitive procurement	Prior to expiration of the exclusive residential franchise agreement (June 30, 2025), evaluate option of conducting sole source negotiations to extend or renew the agreement or conducting a competitive proposal process. Proceed with selected option to secure agreement for future residential franchise agreement.
12	Evaluation of commercial hauler system	Evaluate range of options for the commercial hauler system including continuation of the current system (with updated requirements for SB 1383), establishing non-exclusive agreements for commercial and/or C&D haulers; establishing an exclusive commercial franchise system for some or all streams of materials or service type; combining residential and commercial collection service into one exclusive franchise agreement; separately contracting of collection, processing, and/or disposal services; and more. Objectives to consider include identifying the best option for the City and its customers in terms of diversion, customer rates, ease of management, ease of monitoring, etc.

* SB 1383 program requirements listed here are preliminary and are subject to change following review of draft and final SB 1383 regulations.

B. Facilities

The City expressed interest in examining facility development options for the City Site. Section 2.3 describes that a Transfer Station Master Plan was prepared for the City Site in 2008, but only the SWCC has been developed by the City. Approximately 11 acres remain undeveloped. In this Section, HF&H identifies potential needs around four types of facility development options:

- Processing facility needs;
- Transfer facility needs;
- Public use transfer facility needs; and,
- Hauler corporation yard needs.

For each facility option, key advantages and disadvantages are presented below. At the end of this Section, a short-list of 3 options is provided, identifying facility options that are further analyzed in Section 6.

B.1 Processing Facility Needs

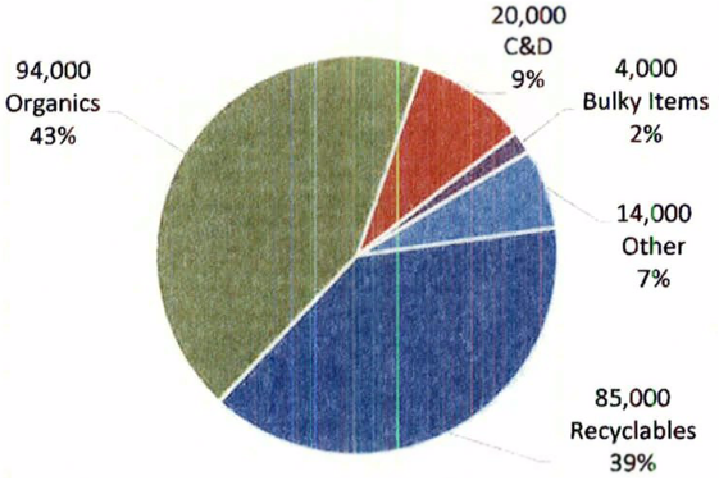
Section 4.2 reported that compliance with State mandates will result in significant increases in processing needs for recyclables, organics, C&D, and other materials, particularly if mandatory programs are well implemented and enforced. Specifically, calculations show single-family and commercial single stream recyclables volumes may increase approximately 240% over 20 years and organics volumes may increase approximately 330% over 20 years at current generation rates assuming 75% of the materials disposed are diverted. The material stream projections from Section 4 indicate processing facility capacity needs summarized in Figures 5-6 and 5-7. A low-end estimate of annual tonnage reflects the "Growth + Mandatory Diversion + Reduced Generation" scenario tonnage projections (Case 4, Figure 4-4), which has lower population, job growth, and material generation rate assumptions than the high-end estimate reflecting the "Growth + Mandatory Diversion" scenario (Case 3, Figure 4-4).

Figure 5-6: Projected Processing Facility Capacity Needs for 2036

Material	Low-End Estimate (tons)	High-End Estimate (tons)
Recyclables	47,000	85,000
Organics	39,000	94,000
Bulky Items	2,000	4,000
C&D	11,000	20,000
Other	0	14,000
Total	99,000	217,000

* C&D and Other tonnages reflect materials recovered net processing residue. Processing capacity needs may be considerably higher, if mixed materials (rather than source separated) are processed to recover these quantities.

Figure 5-7: Projected Processing Facility Capacity Needs for 2036, High-End (tons)



To address these needs, the City may consider developing various types of processing facilities for recyclables, organics, or C&D at the City Site. The facility may be owned and operated by the City, or may be developed in such a way that the City owns it and contracts for operations, similar to the SWCC. There are several advantages to development of a processing facility:

- Choice of processing methods/technologies, including ability to explore emerging technologies presented in Section 3;
- Control over cost of design, build, and operation of the facility;
- In-City processing facility location reduces transportation costs and air emissions;
- Reduced reliance on the private sector to provide transfer and processing services; and,
- Job opportunities.

While there are advantages with this option, numerous risks must be considered, including the following risks:

- High capital costs and potentially high operating and maintenance costs may increase customer rates;
- Uncertainty related to selection of processing methods and technologies during initial facility development and changes in technology in the future;
- Locking into one particular processing method limits flexibility to respond to future needs and changing conditions;
- Changes in the volume and characterization of the materials may be challenging to accommodate if processing methods and/or equipment are not flexible; and,
- Uncertainty and/or volatility in the marketability of the end product(s) may impact facility economics.

Given that a robust processing infrastructure already exists in the region as shown in Figure 5-8 combined with the likelihood that additional private-sector facility development will occur in the region, and the risks enumerated above, HF&H recommends that the City does not pursue processing facility development. Instead, it can rely on the private sector to provide processing facilities. This has several added advantages including: allowing the City and/or its haulers to select different types of processing facilities/technologies; the ability to change facilities over time to best meet the City's needs and the changes in volume, characterization, and source separated streams of materials; ability to competitively procure the lowest cost services; and more.

B.2 Transfer Facility Needs

Section 2.1 identifies nearly a dozen transfer facilities used by the residential and commercial haulers operating in the City. The cost of transporting recyclables, organics, and solid waste to these transfer facilities in collection vehicles is very high when collection vehicles travel long distances or are slowed by traffic. Ideally, a transfer facility would be located in or close to the City to minimize the collection vehicle transportation costs. Transfer station development, which was considered in the 2008 Transfer Station Master Plan, has several advantages including:

- Wider choice of collection service providers since companies that do not own transfer facilities nearby can be competitive;
- New opportunities to separately contract for processing and disposal services including those facilities with emerging technologies;
- Reduced transportation costs and air emissions with many processing facility choices within reasonable distance;
- Shorter haul distances will reduce growth-induced cost increases and greenhouse gas (GHG) emissions over time; and,
- Transfer methods and technologies are proven and have limited risk particularly if flexibility is designed into the facility.

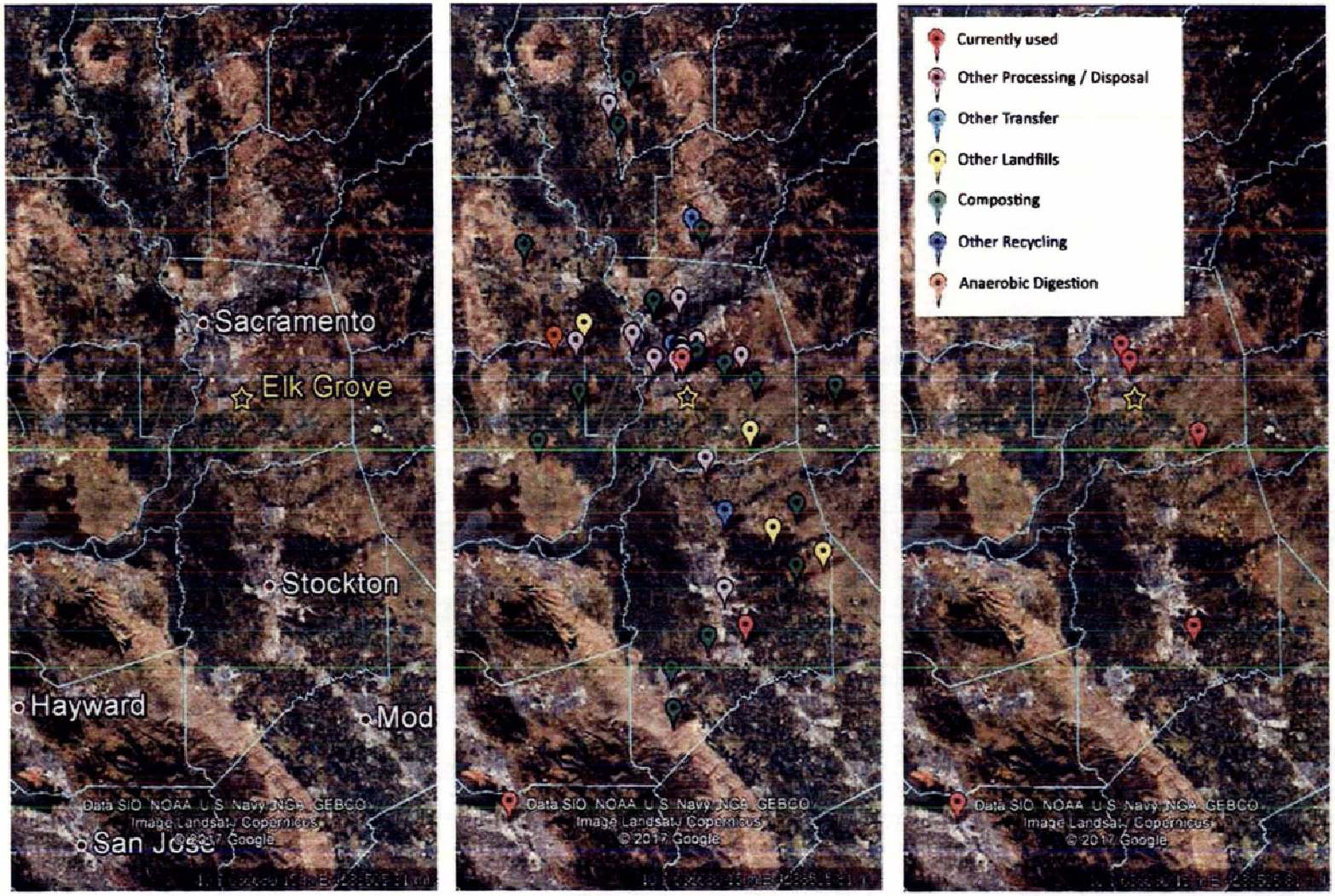
The key disadvantages to be considered include:

- Financial feasibility of the facility will be dependent on many variables including the volume of materials handled at the transfer station, which can be challenging to guarantee over time;
- Changes in the volume and characterization of the materials may impact facility economics; and,
- Hauler arrangements need to be structured to provide the City with ability to direct materials to the transfer station, which may not be supported by private companies.

The level of control and flexibility a City-owned transfer station can provide in managing future transfer, processing, and disposal needs may be in the best interest of the City and its rate payers. Given the strategic advantages and potential cost benefit of owning a local transfer station, the feasibility of developing a hauler transfer station is further considered in Section 6.

Remainder of page intentionally left blank

Figure 5-8: Regional Facilities Map



Regional Map | All Relevant Facilities | Facilities Currently Used by City Haulers

B.3 Public Use Recovery and Transfer Facility

The material projections for self-haulers, presented in Figure 4-6, indicate that recyclables and yard trimmings in the solid waste currently disposed by self-haulers will increase from 2,160 to 6,490 tons per year by 2036 (if self-haulers separate recyclables, organics, C&D, bulky items, and other recyclables materials from the solid waste). These materials may need to be handled as source separated materials at drop-off and/or transfer stations. In addition, self-haulers are estimated to dispose of approximately 4,340 tons to 13,900 tons per year, in 2036.

The City's SWCC provides a valuable service to the public through collection of special wastes and provision of a convenient recyclables and yard trimmings drop-off area, but it will not be sufficient to handle the growing self-haul demand. Recent monthly SWCC data provided by the City shows that as many as 660 to 960 residents per month delivered recyclables and/or yard trimmings to the SWCC. SWCC received 622 tons recycling and yard trimmings in 2016 and 846 tons in 2017. At projected population growth rates, this will amount to 1,500 tons in 2036.

To address this demand, the City can use the remaining 11 acres of the City Site to expand the services it offers to the public by providing facilities to receive and transfer solid waste, recyclables, organics, and C&D from self-haulers. The facility can provide the public with a convenient location for recycling materials and properly disposing of solid waste. Having a local option may increase the likelihood the public self-haulers will recycle more, supporting the City's interest in increasing its diversion level. In addition, having a local disposal option may reduce the potential for illegal dumping. A public use facility does not rely on any changes in the City's franchise system nor does it rely on any complex technology or processing systems, which reduces some risks to the City.

Given the City's commitment to the development and operation of the SWCC and use by its residents, co-location of a public use transfer facility can provide a dynamic resource recovery center for the City and its residential and commercial self-haulers. HF&H recommends that this option be analyzed further in Section 6.

B.4 Hauler Corporation Yard Needs

Collection costs are significantly impacted by the off-route time collection vehicles incur driving to and from their corporation yard, transfer, processing, and disposal facilities. Like a transfer station, it is ideal to have a corporation yard in the City, where the City's hauler(s) can park, fuel, and maintain the collection fleet. If the City can establish a permanent hauler corporation yard, it can lease the yard to different haulers. This will potentially expand the number of hauling companies interested in serving Elk Grove (particularly advantageous in a competitive hauler procurement process) and reduce off-route transportation costs and air emissions. While this type of use may not seem particularly relevant at this time, as Elk Grove and surrounding areas continue to grow and land is built out, appropriate sites for this type of operation can become very limited. A disadvantage to allocating a portion of the City Site for this use is that the City may have other potential uses that would be displaced (e.g., silt storage when dewatering the drainage channel that runs along the south-eastern side of the site, City storage, or City corporation yard). Furthermore, the development of a corporation yard will add costs to the project. However, if a portion of the City Site is set aside for a hauler corporation yard, this area can be repurposed over time if the City's needs change.

The City may defer development of the corporation yard until the commencement of the next exclusive residential franchise agreement. At such time, it could consider having the selected hauler manage the design and construction efforts as a condition of the franchise agreement. Alternatively, the corporation yard could be used by a commercial hauler, particularly if the City chooses to establish an exclusive commercial franchise system in the future.

B.5 Summary of Short-Listed Facility Options

Based on the advantages and disadvantages of the 4 facility options listed above, the 3 options in Table 5-9 were short-listed for further analysis (which is presented in Section 6).

Figure 5-9: Short-Listed Facility Options for Further Analysis

	Program Name	Approach
1	Hauler transfer station	Develop transfer station for use by the City's residential hauler and/or commercial haulers for receipt and transfer of solid waste, recyclables, organics, and C&D.
2	Public use recovery and transfer facility	Develop a public use facility for use by the City's residents and businesses to provide a location for delivery, recovery, and transfer of self-hauled solid waste, recyclables, organics, and C&D. Include a drop-off recyclables area, reuse area, and other facility components to the extent space is available.
3	Hauler corporation yard	Develop collection vehicle parking, maintenance, and fueling to the extent space is available.

5.6 Mid-Term Needs and Possible Solutions

After the City completes implementation of Near-Term initiatives that result in its compliance with SB 1383, the City can consider and implement other program and facility initiatives. This shift will mark the beginning of the Mid-Term Period (2026). HF&H identified a preliminary set of program and facility options for consideration in the Mid-Term Period, which are summarized in Figure 5-10. Several of these options focus on policies that support waste prevention while others consider enhancement to collection and processing services. In general, the programs identified in the preliminary list are not options that are essential to meeting SB 1383, AB 1594, or other existing State requirements. For this reason, they were not included in the Near-Term Period, but are logical next steps in the Mid-Term Period, if the City strives to reach higher diversion goals and reduced GHG emissions.

Over the next 8 years leading up to the Mid-Term Period (2026), conditions will change in response to the implementation of this Strategic Plan and as a result of external factors like the economy, housing and employment growth, and more. For these reasons, HF&H recommends that the Mid-Term programs and policies be evaluated prior to, or at the commencement of, the Mid-Term Period and implemented, unless conditions change in such a way that obviates the need for the program. Other program, policy, and facility options not listed here, may gain traction in the next few years and warrant consideration as well.

Figure 5-10: Mid-Term (2026 – 2030) Program and Facility Options

	Category	Program and Facility Option*
1	Policy	Implement changes, if any, to the City's commercial hauler collection system based on evaluation conducted in the Near-Term Period
2	Policy	Adopt landfill bans on selected materials
3	Policy	Advocate for and promote State-level extended producer responsibility (EPR) and/or implement City EPR ordinances
4	Policy	Support product or packaging bans
5	Policy	Support market development through City procurement practices
6	Policy	Support local reuse and repair programs and/or develop programs
7	Policy	Promote food waste prevention
8	Collection	Consider implementation of less than weekly refuse collection, if not implemented in the Near-Term Period
9	Collection	Consider implementation of two-stream (wet/dry) collection system, if not implemented in the Near-Term Period and if it is compliant with SB 1383
10	Collection	Offer bulky item reuse and recycling collections events
11	Collection	Support horse and other animal manure collection and diversion
12	Collection	Expand hauler diversion requirements
13	Processing	Evaluate mixed materials processing options for residential and commercial materials, and implement, if warranted and compliant with SB 1383, through the franchise hauler(s) or separate City-secured processing agreement
14	Facilities	Evaluate the City's facilities needs and consider development of a pre-processing or processing facility for organics or recyclables through modification of City Site or on an alternative site

* The Mid-Term program and policy options presented here shall be evaluated prior to or at the commencement of the Mid-Term Period and implemented, if warranted. Additional policies and programs may warrant consideration as well.

5.7 Long-Term Needs and Possible Solutions

The programs, policies, and facility needs for the Long-Term Period will be influenced by several factors:

- The highly dynamic nature of the materials management industry;
- Future changes in State and federal legislation/regulation related to waste prevention, landfill diversion, and climate protection;
- Technological, economic, political, global marketplace, and cultural changes that may impact waste generation, the characterization of materials discarded, and the future of the materials management industry; and,
- Results of the City's Near-Term and Mid-Term efforts.

Given the unpredictability of these factors between now and the start of the Long-Term Period (2031), it is not possible to forecast future conditions and develop a specific plan for the Long-Term Period. At this time, the City is best positioned for the future if it maintains flexibility to respond to the changes like those described above that will occur between now and the Long-Term Period.

It is anticipated that as the City moves into the Long-Term Period, programs and policies are more likely to be focused on waste prevention both at the residential, commercial, and industrial levels. Figure 5-11 presents Long-Term program options that the City may consider. In addition, some of the Mid-Term program and facility options listed in Figure 5-10 may not have been implemented in the Mid-Term Period and may warrant consideration in the Long-Term Period.

Figure 5-11: Long-Term (2031 – 2036) Program and Facility Options

	Category	Program and Facility Option*
1	Policy	Adopt zero waste policy for the City, residents, and businesses
2	Policy	Support manufacturing waste prevention - Support or join others in promoting or mandating increased corporate product stewardship with the following types of goals: • Restructuring production and distribution systems to prevent waste from being manufactured; • Extending the useful life of products; and, • Improving the recyclability of products at the end of useful life.
3	Policy	Support packaging policies - Support or join others in promoting or mandating manufacturer take-back programs, reusability and recyclability requirements, and higher recycled-content standards to reduce the use of resources, reduce waste, and improve recyclability of discarded packaging
4	Program	Implement robust behavior change programs – Research and implement behavior change programs for residents and businesses to further promote waste prevention and to motivate increased participation in diversion programs. The behavior change campaigns may rely on new technologies and methods and can be conducted on their own or can be coupled with adoption of additional regulations that require enhanced waste reduction and diversion program participation.
5	Collection	Implement new technologies or methods to improve collection efficiencies and diversion results
6	Processing	Evaluate processing options for residential and commercial materials, particularly new technologies and methods and implement, if warranted, through the franchise hauler(s) or separate City-secured processing agreement
7	Facilities	Evaluate the City's facility(ies) needs and consider development of a pre-processing or processing facility(ies) for organics, recyclables, mixed materials, and/or processing residue
8	Other	Implement policy and/or collection program options identified as Mid-Term options (in Figure 5-10) that were not pursued in the Mid-Term

* The Long-Term program and policy options presented here shall be evaluated prior to or at the commencement of the Long-Term Period and implemented, if warranted. Additional policies and programs not listed here may warrant consideration as well.

In the U.S. and world-wide, many governmental organizations, businesses, and non-profits are moving ahead with the development and implementation of these types of high diversion/zero waste programs and policies. In addition, future State and federal legislation is more likely than not to support new diversion-related programs, standards, or requirements. Furthermore, climate change concerns and GHG emissions reduction objectives and plans will reinforce continued action toward zero waste.

Prior to or at the beginning of the Long-Term Period, the City will need to: (1) review its then-current conditions and goals for diversion and GHG reductions; (2) examine federal, State, and local requirements; (3) evaluate program, policy, and facility options; and, (4) select new initiatives that meet its needs. At that time, an updated Strategic Plan can be developed.

SECTION 6. ECONOMIC AND FEASIBILITY ANALYSIS

As part of the needs assessment in Section 5, several program and facility options were identified for additional analysis to assess the feasibility and impacts of implementing the options during the Near-Term Period. The additional analysis is presented in this Section 6. For the program options, the feasibility analysis included estimating potential diversion, cost, and customer rate impacts. For the facility options, the feasibility analysis included development of conceptual facility schematic plans, identification of several development considerations, compilation of a preliminary list of permits and approvals required, and preparation of planning-level construction cost estimates. In addition, funding strategies are explored for the program and facility options.

6.1 Program Options Analysis

A. Overview of Cost and Diversion Estimates

The feasibility analysis performed for the City examines the 12 program options listed in Figure 5-5. For several programs, as applicable, annual diversion estimates were calculated as well as the percentage increase in the current residential and commercial hauler diversion level. The diversion estimates are presented as incremental increases over the current residential and commercial haulers combined diversion level net of processing residue.[16]

For each program option, HF&H estimated one-time implementation costs, annual ongoing costs, and overall customer cost impact. Cost estimates are presented as increases over current costs. Costs are presented in 2017 dollars. For hauler costs, franchise fees have been included. Estimated customer cost impacts may be added together when the same customer type is associated with the cost.[17] City costs include estimated staff time to plan and implement programs and perform on-going oversight and support as well as consultant costs to support program planning and implementation. In some cases, City staff costs may be absorbed by the City's current staff and, in other cases, may necessitate additional staffing.

HF&H's cost/benefit model was customized to the City's unique conditions. It relied on readily-available, City-specific program and cost information; readily-available benchmarks from other local agencies; and industry knowledge. The cost/benefit model resulted in planning-level estimates for the programs. Numerous variables that are not predictable may have a significant impact on the actual cost of programs. In particular, there can be large variations in transportation costs and pricing for transfer and processing services that will impact the mandatory organics program costs. Transportation costs are highly dependent on the location of the collection vehicle parking facilities and travel distances/times to and from those locations to service Elk Grove customers and deliver collected materials to various transfer, processing, and disposal facilities. While HF&H made a reasonable set of assumptions related to

[16] Diversion estimate percentages reflect estimated tons diverted (net of residue) divided by total residential franchise hauler tons and registered commercial hauler tons collected for a 5-year average (2012 to 2016). Estimates do not account for recycling diversion performed by other recyclers.

[17] For example, the monthly customer cost impact for single-family programs can be added together, but monthly single-family and commercial customer cost impacts may not be added together to provide an overall impact.

transportation, dozens of permutations could be structured given that collection companies utilize different facilities for vehicle parking, transfer, and processing.

In addition, other cost variables, such as the staff time associated with planning and implementing programs and the on-going management and monitoring of programs can vary significantly between different jurisdictions. While the estimates are reasonable, actual results may differ from the planning-level estimates provided herein due to variations in the City's and customers' level of commitment to the programs, potential changes in SB 1383 requirements and other regulations, market conditions changes, and more. These differences may be significant, with the potential for actual costs to be lower or higher than those presented herein.

The City should also be aware that the actual program diversion results may differ from the planning-level estimates presented herein, which reflect relatively aggressive assumptions in terms of program participation and diversion. Factors that will impact the actual diversion level include program design, the manner in which programs are implemented, the level of participation by residents and businesses in the programs, the ongoing commitment of the City to the programs, and changes in demographic conditions, number and types of businesses, product design and packaging, collection and processing technology, federal and State legislation and regulations, and more.

Figures 6-1, 6-2, and 6-3 present the results of the program analysis, showing diversion and cost information. Following these figures is a discussion of each program option. Figure 6-4 provides the estimated City staffing levels for one-time implementation of programs and the annual on-going management and monitoring efforts.

{Remainder of page intentionally blank}

Figure 6-1: Diversion Analysis of Program Options

	Program Option	Additional Diversion (tons/year) (a)		Add'l Overall Residential and Registered Commerical Hauler Diversion (%) (b)	
		Low	High	Low	High
SB 1383 Programs					
1A	Mandatory residential organics including food scraps collection (c)	5,210	13,400	4.2%	10.8%
1B	Mandatory commercial organics including food scraps collection (c)	3,880	12,170	3.1%	9.8%
2A	Enforcement of mandatory organics and contamination: Residential	*incl. above*	*incl. above*	*incl. above*	*incl. above*
2B	Enforcement of mandatory organics and contamination: Commercial	*incl. above*	*incl. above*	*incl. above*	*incl. above*
3	Organics collection for City facilities	70	90	0.1%	0.1%
4	Food recovery program for edible food generators	300	700	0.2%	0.6%
5	Food recovery grant program (d) (optional)	*incl. above*	*incl. above*	*incl. above*	*incl. above*
6	Food recovery center sponsored by City (d) (optional)	*incl. above*	*incl. above*	*incl. above*	*incl. above*
7	Food recovery program for City facilities	*n.a.*	*n.a.*	---	---
8	Food recovery program for large venues and events	4	27	0.0%	0.0%
9	Carpet and textiles recycling program support	304	684	0.2%	0.6%
10	"Other" organic materials programs	*n.a.*	*n.a.*	---	---
Hauler Service Options					
11	Residential franchise negotiation or competitive procurement	*n.a.*	*n.a.*	---	---
12	Evaluation of commercial hauling system	*n.a.*	*n.a.*	---	---
Total		9,768	27,071	7.9%	21.9%

(a) Diversion estimates are planning-level estimates reflecting relatively aggressive assumptions in terms of participation and recovery. Actual diversion levels will differ due to several factors including final program design, implementation approach, level of City/generator commitments, and more.

(b) Add'l overall hauler diversion percentage reflects estimated annual tons diverted (net of residue) divided by total annual residential franchise hauler tons and annual registered commercial hauler tons collected (based on 5-year tonnage average, 2012 to 2016. It does not account for tons from recyclers.

(c) Diversion for mandatory organics programs (1A and 1B) includes yard trimmings, food waste, compostable paper, and recyclable paper.

(d) All diversion for food recovery programs are included Option 4, food recovery program for edible food generators.

Figure 6-2: Cost Analysis of Program Options: Implementation and Annual Costs

	Program Option (a) (b) (c)	City's One-Time Implementation Costs		City's Annual Costs ($/Year)		Hauler Annual Cost Including Franchise Fees ($/year)		Cost Impact for Customer Type
		Low	High	Low	High	Low	High	
SB 1383 Programs								
1A	Mandatory residential organics including food scraps collection							
	Opt 1: Weekly organics + solid waste, bi-weekly recyclables	$ 456,000	$ 716,000	$ 46,000	$ 78,000	$ 3,086,000	$ 3,276,000	Single-family
	Opt 2: Weekly organics, bi-weekly solid waste + recyclables	$ 456,000	$ 716,000	$ 46,000	$ 78,000	$ 1,057,000	$ 1,179,000	Single-family
1B	Mandatory commercial organics including food scraps collection	$ 296,000	$ 473,000	$ 63,000	$ 210,000	unknown	unknown	Comm/multi-family
2A	Enforcement of mandatory organics and contamination: Residential	$ -	$ -	$ 17,000	$ 34,000	$ -	$ -	Single-family
2B	Enforcement of mandatory organics and contamination: Commercial	$ -	$ -	$ 39,000	$ 79,000	$ -	$ -	Comm/multi-family
3	Organics collection for City facilities (d)	$ -	$ -	$ -	$ -	$ 6,000	$ 7,500	All customers
4	Food recovery program for edible food generators (e)	$ 151,000	$ 268,000	$ 52,000	$ 94,000	$ -	$ -	All customers
5	Food recovery grant program (e) (optional)	$ 12,000	$ 23,000	$ 115,000	$ 230,000	$ -	$ -	All customers
6	Food recovery center sponsored by City (e) (optional)	$ 142,000	$ 224,000	$ 30,000	$ 40,000	$ -	$ -	All customers
7	Food recovery program for City facilities (f)	n.a.	n.a.	n.a.	n.a.	$ -	$ -	---
8	Food recovery program for large venues and events	$ 9,000	$ 19,000	$ 18,000	$ 26,000	$ -	$ -	All customers
9	Carpet and textiles recycling program support (g)	$ -	$ -	$ -	$ -	$ -	$ -	All customers
10	"Other" organic materials programs	$ -	$ -	$ -	$ -	$ -	$ -	All customers
Hauler Service Options								
11	Residential franchise negotiation or competitive procurement	$ 50,000	$ 175,000	$ -	$ -	$ -	$ -	Single-family
12	Evaluation of commercial hauling system	$ 50,000	$ 100,000	TBD	TBD	$ -	$ -	Comm/multi-family
Total Residential reflecting Option 1, Excluding Food Recovery		$ 506,000	$ 891,000	$ 63,000	$ 112,000	$ 3,086,000	$ 3,276,000	Single-family
Total Residential reflecting Option 2, Excluding Food Recovery		$ 506,000	$ 891,000	$ 63,000	$ 112,000	$ 1,057,000	$ 1,179,000	Single-family
Total Commercial Excluding Food Recovery		$ 346,000	$ 573,000	$ 102,000	$ 289,000	$ -	$ -	Comm/multi-family
Total Food Recovery Excluding Optional Programs 5 and 6		$ 160,000	$ 287,000	$ 70,000	$ 120,000	$ -	$ -	All customers

(a) All costs are presented in 2017 dollars. Commercial programs include multi-family customers with shared service.

(b) Cost estimates are planning-level estimates based on a series of assumptions. Actual costs will differ due to several factors including final program design and implementation, level of City/generator commitments, and more.

(c) Costs do not include generators' cost of separation of organic materials or edible foods, nor do cost include edible food transportation or edible food service provider costs that may be incurred by generators.

(d) Organics collection for City facilities is anticipated to be provided by Republic at no charge to the City; therefore, no costs are shown for the City.

(e) Food recovery costs do not include costs incurred by food recovery service providers and food recovery organizations.

(f) No costs are included for Program 7, Food Recovery for City, facilities because the City doesn't have any facilities that meet the edible food generator definition and related SB 1383 requirements.

Figure 6-3: Cost Analysis of Program Options: Customer Cost Per Month

	Program Option (a) (b)	Customer Cost for Annual City Costs ($/month) (c)		Customer Cost for Annual Hauler Costs including Franchise Fees ($/month) (d)		Total Customer Cost ($/month)		Cost Impact for Customer Type
		Low	High	Low	High	Low	High	
SB 1383 Programs								
1A	Mandatory residential organics including food scraps collection							
	Opt 1: Weekly organics + solid waste, bi-weekly recyclables	$ 0.15	$ 0.25	$ 5.07	$ 5.38	$ 5.22	$ 5.63	Single-family
	Opt 2: Weekly organics, bi-weekly solid waste + recyclables	$ 0.15	$ 0.25	$ 1.74	$ 1.94	$ 1.89	$ 2.18	Single-family
1B	Mandatory commercial organics including food scraps collection	$ 8.59	$ 23.88	unknown	unknown	unknown	unknown	Comm/multi-family
2A	Enforcement of mandatory organics and contamination: Residential	$ 0.03	$ 0.06	$ -	$ -	$ 0.03	$ 0.06	Single-family
2B	Enforcement of mandatory organics and contamination: Commercial	$ 3.62	$ 7.33	$ -	$ -	$ 3.62	$ 7.33	Comm/multi-family
3	Organics collection for City facilities	$ -	$ -	$ 0.01	$ 0.01	$ 0.01	$ 0.01	All customers
4	Food recovery program for edible food generators	$ 0.10	$ 0.19	$ -	$ -	$ 0.10	$ 0.19	All customers
5	Food recovery grant program (optional)	$ 0.18	$ 0.36	$ -	$ -	$ 0.18	$ 0.36	All customers
6	Food recovery center sponsored by City (optional)	$ 0.07	$ 0.10	$ -	$ -	$ 0.07	$ 0.10	All customers
7	Food recovery program for City facilities	---	---	---	---	---	---	---
8	Food recovery program for large venues and events	$ 0.03	$ 0.04	$ -	$ -	$ 0.03	$ 0.04	All customers
9	Carpet and textiles recycling program support	$ -	$ -	$ -	$ -	$ -	$ -	All customers
10	"Other" organic materials programs	$ -	$ -	$ -	$ -	$ -	$ -	All customers
Hauler Service Options								
11	Residential franchise negotiation or competitive procurement	$ 0.01	$ 0.03	$ -	$ -	$ 0.01	$ 0.03	Single-family
12	Evaluation of commercial hauling system	$ 0.46	$ 0.93	$ -	$ -	$ 0.46	$ 0.93	Comm/multi-family
	Total Residential reflecting Option 1, Excluding Food Recovery	$ 0.19	$ 0.33	$ 5.08	$ 5.39	$ 5.26	$ 5.72	Single-family
	Total Residential reflecting Option 2, Excluding Food Recovery	$ 0.19	$ 0.33	$ 1.75	$ 1.95	$ 1.93	$ 2.28	Single-family
	Total Commercial Excluding Food Recovery	$ 12.68	$ 32.14	unknown	unknown	unknown	unknown	Comm/multi-family
	Total Food Recovery Excluding Optional Programs 5 and 6	$ 0.13	$ 0.23	$ -	$ -	$ 0.13	$ 0.23	All customers

(a) All costs are presented in 2017 dollars.

(b) Notes provided for Figure 6-2 are applicable to this Figure as well.

(c) Customer costs for annual City costs equals annualized City one-time implementation costs divided by 10 years plus annual City costs, which is then divided by number of customers and 12 months.

(d) Customer costs for hauler costs equals annual hauler costs plus franchise fees divided by number of customers and 12 months.

Figure 6-4: Analysis of City Staffing for Program Options

	Program Option (a) (b)	One-Time Implementation Staff Needs (FTE)		Annual On-Going Staff Needs (FTE/Year)	
		Low	High	Low	High
SB 1383 Programs					
1A	Mandatory residential organics including food scraps collection				
	Opt 1: Weekly organics + solid waste, bi-weekly recyclables	0.43	0.67	0.05	0.09
	Opt 2: Weekly organics, bi-weekly solid waste + recyclables	0.43	0.67	0.05	0.09
1B	Mandatory commercial organics including food scraps collection	0.30	0.48	0.10	0.16
2A	Enforcement of mandatory organics and contamination: Residential	0.00	0.00	0.15	0.30
2B	Enforcement of mandatory organics and contamination: Commercial	0.00	0.00	0.35	0.70
3	Organics collection for City facilities	0.00	0.00	0.00	0.00
4	Food recovery program for edible food generators	0.49	0.74	0.43	0.78
5	Food recovery grant program (optional)	0.10	0.19	0.13	0.25
6	Food recovery center sponsored by City (optional)	0.14	0.28	0.25	0.33
7	Food recovery program for City facilities (c)	0.00	0.00	0.00	0.00
8	Food recovery program for large venues and events	0.08	0.15	0.15	0.22
9	Carpet and textiles recycling program support (d)	0.00	0.00	0.00	0.00
10	"Other" organic materials programs (d)	0.00	0.00	0.00	0.00
Hauler Service Options					
11	Residential franchise negotiation or competitive procurement (d)	0.00	0.00	0.00	0.00
12	Evaluation of commercial hauling system (d)	0.00	0.00	0.00	0.00
Total excluding Option 2		1.53	2.51	1.61	2.82

(a) Staffing estimates are planning-level estimates for City staff time only, based on a series of assumptions. Actual staffing needs will differ due to several factors including the ability of existing City staff to absorb new program requirements, final program design, and implementation.

(b) Staffing estimates do not include generators' staffing needs for separation of organic materials or edible foods, nor staffing needs for edible food transportation, edible food service providers, or food recovery organizations.

(c) No staffing is included for Program 7, Food Recovery for City facilities because the City does not have any facilities that meet the edible food generator definition and related SB 1383 requirements.

(d) No City staffing is included for Programs 9, 10, 11, and 12, as these programs are anticipated to be performed with minimal use of existing staff resources.

B. Description of Programs and Cost Considerations

This section provides a general description of each program option and key considerations used in developing the program cost estimates.

SB 1383 Program Options

Program 1A. Mandatory Residential Organics including Food Scraps Collection

For residential service, two significant changes will be needed under the mandatory organics program. First, the City's mandatory requirements will need to specify separation of organic materials (including papers and cardboard) into the appropriated recycling and organics containers for collection by the franchise hauler, regulated commercial haulers, or through self-hauling of the materials (although the allowable self-haul exceptions under SB 1383 may be more restrictive than those reflected in the City's Solid Waste Management Ordinance (Title 30 of the City's Municipal Code)). Second, residents must be provided with food scraps collection service and the commercial organics collection program (under AB 1826) must be expanded to all customers. Planning and implementing this program includes the following key elements:

1. **Adoption of Mandatory Residential Organics Recycling Ordinance**. The City will need to adopt a Mandatory Residential Organics Recycling Ordinance to comply with SB 1383, which requires that an ordinance or other enforcement policies and procedures impose requirements for use of organics collection services by generators and includes inspection and enforcement standards. The Mandatory Residential Organics Recycling Ordinance will need to require residents' separation of organics (food scraps, yard trimmings, paper, cardboard, and other fibers) and participation in the recyclables and organics collection programs.

   The Mandatory Residential Organics Recycling Ordinance should amend the City's existing self-haul exemption to require self-haulers to demonstrate not only proper disposal of solid waste, but also to demonstrate proper recycling and organics diversion. The City's self-haul exemptions will need to be as stringent, or more stringent, than SB 1383 requirements.

2. **Determination of Preferred Collection Method for Single-Family Customers**. While food scraps can easily be added to residents' yard trimmings carts, the addition of food scraps necessitates collection of the organics carts on a weekly basis rather than the current every-other-week schedule and requires that composting or other acceptable processing for diversion rather than the current practice of land application.[18] These collection and processing changes will result in a significant cost increase for single-family customers. For this reason, the program analysis, presented in Figures 6-2 and 6-3, includes examination of two collection options.

   The first option assumed that solid waste and organics collection will be provided weekly and the recyclables collection service will continue on an every-other-week schedule. The second option anticipates that only organics collection will be provided on a weekly basis, with non-putrescible solid waste shifting to an every-other-week collection schedule along with recyclables. The costs for these two options is presented in Figures 6-2 and 6-3. The second option is estimated to be significantly less costly than the first option - $1.89 to $2.18 per month increase compared to a $5.22 to $5.63 per month increase. While both collection scenarios include the same amount of increased organics processing costs, the first option requires a significant increase in the collection costs to provide a high level of customer convenience with both weekly solid waste and weekly organics service. The collection costs for the second option are effectively the same as current collection since the weekly solid waste routes can be "switched" with the every-other-week yard trimmings routes.

   While the cost advantage of the second option is attractive, shifting solid waste to every-other-week service is a cutting-edge practice that customers may resist and also raises some challenges. Odor and vector issues may be a particular challenge during the hot summer months. To minimize odors and vectors, customer will need to fully participate in the weekly food waste recycling and carefully manage materials in their solid waste container since it is only serviced every other week. For example, pet waste, diapers, and hygiene products will need to be separately bagged to reduce odors.

   A third alternative for organics collection is implementation of a two-stream (wet/dry) collection system in which both material streams are collected on a weekly basis. The wet materials would be the clean organics stream (yard trimmings and food waste) designated for composting, and the dry materials would be the remaining materials designated for mixed waste processing to recover recyclables. This type of program would need to be implemented by January 1, 2020 under the draft SB 1383 regulations to be deemed a compliant organics program. While this option is theoretically possible, the cost analysis did not include assessment of this option due to the limited availability of

[18] Weekly collection of putrescible materials is required by State regulations (California Code of Regulations, Title 14, Division 7, Article 5.5, Section 17331) to manage putrescible materials in a manner that minimizes potential health and vector concerns.

mixed materials processing facilities in the region, the high cost to transport and process the materials to more distant facilities, the SB 1383 timeframe, and the current investment in three collection containers per household,. The wet/dry collection option may be considered in the Mid-Term, when the City extends or renegotiates its current residential franchise or competitively procures the next exclusive residential franchise agreement, which is a logical time to make significant changes in collection systems. However, implementation of such program after January 1, 2020 would only be feasible if the final SB 1383 regulations characterize it a compliant approach.

Rather than prescribing one of the collection methods in this Strategic Plan, it is advised that the City gain additional information to inform its decision. As part of the initial negotiation efforts with Republic to integrate this service, the City is recommended to request and evaluate detailed cost proposals from Republic for both collection options. In addition, the City would be wise to conduct public workshops and/or on-line surveys for residents to solicit feedback. The public input process can be used to gauge customers' preference for paying more for the convenience of weekly food scraps/yard trimmings and weekly solid waste collection or paying less with every-other-week solid waste. Between the proposed Republic costs and feedback from the residential community, the City will be in a better position to select the collection approach that is the best fit for its community.

In addition to estimation of the collection and processing costs, the cost estimates in Figure 6-2 and 6-3 include kitchen pails for each resident and education and outreach by Republic during implementation. To minimize costs, the program anticipates use of resident's existing yard trimmings carts without relabeling. On-going education and outreach efforts thereafter will be performed by the City and Republic at no additional cost compared to current program costs. It anticipates that no additional staff time will be needed to update the City's website. Note that diversion of food waste as well as increased diversion of yard trimming and paper results in a decrease in the amount of solid waste collection and avoided solid waste disposal and collection costs. This has been factored into the cost analysis.

3. **Amendment of the Republic Residential Franchise Agreement**. Implementation planning for the residential food scraps collection program is anticipated to occur in late 2020 through mid-2021 targeting a fully operational program by July 1, 2021. This implementation planning effort will commence approximately 4 years prior to the June 30, 2025 expiration of the initial term of the Republic residential franchise agreement. As a result, the City will have to enter into negotiations with Republic to amend the agreement to incorporate implementation of the program. The current agreement includes provisions and defined monthly per household rate adjustment to: (i) change from bi-weekly to weekly yard trimmings collection; and, (ii) shift from land application of yard trimmings to composting for bi-weekly service.[19] It does not specifically address inclusion of food waste (and compostable paper) in the program or composting for weekly service. As a result, some negotiations will be necessary to modify the scope to include food scraps and compostable paper collection with the yard trimmings program; provision of kitchen pails to each household; education during implementation and on an on-going basis; and composting of the organic materials, all of which have been included in the planning-level cost estimates provided in this Strategic Plan. As described above, it is also recommended that Republic be requested to provide a cost proposal for shifting to weekly solid waste collection so that the City can explore a less expensive collection method. Note that the Republic Agreement indicates that a one-year notice by the City is needed to shift to weekly organics collection and a 60-day notice to shift to composting.

[19] Sections 4.1.B and 4.5.4.B.2 of the Solid Waste Collection Services Franchise Agreement between the City of Elk Grove and Allied Waste Services of North America, LLD (also known as Republic).

The cost estimate for the mandatory residential organics program includes consultant time to conduct the negotiations process, which can take as much as 6 to 12 months to solicit and evaluate Republic's proposed costs, negotiate changes, and seek Council approval. The negotiations process is anticipated to be conducted in 2018 so that the City can fully understand the implications of the program and possibly plan phased implementation of related rate increases.

4. **Solicitation of Public Input**. Engaging residents early in the City's planning process for the Mandatory Residential Organics Recycling Program will benefit the City in that it can educate residents on the SB 1383 food scraps collection program requirements and prepare them for a rate impact. The public input process can also be used to obtain feedback to gauge customers' preferences for paying more for the convenience of weekly food scraps/yard trimmings and weekly solid waste collection versus paying less but having every-other-week solid waste.

5. **Implementation Period**. The Republic residential franchise agreement calls for a one-year noticing period to shift from bi-weekly to weekly organics collection. During this time, Republic will provide a detailed implementation plan for review and approval by the City. Alternatively, a specific implementation plan can be negotiated and integrated into the franchise amendment. This one-year period provides Republic time to procure additional collection equipment (if needed), purchase and distribute kitchen pails, and educate customers.

6. **Robust Marketing Campaign**. To support implementation and on-going customer participation in the new food scraps collection program and Mandatory Residential Organics Recycling Ordinance, the City may want to conduct a robust outreach campaign. The campaign can rely on a wide range of outreach tools such as: TV, Facebook, Pandora/Spotify, mobile online ads, newspaper/print, radio promotions, blurbs in hauler materials, local banners/materials in libraries, and street sign flags. If the City chooses to perform this type of campaign, HF&H recommends that the City manages the education campaign and engages a marketing/communications firm to plan and implement it. Costs for this effort are include in the City implementation costs.

   The cost estimate includes a sizeable budget for public education and outreach during program implementation and start-up to message the mandatory requirements widely and clearly. To reduce the cost of this effort, the City may want to join forces with other jurisdictions to share in the creative costs of the public education and outreach campaign.

7. **Monitoring and Enforcement.** Contamination monitoring and enforcement of the mandatory requirements are required by SB 1383 and are considered separately as Program 2A.[20]

Program 1B. Mandatory Commercial Organics including Food Scraps Collection

The mandatory organics program for commercial generators (including multi-family generators) is different than the single-family program in that AB 1826 required commercial generators with certain volumes of materials to recycle food and yard trimmings with the exception that multi-family generators are not required to recycle food waste. The mandatory requirements of SB 1383 specify that all generators separate organics materials from disposal and participate in a source separated collection program or compliant mixed waste organics recycling service. The City can amend its mandatory commercial recycling ordinance to reflect the expanded SB 1383 requirements. It will need to rely on its registered haulers and authorized recyclers to offer organics collection services, including food scraps collection service, to all

[20] With regard to monitoring and enforcement for residential organics program participation, the October 24, 2017 CalRecyle Proposed SLCP (SB 1383) Regulation Text did not identify specific requirements for residents. It is anticipated that future draft regulations will include clarifying language.

multi-family and commercial customers on a weekly basis. In addition, the City needs to inform its registered haulers that it is no longer allowing ADC given AB 1594 regulations and instead is requiring composting, anaerobic digestion, or another form of processing that qualifies as diversion of organics materials. These changes will involve amending the City's Solid Waste Management Ordinance, hauler registration package and conditions, and potentially, the commercial enclosure ordinance to enhance organics recycling requirements.

It is anticipated that the businesses (which had not been required to comply with AB 1826) will subscribe to organics collection service through one of the registered haulers. This will necessitate new organics cart and bin acquisition and distribution, education and outreach at implementation, and potential expansion of organics collection routes. The haulers are anticipated to incur these costs along with organics transportation and processing costs. The organics collection rates are not regulated by the City nor readily available from the registered haulers. Based on experience surveying customer rates for other jurisdictions, it is likely that the range of pricing can vary significantly from one customer to another even with the same level of organics service from the same hauler. The actual cost to the commercial customer will be dependent on the volume of organics materials generated and the rate it negotiates with its hauler. For weekly organics cart service, which is sufficient for the smaller businesses, the organics rate could be a low as $20 to 25 per month, yet as much as $100 to $150 per month.[21] Larger businesses may require one or two cubic yards of organics service, which will be more costly. The monthly impact is further challenging to forecast because customers can reduce their solid waste collection service level and costs when they shift materials into organics containers.

The City currently provides technical assistance services to businesses and multi-family generators to support generators in complying with AB 341 and AB 1826. To support the more comprehensive organics recycling requirements of SB 1383, the City may expand its technical assistance efforts to reach all commercial and multi-family customers. While technical assistance is not expressly required by SB 1383, the cost analysis includes additional staff or consultant time for this effort. The City will also need to conduct some initial education efforts. Similar to the mandatory organics programs for single-family residents, the cost analysis anticipates provision of kitchen pails to each multi-family unit. It anticipates updates to the City's website and collateral materials using in-house staff at no additional cost to the program and on-going education through the regular education efforts of the City and registered commercial haulers at no additional cost to the program. These City-related costs are reflected in Figure 6-2.

In terms of planning for these changes, it is advantageous for the City to initiate changes to its City Solid Waste Management Policy, registered hauler requirements, and mandatory commercial recycling requirement in 2018. While the programs do not need to be in place until 2021, these types of changes are significant so it is important to provide haulers and generators with ample notice of the upcoming changes to allow planning and implementation time.

The option of providing wet/dry collection service to commercial generators is a possibility. It is, however, more challenging in open market hauling environment to have some companies offering a wet/dry system and others offering a three-stream system with separate collection of solid waste, recyclables, and organics. Having differences among haulers (and differences with the residential collection system) complicates messaging, website content, and outreach materials as well as provision of technical

[21] Estimated rates for organics cart collection service is based on examination of rates in Stockton and Roseville, which were readily available.

assistance to commercial generators. It can create a scenario where employees and visitors have to adapt to different separation requirements in different locations in the City. For these reasons, the wet/dry options was not analyzed. If the City were to implement an exclusive commercial collection system at some point, the wet/dry option may be worth further investigation, but again, the SB 1383 January 1, 2020 implementation date may result in such a program being non-compliant.

Programs 2A and 2B. Enforcement of Mandatory Organics and Contamination

SB 1383 draft regulations specify that jurisdictions must enforce the requirements of SB 1383 through adoption of an ordinance or enforcement policies and procedures. Given that the City has an enforcement program in place for multi-family and commercial generator compliance with AB 341 and AB 1826 regulations, the SB 1383 enforcement requirements will be an expansion of the existing program. It may, however, require an amendment of the City's current policies and procedures to address all customers, haulers, processors, large events, and large venues. SB 1383 further requires that jurisdictions conduct inspections of all businesses once over a two-year period from 2022 to 2023 and provide notices of non-compliance; new businesses within 1 year of receiving a business license; and 20% of regulated entities annually after January 1, 2024. No later than January 1, 2024, jurisdictions shall begin progressive enforcement action for violations including imposition of penalties on non-compliant regulated entities (residential and multi-family generators, haulers, processors, large events and venues). *(Note that the Draft SB 1383 regulations do not expressly specify inspection and enforcement requirements for single-family generators. Future drafts or the final regulations may.)*

An additional focus area in SB 1383 is on minimizing and monitoring contamination of materials. SB 1383 compliant programs will include monitoring and enforcement by local jurisdictions upon generators of all sizes (i.e., single-family, multi-family, commercial, institutional, etc.) and monitoring of organics separation/recycling and contamination. Draft SB 1383 regulations call for routine inspection of no less than 20% of the regulated entities annually commencing January 1, 2024. In 2022, the City will expand its current commercial enforcement program, which now concentrates on multi-family and commercial generator compliance with AB 341 and AB 1826 regulations, to include all multi-family and commercial generators. In Figure 6-2, enforcement program costs are included separately for residential and commercial generators and reflect the incremental increase in the City's level of effort to meet SB 1383 requirements. The enforcement cost estimate is based on the City's past and current experience with enforcement of AB 341 and AB 1826 regulations.

Program 3. Organics Collection for City Facilities

City participation in organics collection is an element of SB 1383 requirements. At this time, yard trimmings are collected at the City's corporation yard. All City facilities will need to be provided with organics collection service. Given the limited generation of food waste at these facilities, the program anticipates use of carts for organics collection and anticipates the service will be provided through the Republic residential franchise agreement. The cost estimate assumes that education of employees, the public, and contractors will be performed by City staff or Republic and program monitoring will be performed by City staff, both at no additional cost to the program.

The City may plan commencement of organics collection services for all City facilities any time prior to January 1, 2022. For the purposes of this Strategic Plan, July 1, 2021 is identified as the commencement date for the program.

Program 4. Food Recovery Program for Edible Food Generators

The food recovery component of SB 1383 establishes specific requirements for medium and large edible food generators, food recovery service providers and organizations, and jurisdictions. A rough estimate of edible food generators shows as many as 150 to 200 businesses may be covered including supermarkets, schools, colleges, larger restaurants, and hotels.[22] The program cost analysis focuses on costs to perform the activities required for the City's compliance, which are listed below. Costs incurred by businesses and food recovery service providers and organization for source separation, storage, transport, etc. are not included as this analysis focuses on cost impacts to the City and haulers for solid waste, recyclables, and organics collection costs.

- One-time City implementation efforts to be completed in 2020:
  - Develop list of edible food generators;
  - Develop list of food recovery service providers and organizations; and,
  - Develop and implement food recovery ordinance to meet SB 1383 requirements (that City must enforce SB 1383 through an ordinance or other enforcement procedures or policies) with a compliance date for regulated entities on or about July 1, 2021.

- One-time City implementation efforts to be completed in 2021:
  - Educate edible food generators and food recovery service providers and organizations on City's new food recovery ordinance;
  - Prepare a Food Donation Guide;
  - Prepare food recovery education materials for generators to use in educating employees; and,
  - Provide initial education and technical assistance to edible food generators.

- By January 1, 2022 and annually thereafter, City shall work in coordination with the County to support the following:
  - Development of a list of medium and large edible food generators including large events and venues;
  - Preparation of estimates of edible food disposed by large/medium generators in 2022 and every year thereafter for 15-year period; and,
  - Identification of existing and needed capacity of food recovery organizations; identify new or expanded food recovery capacity.

- Annual on-going City efforts, anticipated to commence on or before July 1, 2021:
  - Monitor generator and food recovery organization compliance with ordinance;
  - Update lists of edible food generators;
  - Update and maintain list of food recovery services and organizations on City website;
  - Assess food recovery capacity needs and prepare an implementation plan, if additional capacity is needed;
  - Update the Food Donation Guide and other education materials as needed;
  - Track reporting from edible food generators and food recovery organizations (if any); and,
  - Provide technical assistance to edible food generators.

[22] The number of medium and large generators is preliminary. When SB 1383 regulations are finalized, the definition of these generators will be known and the City can reevaluate the number of covered businesses.

Program 5. Food Recovery Grant Program (Optional)

While establishing a food recovery grant program is not a required element of the draft SB 1383 regulations, counties, with support of cities, need to assess the food recovery needs and develop an action plan, if the food recovery service providers and organization do not have sufficient capacity to meet the needs. For this reason, it may be beneficial for the City to take a proactive role in supporting food recovery efforts in the City (or it may find that it needs to implement an action plan). The grant program is intended to support food recovery efforts by medium/large edible food generators and foster expansion of current food recovery services and organizations and/or development of new food recovery services. The program anticipates establishment of the grant program framework and an annual grant application and award cycle along with monitoring of award recipients.

As shown in Figure 6-2, the food recovery grant adds significant costs to the City. With the SB 1383 food recovery goal for 2025, it may be prudent for the City to hold on implementation of this option until it has an understanding of how much additional food recovery capacity is needed, if any. The Strategic Plan assumes delaying consideration until 2023, which will allow the City time to better understand the needs of the edible food generators and food recovery organizations through the edible food recovery program (Program 4), which will have been operating for two or more years. Alternatively, the amount of the annual grants can be increased (or decreased) as needed, or suspended for a period of time to adjust to the City's budget and needs.

Program 6. Food Recovery Center Sponsored By City (Optional)

Development of a Food Recovery Center is an option for the City if it chooses to play an active role in food recovery efforts. It is not a requirement of SB 1383. The Food Recovery Center is included in Public Use Option schematic plan presented in Section 6.2. The concept is for the City to provide a low-cost or no-cost space for a food rescue operation for receipt, storage, and redistribution of donated edible food for quick redistribution to partner organizations that in turn distribute food to people. It is not intended as a place where food is distributed to individuals. Initial implementation efforts include staff time to develop the guidelines for the food recovery operation, and an application and service provider selection process. The program cost estimate includes costs to purchase of on-site equipment and a delivery vehicle. On-going program costs include staff time to manage and monitor the operation, but do not include costs for food center employees, which are assumed to be provided by the food recovery organization that leases the Food Recovery Center. The building costs are reflected in the facility costs in Section 6.2.

This type of program adds costs to the facility construction as well as implementation and on-going City management and monitoring costs. The potential need for this type of facility will not be known until SB 1383 regulations more fully define the expectations related to food recovery and the City assesses the specific needs of its community. For these reasons, it is anticipated that the City would not initially proceed with this option, but may slate it for evaluation in the future (tentatively in 2023). At that time, the City can consider development of a Food Recovery Center at the City Site (to the extent that space is still available for such purpose) or at an alternative location. If the City does not proceed with a Food Recovery Center at the City Site, the area designated in the Public Use Option schematic plan can be used for another purpose or construction costs can be reduced through elimination of the building and related site improvements.

Program 7. Food Recovery Program for City Facilities

The City reports that it currently does not have any City facilities that meet the definition of medium or large edible food generators. For this reason, no costs have been estimated for this program. In the future, if new City facilities such as the planned projects for a new Civic Center, which will have an on-site kitchen, and the new Aquatic Center, which will have an on-site snack bar and host large events, meet the definitions of medium or large edible food generators, the City will need to develop and implement a food recovery plan or require its contracted facility operator to do so.

It is advised that the City reassess the extent of food generation at City facilities in 2020 to determine if any new City facilities have been developed that meet the SB 1383 edible food generator definition or to determine if the SB 1383 definition has been modified and covers one or more City facilities. If one or more facilities must comply with SB 1383 food recovery requirements, the City can implement the food recovery program for the regulated City facilities in 2021 so that the program is in place well before the date regulations become effective, January 1, 2022.

Program 8. Food Recovery Program for Large Event and Venues

The draft SB 1383 regulations require food recovery programs for events and venues with 2,000 persons attending per day. The City anticipates that a dozen or more festivals, fairs, parades, and other large events will need to comply with these regulations. To support these efforts, the program envisions one-time City efforts to: identify needs and a list of qualifying events and venues; develop a plan; amend the events and venue permit process; and, prepare education materials such as a food donation guide for events and venues. On-going City efforts were included for program management, monitoring, and reporting. Cost do not include staff time for the event and venue staff to plan, implement, and report on their food recovery efforts.

To have this program in place by January 1, 2022, the City is recommended to conduct its one-time planning and implementation activities in 2019 in conjunction with the development of the food recovery ordinance described for Program 4. In 2020, it can focus on notification and education of the regulated large events and venues. It can require compliance in 2021 to ensure large events and venues are conducting the food recovery programs on or before January 1, 2022.

Program 9. Carpet and Textiles Recycling Program Support

At this time, SB 1383 includes "applicable" carpet and textiles in the definition of organic materials, but does not describe the elements of a compliant program. As a result, the program herein provides a basic level of effort that may need to be modified if final SB 1383 regulations establish more rigorous requirements.

In California, carpet recycling is being driven by the State Carpet Stewardship Law (AB 2398, 2010 and updates through recent legislation (AB 1158, 2017) to set carpet recycling standards. Through this program, more opportunities for carpet/padding recycling are becoming available. Carpet/padding makes up approximately 1.3% (1,055 tons annually) of waste disposed in the City. The City can promote recycling opportunities and monitor Carpet America Recovery Effort's (CARE) efforts to ensure sufficient carpet recycling capacity is available in the City or region. The program anticipates that the City will rely on CARE's efforts and promote carpet/padding recycling through its regular education efforts and hauler newsletters. As a result, no costs have been included for this program.

For textiles, which make up 5.0% percent (4,050 tons annually) of the City's waste disposed, there is a local infrastructure of thrift organizations engaged in reusing textiles. This cost analysis anticipates that the promotion of textile diversion will occur through other City education efforts and hauler newsletters at no additional cost.

It is anticipated that the City will initiate its focus on carpet and textiles in 2019 and continue annually with additional research on new opportunities and education of generators to promote recycling of these materials.

Program 10. "Other" Organic Materials Programs

Other organic materials covered by SB 1383 include biosolids, digestate, and sludges. The City does not have any facilities that generate these types of materials nor knowledge of manufacturing facilities that do. As new businesses locate in the City, the City will need to educate any that produce these types of organic materials on the requirements of SB 1383 and monitor their compliance. For this reason, reexamination of "other" organics needs is anticipated in 2020 to determine if any new facilities in Elk Grove with unique organics waste have become operational, and, if so, implementation of organics reduction program(s) for these facilities can be planned for 2021.

C&D contains organic materials covered by SB 1383 regulations including green waste, wood waste, and cardboard. Costs have not been included for C&D program efforts because the City enhanced its C&D ordinance in 2017 to reinforce CALGreen requirements to divert 65% of C&D materials.

Lastly, diversion of manure from landfills is a material that may require some focus by the City. In the Near-Term Period, education can be directed at these generators. A collection program for manure is identified as a Mid-Term program option for future analysis, if warranted. At this time, no program costs have been included.

Hauler Service Options

Program 11. Exclusive Franchise Negotiation or Competitive Procurement

The City's franchise agreement with Republic for residential collection services expires on June 30, 2025, unless the City exercises its option to extend it for an additional 3 years. During the Near-Term Period, the City will need to take action related to the June 30, 2025 expiration of the base term of the residential franchise agreement. Consultant support (ranging from $50,000 to $175,000) has been reflected in the cost estimate to evaluate options including a simple 3-year extension of the agreement; robust sole source negotiations with Republic for significant changes and/or longer-term extension; or performance of a competitive procurement process to select the future residential franchise hauler. It is anticipated that the City's existing staff can manage the negotiations process; and, as a result, additional staff time has not been estimated. The lower cost range anticipates a simple extension of the agreement with a contract compliance review and minimal negotiations (as the City has a three-year option to extend), and the high cost range allows for a robust sole source negotiation process for more significant changes and longer contract term or performance of a competitive procurement process.

The objective of the timeline for this activity is to start negotiations well before the expiration of the franchise agreement. This will allow the City the opportunity to enter into sole source negotiations if it desires, and if such negotiations are not successful to have sufficient time to conduct a competitive process. In total, 3 to 4.5 years are needed for the following:

- Evaluate the City's options and engage with Council to select strategy (4 to 6 months);
- Conduct sole source negotiations, if the City chooses this course of action (6 to 12 months);
- Conduct RFP process, if the City choose this course of action (12 to 24 months); and,
- Implement future collection services if a contractor other than Republic is selected (12 months).

To allow for 3 to 4.5 years, this effort is scheduled to begin in 2021 with evaluation of the City's options and selection of preferred strategy. The preferred strategy can be initiated in late 2021 or early 2022 and continue through mid-2024. This will allow for the future contractor to have a full year (from mid-2024 to July, 1, 2025) to implement new services.

Program 12. Evaluation of Commercial Hauling System

The City has a system of registered commercial haulers and authorized recycling haulers that compete for and provide collection service to commercial customers. While this type of open market system has several advantages, studies conducted by others on franchise system options, including studies for the cities of San Diego, San Jose, and Los Angeles, have concluded that exclusive franchise arrangements support high diversion goals. Given the increased need to expand, monitor, and enforce additional diversion programs required by recent State regulations and legislation (AB 341, AB 1826, AB 1594, and SB 1383), evaluation of the City's hauling system options is an ideal Near-Term action.

There are many types of collection systems the City can consider including the following examples:

- Continuing the open market commercial collection system, but establishing non-exclusive franchise agreements with more extensive requirements and performance standards. To address the variation in the size of the hauling companies and their scope of services, a tiered non-exclusive franchise system can be structured that establishes more requirements on companies that provide a full range of services (cart, bin, drop box solid waste, recycling, and organics) and more focused requirements on those companies that only provide recycling, C&D, and/or drop box service);

- Establishing some form of an exclusive franchise systems to grant one hauler the sole right to: 1) collect some or all types of materials; 2) service some or all types of customers; and/or, 3) operate throughout all of the City or in defined service areas;

- Combining residential and commercial collection service into one exclusive franchise agreement;

- Separately contracting for collection, processing, and/or disposal services (which will be particularly relevant if the City builds a transfer facility at the City Site); and,

- Other options designed to address the objectives and concerns of the City and its stakeholders.

To determine what type of commercial collection system is best for the City, the City should start with an assessment of the current hauling system performance and then evaluate options in terms of advantages and disadvantages related to diversion, customer rates, ease of management, ease of monitoring, etc. The evaluation process and design of any changes to the current system should also be informed by input from the haulers and customers.

It is important to note that State regulations (Public Resources 49520-49524) require, in some instances, that haulers operating in an open market environment be provided 5-years' notice before an exclusive franchise or contract is implemented. The City will need to obtain a determination of the applicability of this 5-year noticing requirement from its legal counsel. For the purposes of this Strategic Plan, the five-year noticing has been reflected in the timeline to plan for the possibility that such noticing period is required (although this does not in any way provide an opinion of such applicability). Evaluation of commercial hauling system options is proposed to occur in 2019 along with provision of 5-year noticing by the end of 2019, if required. If the City chooses to implement changes to the commercial hauling system, the City can then take actions in 2022 through 2024 to amend its policies, establish non-exclusive franchise agreements, and/or conduct a competitive procurement process for one or more exclusive franchise haulers. This timeline is designed to then allow one year for implementation of system changes with the goal of having the new system in place at the beginning of the Mid-Term Period (January 1, 2026). This year-long implementation period will be particularly important if some aspects of the system are managed through an exclusive franchise as the selected hauler will need to procure equipment, distribute containers, conduct education and outreach, etc.

The cost estimate presented in Figures 6-2 and 6-3 for this hauler option includes consulting costs of $50,000 to $100,000 to assess the current commercial hauler system, evaluate a range of options, survey customers (if desired), and present a report to the City Council. Implementation costs for changes to the system, if any, are not included since the scope of the changes are unknown.

C. Summary of Findings

Figure 6-5 presents a summary of the programs, which includes recommendations to proceed with 10 of the 12 programs analyzed. Eight of the 12 programs are required by SB 1383; and, 2 programs addressing the residential and commercial hauling systems are recommended. Optional Programs 6 and 7 – the Food Recovery Grant Program and the Food Recovery Center -- are not recommended at this time. The City may evaluate these food recovery programs at a later date if it wants to take a strong leadership role in food recovery and/or if it identifies a gap in the capacity of food recovery service providers and organizations.

The implementation plan in Section 7 provides a timeline for implementation of the recommended programs, which shows how the City can phase in the programs to manage staff demands and expenditures.

Figure 6-5: Program Recommendations

	Program Option	Recommended	Notes
SB 1383 Programs			
1	Mandatory organics including food waste collection	✓	Required by SB 1383
2	Enforcement of mandatory program	✓	Required by SB 1383
3	Organics collection for City facilities	✓	Required by SB 1383
4	Food recovery program for edible food generators	✓	Required by SB 1383
5	Food recovery grant program	---	Optional; consider at a later date
6	Food recovery center sponsored by City	---	Optional; consider at a later date
7	Food recovery program for City facilities	✓	Required by SB 1383
8	Food recovery program for large venues and events	✓	Required by SB 1383
9	Carpet and textiles recycling program support	✓	Required by SB 1383
10	"Other" organic materials programs	✓	Required by SB 1383
Hauler Service Options			
11	Exclusive franchise negotiation or competitive procurement	✓	Required to address the 2025 expiration of base term of the residential franchise
12	Evaluation of commercial hauling system	✓	Optional, but recommended

6.2 Facility Options Analysis

In Section 5.5.B, the assessment of unmet facility needs identified 3 facility options for further analysis: (1) Hauler transfer station ("Hauler Transfer Option"); (2) Public use recovery and transfer facility ("Public Use Option"); and, (3) Hauler corporation yard. The analysis of these three options focuses on the development of these facilities at the City Site and involved preparation of two facility schematic plans, both of which include an area for a hauler corporation yard. This section presents the schematic plans, development and permitting considerations, and construction cost estimates for these two plans. In addition, public-private development opportunities are discussed.

Consistent with HF&H's scope of work, the facility schematics, construction cost estimates, and development considerations were developed based on limited planning work. If the City chooses to pursue one or more options, additional conceptual design work and site investigation will be needed to refine the design concepts and construction cost estimates.

A. Schematic Facility Plans

Two schematic plans were prepared that incorporate the three facility options to show the approximate sizes and locations of buildings and roadways in configurations that are based on practical considerations for the recycling and solid waste industry. The plans are subject to change if site conditions such as soil strength and other factors constrain the building or roadway locations or site functionality. The following list provides a summary of key considerations in preparation of the schematic plans:

- Roadway curves are adequate for long-haul semi-trailers where needed;
- Simple clear-span metal buildings with roll-up vehicle doors are assumed throughout. Finished interiors within these buildings will provide office space, storage, locker/lavatory/break room areas, etc.;
- Building interior clearances are appropriate for the intended use. Transfer buildings that receive materials from franchised hauler vehicles have assumed clearances of 25 feet at the eaves;
- Circulation is generally counterclockwise to enable drivers to see more easily when backing from a loop road toward a building to unload;
- Loading areas for large transfer trucks are positioned along the back sides of buildings, away from customer traffic. To minimize excavation at the site due to groundwater conditions, transfer trucks are top-loaded using conveyors requiring the trucks to pull forward periodically while being loaded;
- Apart from the transfer loadout conveyors and mobile equipment such as wheeled loaders, no material handling or processing equipment is envisioned. Mechanized processing and compaction is assumed to take place at off-site processing and disposal facilities; and,
- A 45-foot drainage channel right of way has been requested by the City for drainage channel maintenance.[23] In addition, the City expressed interest in as much as five acres available for dumping silt from periodic creek dredging operations. This can be accommodated in the Public Use Option, but not in the Hauler Transfer Option.

[23] Although the schematic plans do not reflect a full 45-ft-wide right of way, the 45-foot width can be accommodated with no material effect on the layout or operation of these facilities.

In addition to illustrating the functionality of the facility options, the schematic plans provide the basis for the preliminary construction cost estimates presented later in this section. However, it is important that these schematics not be considered as engineering designs, and the cost estimates are not based on engineering data such as soil test reports and topographic surveys. Local building code requirements may result in unanticipated costs as well. Consequently, a large contingency factor has been included in the cost estimates. It may be possible to reduce costs by making changes to building sizes and locations. A "value engineering" process to focus the design tightly on the known requirements should be considered early in the design phase if the City proceeds with facility development.

Figures 6-6 and 6-7 present the two schematic plans – Public Use Option and Hauler Transfer Option. Each of these schematics include a hauler corporation yard. Following these figures is a description of each plan.

{Remainder of page intentionally blank}

Figure 6-6: Public Use Recovery and Transfer Option

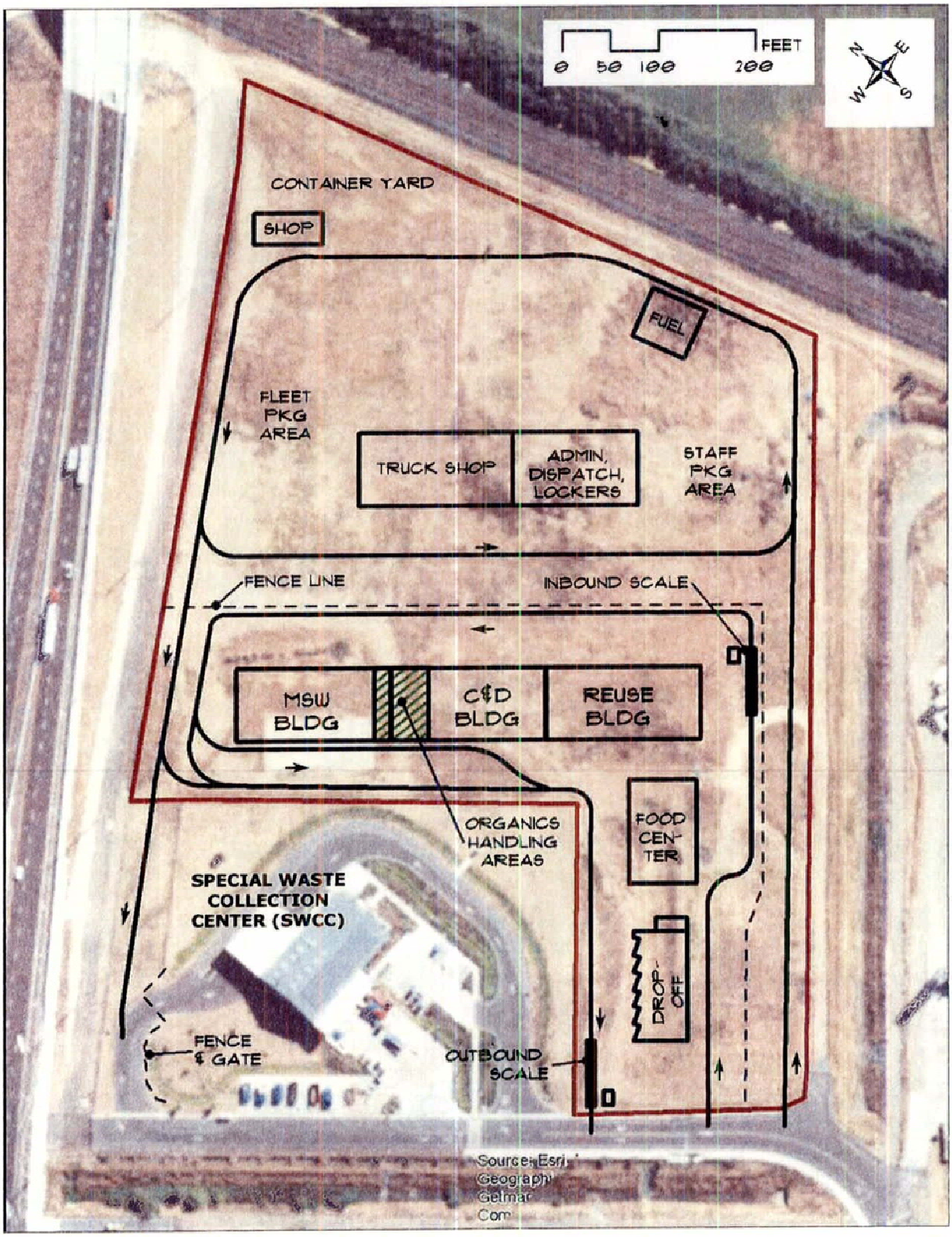
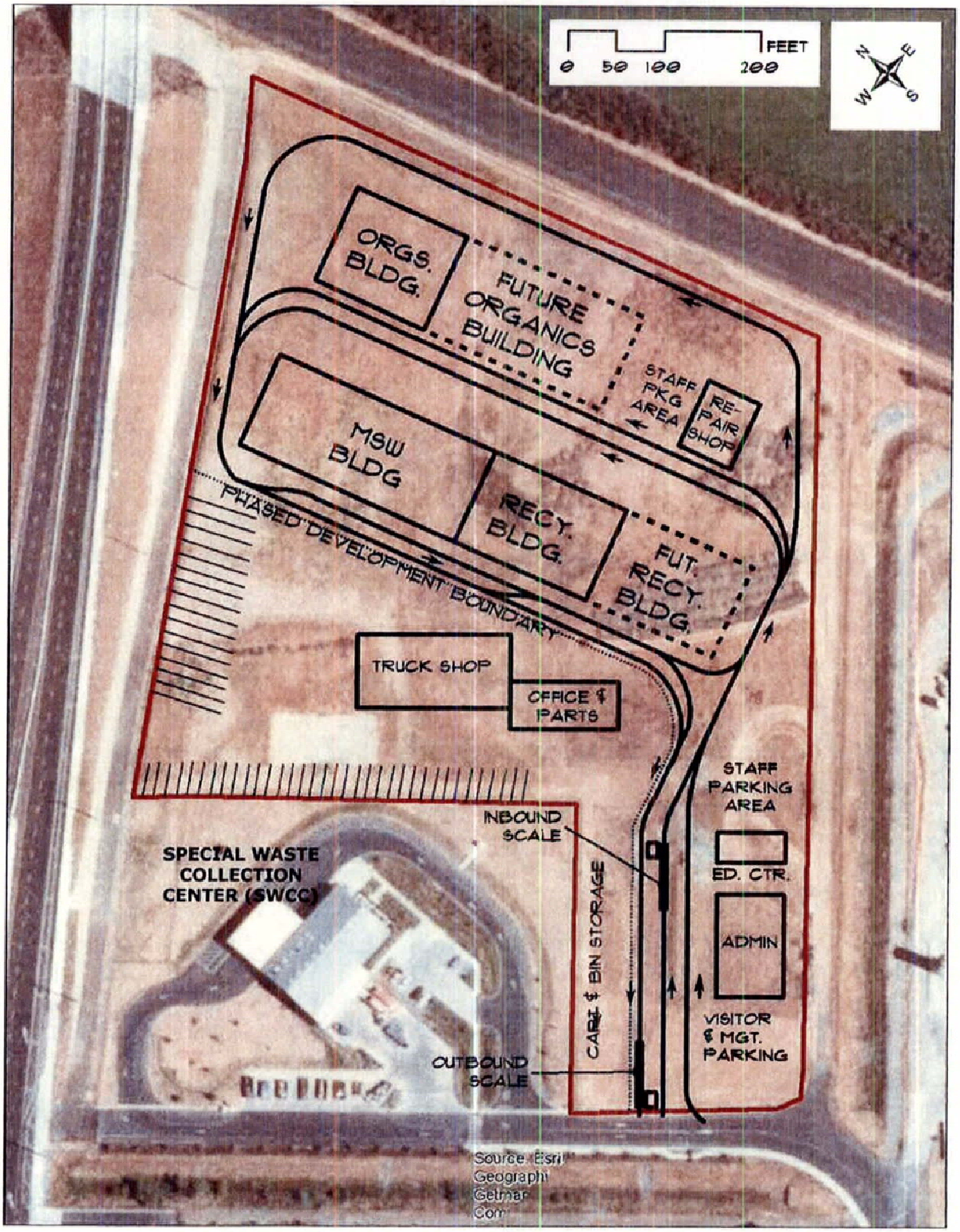


Figure 6-7: Hauler Transfer Facility Option



A.1 Public Use Recovery and Transfer Facility

The Public Use Option includes the following key elements:

- Drop-off Area for recyclables and yard trimmings;
- Food Recovery Center;
- Receiving and Transfer Buildings for separate handling of reuse items, C&D, organics, and solid waste;
- Inbound and outbound scales and scale houses; and,
- Hauler corporation yard, which could alternatively be used for other City purposes.

Public Use Areas

The Public Use Option would receive and transfer materials delivered by residents as well as larger businesses and building contractors that self-haul to the site. Self-haulers using vehicles larger than 10 wheelers and semi-trailers would not be allowed. Upon entering the facility, customers would first encounter the Drop-Off Area with an elevated pad, where they may back in and unload source separated recyclables into roll-off bins before continuing toward the weigh scales. At the Drop-Off Area, a small shed at one end would provide shelter for a worker that is responsible for directing traffic and instructing customers. A portable scale and various small containers would be used to weigh materials for AB 901 record keeping, if required.[24] Alternatively, the site entry area may be reconfigured to accommodate an additional vehicle scale for the Drop-Off Area. On the roadway near this area, all in-bound loads would be checked for hazardous materials, which would not be allowed into the facility. At the City's option, the SWCC recycling drop-off area may remain in place or be closed with all materials being directed to the new Drop-Off Area. This decision will be dependent on the anticipated traffic at the Drop-Off Area. The Drop-Off Area in the schematic plan for Public Use is about comparable in size to the drop-off at SWCC. If the City desires a larger Drop-Off Area, the area designated for the Food Recovery Center (described below) could instead be used to create an expanded Drop-Off Area.

The next building, a 7,000-square foot Food Recovery Center, is envisioned as a food rescue operation, which can receive, store, and redistribute donated edible food such as unserved prepackaged meals, catering trays, boxed produce, day-old baked goods, etc. It is intended primarily as a quick-turnover receiving and redistribution warehouse, not as a place where food is distributed to individuals. The long sides of the building would primarily be for loading and unloading from small trucks and vans. The building would be surrounded by pavement, with access to the exit road just beyond the building so that food-only traffic (and Drop-Off Area customers with no materials to deliver to the transfer buildings) can exit the facility prior to reaching the scale house. The building interior would include a walk-in cooler, dry storage, and administrative space. The exact size and configuration of the building should be planned in consultation with local food banks and/or food recovery organizations. The footprint shown is approximately 70 x 100 feet. **As described in Section 6.1.B, the Food Recovery Center is an optional program that is not required by SB 1383.** If the City chooses not to proceed with it or chooses to site it on an alternative property, the designated area could be used for another purpose such as expansion of

[24] AB 901 regulations are in draft form. Final regulations are anticipated to be adopted in early 2018. Draft regulations require tracking of weights and jurisdictions-of-origin for each type of material received at a transfer station.

the Drop-Off Area, or construction costs could be reduced through elimination of the building and related site improvements.

Beyond the Food Recovery Center is the in-bound truck scale, 70-feet in length, with a small scale house for an attendant who would record each in-bound vehicle's gross weight and its jurisdiction of origin.

From the scale house, customers would proceed to any or all of the three main materials receiving and transfer buildings – Reuse Building, C&D Building, and Solid Waste Building. Each of these buildings has a preliminary footprint of 12,000 square feet (160 x 75 feet), for a total receiving and transfer area of 36,000 square feet. The Solid Waste and C&D buildings each include a designated area for receiving and consolidating organics such as yard waste, food scraps, crop residues, stable bedding, etc. This is critical to include as SB 1383 requires that new solid waste facilities accommodate organic materials separately.

These buildings are intended to house simple transfer operations that consolidate materials self-hauled by the general public (including businesses and building contractors) and load them into roll-off containers or transfer trailers for shipment to processing or disposal facilities. Alternatively, the Solid Waste and C&D Buildings could be a single building with movable, internal, low walls to separate the material streams as needed. The C&D transfer operation could involve "floor sorting" for recovery using mobile equipment and manual labor. The space is too small to accommodate wood grinding, inerts screening, or other processes typical of a C&D material recovery facility, which does not result in size reduction and increased material densities that will reduce transfer hauling costs. The area between the loop road and the buildings would be entirely paved so that customers could back in as directed by facility staff. As shown in Figure 6-6, the long side of each building could provide unloading bays for up to 10 customers at once, or 20 in total. This is expected to be adequate for the self-haul tonnage projected for 2036, based on the following calculation:

- Total expected tonnage: 13,902 tons per year, or 267 tons on the average week;
- Estimated peak daily tons: 50% of the average week = 140 tons/day, or 20 tons/hour;
- Assumed average vehicle unloading rate: 50 pounds/minute/vehicle (varies widely, from hand unloading to self-dumping trucks); and,
- Number of vehicles unloading concurrently: [20 tons/hour x 2000 pounds/ton ÷ 60 min/hour] ÷ 50 pounds/min/vehicle = 13.3 vehicles.

The Reuse Building is intended to serve as a storage and display area for reusable construction materials such as windows and doors, plumbing fixtures, lumber, etc. A small administrative area and workshop within the building would be used for cleaning and pricing items. A separate customer service counter would receive donated materials and charge customers for purchases. Some materials may also come to the Reuse Building from the C&D operation next door, when salvaged by facility staff. The Reuse Building might also sell or provide basic supplies for small contractors, such as adhesives, tarps, wallboard mud and tape, extension cords, etc.

After visiting any (or all) of the three main buildings, customers would depart the facility via the exit road, stopping at the outbound scale to pay if necessary. Over 200 feet of roadway are shown for outbound vehicle queuing. (The outbound lanes of transfer facilities tend to require more queuing space than the inbound lanes because payment takes longer than check-in.) Interconnected point-of-sale computers at the inbound and outbound scales would keep scale attendants informed about customers that are being charged for delivery of materials. A bypass lane and gate could be added to the design, for customers not

being charged for materials delivered and for outbound transfer trucks, as shown on the west side of the SWCC in Figure 6-6.

Hauler Corporation Yard

Approximately six acres in the northeast portion of the site, closest to the railroad tracks, are reserved for a hauler corporation yard or other City use such as silt dumping area for drainage channel maintenance. Although this area could be useful for City handling of silt from drainage system cleanout, there are also advantages for the City, if it is made available to potential refuse and recycling haulers for vehicle storage and service, dispatch, etc., as described in Section 5.5.B.4 of this report. The buildings and yard areas shown in the illustration are intended to accommodate typical operations for a hauler serving the City. The corporation yard can accommodate approximately 30 collection vehicles plus 2 or 3 roll-off vehicles and 3 or 4 transfer vehicles, which should be adequate for the residential hauling operations through 2036. The 12,000-square-foot truck shop has a footprint of 160 feet by 75 feet. It can accommodate up to eight collection vehicles for service at one time, while the remaining half of the building space can be used for parts storage, office space, etc. As shown in Figure 6-7, this shop is situated so that the service bays can be accessed by vehicles from both sides of the building. An area is provided for a diesel fueling station for collection vehicles and an unleaded gasoline fueling station for supervisor vehicles.

The corporation yard area has been sized to support the residential franchised collection operations in Elk Grove through 2036, but it may not meet all hauler needs. For example, if the residential hauler also operates a roll-off box or commercial bin collection service, they will likely need a separate yard area to store spare boxes, bins, and possibly trucks.

The corporation yard exit road runs along the west side of the site parallel to Grant Line Road, and it intersects the SWCC exit road. To provide independent security and access for the SWCC and the corporation yard, fencing and a gate will need to be installed across the SWCC exit roadway, as shown in Figure 6-6. The local fire code may require a second exit from the corporation yard. If so, one possible option would be to add gates to the perimeter fencing that parallels Grant Line Road.

Phased Development Option

The facility can be developed in phases. Specifically, the Public Use Option development plans can be divided into two sections using the fence line shown in Figure 6-6 as the dividing line. Phase 1 can consist of the public use areas in the lower portion of Figure 6-6 (area closest to the SWCC). It includes the transfer and materials receiving buildings for solid waste (MSW), C&D, and reuse; the food recovery and drop-off centers; as well as all roadways in the Phase 1 area and the scale houses.

Phase 2 can comprise the hauler corporation yard in the upper section of Figure 6-6, and include a truck shop, related administrative offices with parts storage, parking area for most or all of the residential hauler's collection vehicles, container storage area, and fuel facility. In this area, the grading, paving, utilities, storm drainage, and building construction work would occur at a time separate from Phase 1 site improvements.

A.2 Hauler Transfer Facility

In this configuration, the entire site serves as a transfer facility for materials generated and collected in Elk Grove and as a corporation yard for parking and maintenance of residential franchise hauler collection vehicles. The Hauler Transfer Option includes the following key elements:

- Receiving and Transfer Buildings for separate handling of solid waste, recyclables and organics;
- Inbound and outbound scales and scale houses;
- Education Center;
- Administrative Building; and,
- Hauler corporation yard with truck maintenance shop and office, which could alternatively be used for other City purposes.

The building footprints are sized to accommodate residential and commercial solid waste, recyclables, and organics materials throughout the 20-year planning period, under the Mandatory Diversion scenario (Case 3) as described in Section 4.3.[25] However, the site can accommodate material flows from other scenarios equally well, including the "2-Stream (wet/dry) option", since the total amount of material is expected to be the same or less. Depending on the actual volumes and material streams handled in the future, the sizes or uses of some of the transfer buildings would need to change to match those material flows, which can be accommodated due to the flexible facility design.

Because of the space required for the hauler transfer services and corporation yard, the site cannot also accommodate self-haul deliveries by the general public or local businesses. It does not have space for a fuel station and may not have sufficient storage area for all of the hauler's inventory of carts, bins, and drop boxes, which would require hauler use of off-site properties. Furthermore, this schematic plan does not have space available for dredge spoils management.

In the Mandatory Diversion scenario, the annual tonnage of solid waste and building space needed to handle the solid waste is forecasted to change very little, because increased diversion would offset the increase in solid waste caused by a growing population. In contrast, the transfer areas that would be handling recyclables and organics would be expected to grow substantially throughout the 20-year planning period. As a result, the site configuration includes sizeable expansion areas for these materials.

To determine the size of each material handling building, the floor areas were sized to store 1.5 days of solid waste, recyclables, and organics. For each stream, the following conservative techniques and assumptions were applied:

- Maximum annual tonnage was converted to daily tonnage (dividing by 260 for a conservatively high 5-day-per-week average) and rounded up slightly to provide a further margin of safety;
- Typical density of the material was used to estimate the volume of 1.5 days of material;
- The floor area of a pile of this material was calculated using an assumed height of 9 feet, although pile heights of 10 to 12 feet are typically created with common transfer station mobile equipment.

[25] In the Case 3, Mandatory Diversion scenario, material flow projections through 2036 reflected the potential impact on annual tonnage levels considering population growth and response to existing mandatory State diversion requirements.

The floor area was used to derive a rectangular footprint that would conform to typical building dimensions; and,

- In addition, an estimate was made of the number of unloading bays needed for each type of material, based on the typical arrival rate during a busy part of the work day (2 trucks/minute) and the amount of time typically needed to unload (less than 5 minutes).

Under the Mandatory Diversion scenario, the solid waste tonnage is expected to begin at 76,447 tons per year in 2017, grow until 2021, and then diminish significantly as mandatory diversion measures take effect through 2024. Thereafter, continuing population and business growth in Elk Grove will drive an increase in solid waste tonnage until 2036, when it is about 10% higher than in 2017, reaching an estimated 82,871 tons per year. Based on this and to be conservative, 100,000 tons of solid waste per year was used as a design basis. This equates to 385 tons per weekday. Assuming storage equal to 1.5 days of volume with a density of 350 pounds per cubic yard, 3,300 cubic yards of storage capacity would be needed. Stacked 9 feet high, this would require 9,900 square feet of floor space. Allowing space around the edges of this pile, as well as space for trucks to unload within the building, a total pile footprint of 50 feet x 200 feet could be accommodated within a 24,000-square-foot building (100 x 240 feet). These are the dimensions of the solid waste building shown in Figure 6-8.

Figure 6-8 below shows the projected Mandatory Diversion scenario annual tonnages at 3 key years during the planning period. It also includes other relevant factors used to derive the building sizes shown in Figure 6-7 for the 3 main transfer buildings.

Figure 6-8: Basis of Calculations of Building Footprint Dimensions

Description		Solid Waste	Recyclables	Organics
Material Throughputs (Tons/year)				
	2017	76,447	25,026	21,686
	2026	52,007	52,939	62,943
	2036	82,871	85,224	93,860
Initial Building Size Assumptions and Calculations				
	Design Basis Tons/year	100,000	50,000	40,000
	Design Basis Tons/weekday	385	195	160
	Material Density (Lb./Cu. Yd.)	350	250	400
	Storage Volume for 1.5 Days (Cu. Yd.)	3,300	2,400	1,200
	Storage Pile Floor Area Requirement (Sq. Ft)	9,900	7,200	3,600
	Storage Pile Floor Area Dimensions	50 x 200 ft	60 x 120 ft	50 x 72 ft
	Overall Building Footprint	100 x 240 ft	100 x 150 ft	100 x 120 ft*
Building Expansion Assumptions and Calculations				
	Design Basis Tons/year	n.a.	40,000	60,000
	Design Basis Tons/weekday	n.a.	160	240
	Material Density (Lb./Cu. Yd.)	n.a.	250	400
	Storage Volume for 1.5 Days (Cu. Yd.)	n.a.	1,920	1,800
	Storage Pile Floor Area Requirement (Sq. Ft)	n.a.	5,760	5,400
	Storage Pile Floor Area Dimensions	n.a.	60 x 96 ft	50 x 108 ft
	Overall Building Footprint	n.a.	100 x 140 ft	100 x 200 ft*

* Additional space has been provided in the Organics Buildings to assure that these materials can be managed properly, with adequate control of liquids, odors and vectors.

Phased Development Option

The "Phased Development Boundary" in Figure 6-7 illustrates how the Hauler Transfer Facility can be divided into two sections for phased development. The upper section of the site includes the transfer facility, inbound and outbound roads and scale house for the transfer operation, staff parking and administration building. Phase 1 encompasses the large transfer and material handling buildings in the upper portion of the site plan, the education center, the scales, staff parking area, and all roadways. In addition, the administration building near the site entrance is part of Phase 1. Phase 2 is intended for use by a hauling company and includes a truck shop, related offices with parts storage, parking area for most or all of the hauler's collection vehicles, and an area near the entry roadway for "grab and go" storage of collection carts and bins. The hauling company is likely to need additional off-site space to store roll-off equipment, bins, and carts, and they may need additional office and dispatch space, especially for roll-off services. The Phased Development Boundary may be a fenced division of Phase 1 and 2 or may not need to be fenced if the operator of the Phase 1 transfer facility is closely affiliated with the hauling company that occupies the Phase 2 area. Transfer vehicle parking to support Phase 1 operations may need to be accommodated in the Phase 2 area, along the Grant Line Road side of the site (left side of the illustration).

B. Development Considerations

If the City pursues either facility development option, several factors listed below should be considered as they may impact the facility design, costs, and permitting process. Other site considerations may be relevant, but the planning-level nature of this feasibility analysis did not include detailed research or site investigation to identify other possible development considerations.

- **Regulations.** Draft regulatory requirements include new facility requirements – Draft SB 1383 regulations require separate handling of organic materials; and, draft AB 901 regulations require weighing of all materials received, processed, marketed, and disposed.
- **Food waste handling.** Many facilities have experienced extensive limitations or prohibitions on management of food waste outdoors or have needed extensive odor management plans and equipment. The schematic plans anticipate receipt of organic materials in an enclosed building to address this type of concern.
- **Noise ordinance.** The City's noise ordinance limits substantial noise-generating outdoor activities at the site during night-time hours (10:00 p.m. to 7:00 a.m.) and necessitates designing the facility to ensure high noise-generating activities are screened by buildings from noise-sensitive land uses. This could limit processing, transfer operations, and hours of operation for site activities such as grinding wood. (Note that processing and grinding functions are not currently in the schematic plans.)
- **Traffic conditions.** Increased traffic at the City Site (in addition to the current SWCC traffic) may result in additional required mitigations to local traffic features such as additional turn lanes and traffic signal installation or modifications. This will be determined during the environmental review process. While some mitigation measures were adopted for construction of the SWCC, the proposed site activities may require changes to current SWCC traffic patterns.
- **Future changes.** Given the potential for changes in State and federal regulations, technology, the economy, and more over the next 20 plus years, designing a facility with flexible use areas will be critical to the long-term success and viability of the facility.
- **Site conditions.** Site geology or hydrogeology may limit construction of facility structures

especially if excavation activities are conducted, which should incorporate the previous soil management plans consideration of past hydrocarbon contamination. For this reason, the schematic plans are based on a top-loading conveyor system to load transfer trailers rather than construction of a below-grade roadway that allows for materials to be push into the top of the transfer trailers. Other design considerations may need to be reflected in the final facility design and could impact functionality and/or costs.

- **Drainage Channel Maintenance.** The silt characteristics of dredge materials from on-site drainage channel maintenance and the possibility of contamination of the site resulting from salt and pesticides from agricultural lands in the area may be a concern. A possible solution would be to pave the site in the areas where the silt is applied/stockpiled. Adequate area needs to be accommodated along the drainage channel for maintenance as previously described.

C. Permitting Considerations

The required permits and regulatory approvals for facility development are dependent upon the types of materials accepted and the facility design features. Based on the Public Use and Hauler Transfer Options presented in Section 6.2.A, a list of anticipated permits and approvals was prepared and is provided in Figure 6-9. The final list of permits and approvals will be based on the amount and type of materials managed and the facility functions rather than the site configuration. There are several permits and approvals that will be necessary for both the Public Use Option and the Hauler Transfer Option, and others that are specific to each facility option. For example, if the Public Use Option includes a beverage container redemption program in the Drop-Off Area, then it will need to be a Certified Recycling Center. The Hauler Transfer Option will not need the Certified Recycling Center approval, but will need an approved Spill Prevention Control and Countermeasure Plan and/or an underground storage tank permit if the fueling station is developed. In fact, the need for various permits may be a factor in the City's final decision-making process regarding the types of features to include at the City Site. When final decisions are made regarding site activities and the types of materials to be handled, this permit/approval list can be updated. Note that typical building and occupancy permits for a project of this nature are not included in this list in order to focus attention on permits and approvals more specifically required for recycling, organics, and solid waste facilities.

It is difficult to predict a timeline for securing permits because not all permits or approvals have specified approval timeframes for the regulatory agencies. A typical range may be two to five years in total. Completing the California Environmental Quality Act (CEQA) requirements is one of the most significant steps in the process, taking roughly 9 to 12 months to complete, depending on issues that arise, public comment, revisions, and other factors. CEQA can take considerably more time if regulatory agencies require revision or additional studies. It is important to recognize that the City conducted CEQA for the previous transfer station project at the City Site, which is anticipated to minimize the time associated with a review for this project. Once CEQA is complete, approximately one year will be needed to secure the other permits and approvals listed if sufficient resources are allocated to it. At that time, most of the permits/approvals can be prepared concurrently.

Figure 6-9 includes estimated time frames for each permit or approval reflecting the time from submittal of the completed application through regulatory agency review and approval. Application preparation times range from a few weeks to a month for most permits except for preparation of the CEQA documents and Solid Waste Facilities Permit application, which can take longer. The estimated permitting times shown in Figure 6-9 may be extended due to changes to proposed activities, reviewing agency concerns, public concerns, and delays in revising permit applications and supporting documents.

Figure 6-9: Permits for Facility Development

Permit/Approval*	Agency	Notes	Estimated Time**
Minimum Permit Requirements			
California Environmental Quality Act	Local & CalRecycle	Required to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.	9-12 months
Solid Waste Facility Permit/Transfer/ Processing Report	Sacramento Co. Environmental Management Department /CalRecycle	Required, there are a range of permit options depending upon the types and amounts of waste handled	6-9 months
Conditional Use Permit	Local	Likely required if proposed activities are not within the site zoning designation.	2–6 months
Nondisposal Facility Element Conformance	Local	Identifies nondisposal facilities used by a jurisdiction to implement programs approved in the Source Reduction and Recycling Element	1-2 months
Weighmaster license	Department of Weights and Measures	Required if certified weights for materials and wastes are required	1-2 months
Hazardous waste identification number	Department of Toxic Substances Control	Required for hazardous waste generated onsite such as hazardous waste found in solid waste loads or from vehicle maintenance.	1 month
Permits Required for Certain Facility Features and Operational Plans			
Certified Recycling Center	CalRecycle	Required if California Redemption Value containers are redeemed from the public	2-4 months
Tire Program Identification Number	CalRecycle	Required for waste tires generated on site or accepted from public (note that the schematic plans do not anticipate a tire storage facility)	1 month
Waste Tire Facility	CalRecycle	Required if storing 500 or more waste tires	1-2 months
Fuel permit	State Board of Equalization	Required for some types of commercial diesel powered or alternative fuel vehicles	2-3 months
Authority to Construct and/or Permit to Operate	Sacramento Metropolitan Air Quality Management District	Maybe required for facility equipment, waste processing, including management of organics waste such as food waste and grinding equipment	2-3 months
General Industrial Stormwater Permit	Regional Water Quality Control Board	Likely required for vehicle maintenance and scrap metal management	1-2 months
Hazardous Materials Business Plan	Sacramento Co. Environmental Management Department	Required if hazardous materials are used on site, such as truck maintenance	1-2 months
Spill Prevention Control and Countermeasure Plan	Sacramento Co. Environmental Management Department	Required if there is aboveground storage of petroleum products over 1,320 gallons or more	1-3 months

Permit/Approval*	Agency	Notes	Estimated Time**
Underground Storage Tank Approval	Sacramento Co. Environmental Management Department	Required if underground fuel storage is required	1-2 months
Wastewater Discharge Permit	Sacramento Regional County Sanitation District	Required if wastewater discharges at the site are over certain limits	2-3 months

* Typical building and occupancy permits for a project of this nature are not included.

** Estimated time reflects the time from submittal of the completed application through regulatory agency review and approval.

Changing State Regulations

CalRecycle has adopted and is considering revisions to regulations of the management of organics, particularly food waste. Solid waste facilities are required to remove accepted solid wastes within 48 hours of receipt. Local Enforcement Agencies (LEAs) can approve alternative frequencies, but typically do not allow for storage beyond 48 hours. Some LEAs require all food waste processing to occur in an enclosed facility (which is planned for the City Site). Some transfer station operators have been required to implement additional odor considerations when accepting food wastes. When the City finalizes its facility plan and the types of materials accepted and handling methods and SB 1838 regulations are more developed, initiating discussions with the LEA is advised particularly related to organics management and other transfer station requirements.

CEQA Review

The 2009 Final Environmental Impact Report (EIR) for the City Site, which was prepared for CEQA review, addressed a proposed Elk Grove Transfer Station. This EIR will need to be reviewed, and possibly updated, to address the new, proposed solid waste, recycling, and organics activities. The Mitigation Monitoring and Reporting Program, which is generated as a result of the CEQA process, included some considerations that might be incorporated in the environmental review for this proposed project. Some of these measures (and their related Mitigation Number) include:

- Odor control measures such as closing building doors when receiving wastes, covering loaded transfer trailers, and tracking odor complaints (4.3-5). These odor control measures are typically addressed in the Report of Facility Information for the Solid Waste Transfer/Processing Facility, which is part of the Solid Waste Facilities Permit application;
- Compliance with the City's noise ordinance (4.4);
- Increased sweeps by Code Enforcement for illegal dumping (4.7-8);
- Storm drain system improvements such as storm water detention facilities (4.8-1);
- Biological resource considerations for construction may limit facility design (4.9); and,
- Construction activities also require various air emissions, dust, and other environmental considerations (many measures).

If the City chooses to develop the facility in phases, it will be important for the City to carefully think through its EIR preparation options, as different strategies can be used. For example, a programmatic EIR

can describe the initial phase of the project in detail and future phases more generally. In this case, subsequent EIR work will be conducted prior to the development of the future phase(s). Another option is to prepare an EIR that fully describes and analyzes impacts related to all phases. In this later case, the City may have to initially address mitigation measures for future phase(s) that may never be developed and/or may have to conduct subsequent EIR work if the City modifies the plans for the future phase(s).

Prior Environmental Site Assessment

The 2015 Phase I Environmental Site Assessment for the City Site indicated that the site had previously been the location of a trucking facility and a pallet recycling company. These activities involved the use of various hazardous materials including underground and above ground tanks. Clean up of a leaking underground storage tank had been approved by Sacramento County in 2010 after contaminated soils had been removed from the site. The Assessment deemed that "adequate site characterization and remediation has been conducted and no significant health threat exists at the site. Due to the history of the site, however, the potential exists to encounter limited hydrocarbon impacted materials during any future site development. Proper soil management of contamination found during future site development will require incidental cleanup activities" similar to the 2012 and 2015 soil management plans.

The Assessment also indicated that no further action was required from the Chemical Storage and Mixing or Above Ground Storage Tanks that were located at the site. In regards to recognized environmental conditions at facilities located adjacent to the property there is "no recorded evidence that soil and/or groundwater contamination exist at this parcel and/or extend off site; consequently there is no associated risk identified with respect to the subject property."

D. Construction Cost Estimates

Figure 6-10 below provides construction cost estimates for the Public Use Option and the Hauler Transfer Option shown in Figures 6-6 and 6-7. Estimated costs are based on data from BNi Building News and R.S. Means construction cost estimating guides, adjusted for location (Sacramento area), as well as information from recent construction bids submitted to Elk Grove. The estimates are further informed by an understanding of transfer station and material recovery facility design and operations throughout California. It is important to note that these estimates are based on schematic-level facility concepts, not on design-level facility plans. With this perspective, the estimates take into account the functions shown in the sketches, using typical facility sizes and features, but they are not based on an architectural or engineering design. As such, the construction cost estimates are quite preliminary and subject to refinement. This is reflected in the 20% contingency factor that has been applied to both cost estimates. The "bottom line" cost estimates should be considered as an order-of-magnitude estimate, indicating a probable range of $10 to $20 million for each facility option. Note that construction costs for the Public Use Option can be significantly reduced through elimination of the hauler corporation yard, Drop-Off Area, and Food Recovery Center. For the Hauler Transfer Option, construction costs can be reduced somewhat by elimination of the hauler corporation yard and Education Center.

The cost estimates reflect construction costs and are not inclusive of costs for site investigation, architectural and engineering services, CEQA, and permitting, or for rolling stock, equipment, and supplies required for operation.

Figure 6-10: Construction Cost Estimates for Facility Options

Category	Public Use Option	Hauler Transfer Option
Mobilization	$ 6,000	$ 6,000
Storm Water Pollution Prevention Plan	$ 8,000	$ 8,000
Clear and Grub	$ 25,000	$ 25,000
Earthwork	$ 72,000	$ 72,000
Landscaping (5% of site)	$ 186,000	$ 182,000
Roadways, Joint, Utility Trench	$ 2,560,000	$ 2,013,000
Other Asphalt Paving	$ 1,668,000	$ 1,493,000
Concrete Paving	$ 354,000	$ 477,000
Buildings	$ 5,088,000	$ 6,261,000
Other Structures	$ 521,000	$ 120,000
Equipment	$ 675,000	$ 928,000
Water	$ 316,000	$ 316,000
Storm Drain System	$ 181,000	$ 181,000
Sewer System	$ 61,000	$ 61,000
Fences and Gates	$ 260,000	$ 33,000
Lighting	$ 219,000	$ 224,000
Other Electrical	$ 27,000	$ 27,000
Subtotal	$ 12,227,000	$ 12,427,000
Contingency (20%)	$ 2,446,000	$ 2,486,000
Total	**$ 14,673,000**	**$ 14,913,000**

At the City's request, phased development approaches were conceptualized for both facility options (as described in Section 6.2.A) and cost estimates were prepared for each phase. Phased development will enable the City to consider a multi-year, needs-driven approach to site development and reduce its initial construction cost investment. Figure 6-11 presents the phased development cost estimates.

Figure 6-11: Phased Construction Costs for Facility Options

	Public Use Option	Hauler Transfer Option
Phase 1		
Transfer buildings and site improvements (a)	$ 6,304,000	$ 10,086,000
Reuse center (b)	$ 903,000	---
Food recovery center (b)	$ 819,000	---
Drop-off center (b)	$ 188,000	---
Administration building (b)	---	$ 934,000
Subtotal	$ 8,214,000	$ 11,020,000
Phase 2		
Hauler corporation yard and site improvements (b)	$ 6,811,000	$ 4,096,000
Total	$ 15,025,000	$ 15,116,000

(a) Includes 20% contingency.
(b) Includes 20% contingency, plus 5% surcharge for added demobilization and remobilization costs for phased development.

For phased construction of the reuse center, food recovery center, drop-off center, and administration building, a 5% surcharge has been added to the construction costs (in addition to the 20% contingency described above). This surcharge is included to anticipate costs associated with demobilization and remobilization efforts associated with a phased approach. In these cases, each time the construction contracting team leaves the project site and returns costs are incurred to remove and return equipment, re-establish subcontractor and vendor agreements, re-excavate areas that were backfilled for drainage and safety reasons, replace temporary pavement with final roadways or structures, and more. There may be other cost impacts associated with phasing such as added permitting and CEQA costs, which are not reflected in this estimate.

E. Public/Private Development Opportunities

To develop a facility at the City Site, the City can choose between two primary financing options: (1) a publicly financed facility that may be operated by the City or a contractor (Publicly-Financed model); or, a privately financed facility that would be developed and operated by a private company and purchased by the City in the future (Privately-Financed Model).

If the City selected the Publicly-Financed Model, the cost of the facility could be financed from a combination of equity (from reserves held by the City's solid waste enterprise fund) and tax exempt debt (revenue bonds or certificates of participation). The cost of capital is lower in this approach than the Privately-Financed Model, but the City takes most/all of the risks.

If the City chose to pursue a Privately-Financed Model, the facility could be financed from a combination of private equity, tax credits, State grants (if, and as available), taxable debt, or tax-exempt debt issued by the California Pollution Control Financing Authority (CPCFA), in which case tax credits would not be available. The cost of capital can be significantly higher in this Model (due to the cost of private equity at 15% and more and higher interest rates for taxable bonds), but more of the risk can be shifted to a private

company. This approach is sometimes taken by agencies, which do not have investment grade credit ratings.

Publicly-Financed Model

In a Publicly-Financed Model, bonds would be issued for the facility. The amount of the bonds issued equals the project cost, certain reserves, and issuance costs. Assuming a 3-year construction period, a 20-year term of the bonds, an average coupon rate of 3.5%, and a $17 million project cost, the bonds issued may equal $20,063,000 with an average annual debt service of approximately $1,423,000.

The key risks in the project relate to construction risk, the volume of materials flowing to the facility, the cost of operations, and the revenues to be received from operations. The following strategies can be used to manage these risks.

- The City could mitigate the construction risk through its agreement with the construction company by holding the company to a fixed cost;
- The City could mitigate the risk of materials flowing to the facility by sizing the facility to equal the tons reasonably under its control through franchise agreement(s), hauler permit system, and City-generated materials. If it were to size the facility to meet the needs of adjoining agencies or others, it could enter into long-term contracts with those agencies to secure the flow of their materials to the facility; and,
- The City could mitigate the risk of the cost of operations and revenues received from operations by contracting for private operation of the facility. Such contracts routinely include risk-sharing arrangements related to these factors.

Privately-Financed Model

In a Privately-Financed Model, the City would issue a request for proposals for a contractor to design, build, own, and operate (DBOO) the facility. The City would enter a long-term lease of the site with the contractor as well as a development and long-term facility operations agreement. The agreement would provide the right to the City to purchase the facility at some point during the term or at the end of the term, at a predetermined price or in accordance with a predetermined methodology for determining the price (independent appraisal). Similar approaches taken by other cities have resulted in contracts with privately-held developers who may have industry experience or may team with another company with such experience. Rarely do such arrangements appeal to large publicly-held solid waste management companies, which more typically develop and own their facilities.

A Privately-Financed Model can reasonably be assumed to be significantly higher in cost that a Publicly-Financed project. While the cost is higher, the following other considerations should be taken into account:

- The project cost should be comparable to a Publicly-Financed Model, subject to tax incentives and grants that may not be available to the City and may offset some costs;
- Tax incentive financing arrangements are sometimes available for such financings, but the project features and facility functions, amounts of the incentives, and terms to qualify for the incentive vary significantly and need to be reviewed during the financing. Because of the tax-related nature of the financing, such opportunities are not available to public tax-exempt financing projects; and,

- A Privately-Financed Model might have a combination of equity and debt financing. While the owner's equity contribution might reduce the debt financing by 35%, it comes at a much higher return on interest than the debt (e.g., this can be equal to or greater than 15%). Also, the taxable debt would have a premium interest rate compared to tax exempt financing. This can be equal to or greater than 3.5% more than non-taxable debt. Assuming a $5,950,000 equity investment at 15% and an $11,050,000 bond financing with a 20-year term and an average coupon rate of 7%, the annual financing cost may approximate $2,516,000.

Key advantages of a Privately-Financed Model include, but are not limited, to the following:

- The City does not have to issue the bonds and thereby use up some of its debt capacity. Further, depending on the terms of the DBOO contract, the City does not assume the liability of the debt offering;
- Construction risks are shifted to the DBOO contractor;
- The contractor designs, constructs, and operates the facility; therefore it theoretically should be done in a manner that achieves the best life-cycle economic results. Also, unlike a Public-Financed Model where one contractor may construct the facility and another operate it, the City does not have to resolve disputes between the parties;
- While the City will have to direct its material streams to the facility, the DBOO contractor may assume risks related to non-City materials; and,
- The City could mitigate the risk of the cost of operations and revenues received from operations through the DBOO contract.

Disadvantages to such an arrangement include, but are not limited to, the following:

- The cost of capital is significantly higher than a Publicly-Financed Model;
- The longer-term nature of the DBOO agreement may make it difficult for the City to resolve disputes with the operator or change the operator; and,
- The purchase price of the facility may need to meet a "fair market" value test that results in City paying the cost of the facility twice – once over the initial term of the DBOO agreement, and a second time when it purchases the facility.

Financial Comparison of Publicly-Financed and Privately-Financed Models

Figure 6-12 provides a comparison of the Publicly-Financed and Privately-Financed Models.

Figure 6-12: Publicly & Privately-Financed Facility Scenarios for Hauler Transfer Option

	Publicly-Financed Model	Privately-Financed Model
Project Cost	$15,000,000	$15,000,000
Plus Site Investigation, Engineering, CEQA, Permitting	$2,000,000	$2,000,000
Less Equity Contribution	$0	$5,950,000
Less Grant Fund Contributions	$0	0
Net Project Cost	**$17,000,000**	**$11,050,000**
Plus Debt Service Reserve Fund	$1,460,000	$855,060
Plus Capitalized Interest Fund	$1,148,000	$1,118,155
Plus Cost of Issuance and Underwriters Discount	$455,000	$131,548
Total Cost of Issuance	**$20,063,000**	**13,154,762**
Estimated Annual Debt Service	$1,821,429	$1,326,000
Return on and of Investment	$0	$1,190,000
Total Annual Financed Cost	**$1,423,000**	**$2,516,000**
Cost per ton *	**$11**	**$19**

* Cost-per ton is calculated based on receipt of 130,000 tons per year of residential and commercial tons collected in the City, which reflects an annual average over the past five years (2012 to 2016). It does not include annual cost of facility operations.

While both financing options are available to the City, the Publicly-Financed Options provides the more cost-effective approach. The cost impact can be reduced by:

- Increasing the number of tons processed by contracting with other agencies and contractors.
- Reducing the current franchised residential hauler and permitted commercial haulers for transfer and transport costs.
- Eliminating the hauler corporate yard from the facility schematics to reduce site improvement and building costs.

If the City decides to proceed with the project, a financing analysis should be performed based on then-current market conditions to provide the City a more accurate estimate of costs based on the terms of the financing and market conditions at the time.

F. Summary of Findings

The Facility Options Analysis examined two different uses of the City Site. Of these options, the Hauler Transfer Facility option provides the most value to the City for several reasons. It provides the City the ability to engage more than one contractor in the provision of collection, transfer, processing, and disposal services. The City's current contracting model for residential services relies on one company to provide all of these services under the scope of the residential franchise agreement. This arrangement has advantages in that the contracting and contract management process is streamlined; however, it limits the number of companies that can compete for the services under a competitive procurement process

and, in so doing, limits the number of processing and disposal facility options to only the companies that can provide the full range of services. In contrast, if the City develops and owns a transfer station, the City is in a position to choose from among multiple service providers to contract with for collection, transfer, processing, and disposal services. This strategy levels the playing field in a competitive procurement process for collection services because hauling companies that cannot provide the full range of services (collection, processing, transfer, and disposal) can propose collection services to the City. In addition, the City can separately contract for one or more types of organics, recyclables, or mixed materials processing services by directly engaging with these service providers rather than relying on their collection provider to secure these. This can lead to a wider range of choice in processing methods (which potentially allows for more flexibility in the collection requirements) and can lead to securing the best available pricing for the services.

While these advantages are potentially significant to the City, the financial benefit cannot be easily quantified, nor can development of the Hauler Transfer Facility provide a guarantee of reduced rates to customers. It does, however, guarantee the City the ability to create a competitive environment under which proposals can be submitted providing the City with the best deal available at that time. It also guarantees the City the ability to secure its own contracts for processing and disposal services (rather than bundle these services into its franchise collection agreement). Having this ability will provide the City flexibility in choosing the types of processing technology it prefers or needs and allows for the services to be obtained through competitive processes, which provide assurance that the City has obtained market pricing.

Determination of the financial benefit of the City's development and ownership of a Hauler Transfer Facility is a task that cannot realistically be performed because there are so many unknown variables (such as dozens of cost permutations associated with transportation to many different processing and disposal facility locations, hauler corporation yards, and routing strategies, etc.). A series of assumptions around the complexities of the unknown variables will yield financial predictions that either provide such a wide range of costs that the analysis is not meaningful or may provide an inaccurate assessment. However, HF&H has experience working with clients, like the City of San Jose, that have seen financial benefits in these situations. For example, San Jose conducted sole source negotiations with multiple service providers for its residential franchise contract extension. At about the same time, these companies proposed services to an adjoining city in a competitive procurement process. A comparison of annual route costs proposed in these two scenarios showed that route costs and profit levels were lower in the competitive procurement process.

The City may have other options for the City Site that do not involve management of recyclables, organics, or solid waste, and that may be determined to be a higher and better use for the City Site. If however, the City concludes the Hauler Transfer Facility is in their best interest, a phased development approach would reduce the initial investment and annual debt service payments significantly. The first phase that involves the transfer facility development provides the City with the contracting flexibility described above. The second phase that involves the hauler yard development may provide the City with additional cost savings through routing efficiencies realized when the collection vehicles are stationed at the transfer facility site. This second phase can be completed when the City conducts a competitive procurement for franchise collection services because it can require the selected hauling company to manage the design and construction of the hauler corporation yard and finance it through the collection rates.

SECTION 7. IMPLEMENTATION PLAN

Section 7 presents a plan for implementing the programs recommended for the Near-Term Period and the development of a Hauler Transfer Facility (if the City elects to proceed with facility development). In addition, the implementation plan identifies two check points – at the commencement of the Mid-Term and Long-Term Periods – for reassessment of the City's needs and analysis of new program options. Lastly, a summary level implementation timeline is provided for the programs and facility development. Program descriptions in Section 6.1.B include key actions the City needs to take for each program and provides an explanation of the planning and implementation timeframes.

As described in the Executive Summary, the Strategic Plan has been prepared based on an understanding of SB 1383 requirements pursuant to CalRecycle's October 27, 2017 Draft Regulation Text. Actual jurisdiction and generator requirements in the final regulations may differ somewhat (or significantly) compared to the draft requirements. After the SB 1383 rule-making process is completed in late 2018 or early 2019, it is advised that the City review the program recommendations in this Strategic Plan and modify the Strategic Plan, if needed, to align with the final SB 1383 regulations.

7.1 Organics Program Implementation Plan

Figure 7-1 presents a timeline for implementation of the Near-Term program recommendations. The timeline, which spans through 2025, was designed based on the following guiding principles:

- **Implementation and program start dates.** All organics programs need to be operational in 2021 because the SB 1383 regulations take effect on January 1, 2022 and are enforceable by CalRecycle against jurisdictions, facilities, and haulers. As a result, the implementation period (if any is needed) is slated during or prior to 2020, and the first year of the program is scheduled to start on or before July 1, 2021.
- **Periods of negotiations, policy development, and evaluation.** For several programs, the timeline includes planning periods for the following activities described below. These planning periods are conducted one or two years prior to implementation of the programs, which is critical to allowing for engagement and education of haulers and generators impacted by the new programs and to allow sufficient notice to plan and implement the programs.
    - Contract negotiations. The mandatory residential food scraps collection program (Program 1) requires time for the City to negotiate changes in the collection program with its residential franchise hauler, Republic.
    - Amending and adopting polices. Mandatory residential organics recycling and enforcement (Programs 1A and 2A), and the food recovery programs for edible food generators and large events and venues (Programs 4 and 8) require adoption of new ordinances and policies. The mandatory commercial organics recycling program and enforcement (Programs 1B and 2B) require amendment of the existing ordinance and policies.
    - Evaluation. The two hauler service option programs (Programs 11 and 12) involve evaluation of the residential and commercial hauling system during the Near-Term Period to determine what next steps to take.
- **Reassessment periods.** Time for reassessing the City's needs is shown for the food recovery grant

program and food recovery center (Programs 5 and 6) because these optional programs are not required by SB 1383 and can be deferred until more information is available on food recovery needs. In the case of the food recovery programs for City facilities and for "other" organics materials, there are no needs at this time so reassessment periods are included to determine if any future needs arise for these programs.

- **Annual periods.** To simplify the timeline, it is organized in one-year periods. In practice, some program planning and implementation periods may run shorter or longer than one year.

The timeline presented here presents a reasonable approach given the guiding principles. Many other permutations are possible for the timeline. The City may modify the schedule, but it is recommended that all organics programs be implemented before or during 2021 since SB 1383 is enforceable by the State as of January 1, 2022. Changes, if any, to the timeline need to anticipate sufficient time to work with stakeholders when adopting or amending the City's Solid Waste Management ordinance and providing adequate time for haulers and generators planning and program implementation.

{Remainder of page intentionally blank}

Figure 7-1: Program Implementation Timeline

	Program/Policy	2018	2019	2020	2021	2022	2023	2024	2025
	SB 1383 Programs								
1A	Mandatory residential organics including food scraps collection	Negotiate/ Adopt policies	---	---	Implement	On-going operation	On-going operation	On-going operation	On-going operation
1B	Mandatory commercial organics including food scraps collection	Amend policies	---	---	Implement	On-going operation	On-going operation	On-going operation	On-going operation
2A	Enforcement of mandatory organics and contamination: Residential (a)	Adopt policies	---	---	---	---	---	On-going operation	On-going operation
2B	Enforcement of mandatory organics and contamination: Commercial (b)	Amend policies	---	---	---	On-going operation	On-going operation	On-going operation	On-going operation
3	Organics collection for City facilities	---	---	---	---	On-going operation	On-going operation	On-going operation	On-going operation
4	Food recovery program for edible food generators	---	Adopt policies	---	Implement	On-going operation	On-going operation	On-going operation	On-going operation
5	Food recovery grant program (optional)	---	---	---	---	---	Reassess Needs	Implement if desired	On-going
6	Food recovery center sponsored by City (optional)	---	---	---	---	---	Reassess Needs	Implement if desired	On-going
7	Food recovery program for City facilities	---	---	Reassess Needs	Implement if needed	On-going if needed	On-going if needed	On-going if needed	On-going if needed
8	Food recovery program for large venues and events	---	Adopt policies	Implement	On-going operation	On-going operation	On-going operation	On-going operation	On-going operation
9	Carpet and textiles recycling program support	---	On-going operation	On-going operation	On-going operation	On-going operation	On-going operation	On-going operation	On-going operation
10	"Other" organic materials programs	---	---	Reassess Needs	Implement if needed	On-going if needed	On-going if needed	On-going if needed	On-going if needed
	Hauler Service Option Programs								
11	Residential franchise negotiation or competitive procurement	---	---	---	Evaluate Options	Negotiate or RFP process	Negotiate or RFP process	Negotiate or RFP process	---
12	Evaluation of commercial hauling system	---	Evaluate Options	---	---	Amend policies if needed	Negotiations or RFP if needed	Negotiations or RFP if needed	Implement if needed

(a) Enforcement of residential generators may need to occur in 2022 and 2023 (subject to review of future SB 1383 regulations) with a focus on inspection and issuance of notices of non-compliance in these years. In 2024, progressive enforcement action including assessment of penalties.

(b) Enforcement of commercial generators begins in 2022 and 2024 with a focus on inspection and issuance of notices of non-compliance in these years. In 2024, progressive enforcement action including assessment of penalties.

7.2 Facility Development Plan

If the City decides to proceed with the development of the Hauler Transfer Facility, the process can be planned in several ways in terms of the financing (as discussed in Section 6.2.E) and contract arrangements for design, build, and operation (DBO). Figure 7-2 presents a timeline that anticipates the City will target full operations of the Hauler Transfer Facility on July 1, 2025 to coincide with the commencement of the future residential franchise agreement (if the current agreement with Republic is not extended).

Figure 7-2: Hauler Transfer Facility Development Timeline

	Activity	2018	2019	2020	2021	2022	2023	2024	2025
1	Finalization of facility development and financing strategy								
2	Competitive procurement for design, build, operate (DBO) contractor or for engineering firm and construction contractor								
3	Facility design								
4	Permitting - Local permits and CEQA (a)								
5	Permitting - Solid Waste Facilities Permit and other permits (b)								
6	Procurement of facility operator (if DBO contractor was not retained)								
7	Construction								
8	Commence facility operations								•

(a) CEQA is estimated to require 9 to 12 months, but can take considerably more time if regulatory agencies require revision or additional studies.
(b) Once CEQA is complete, approximately one year will be needed to secure other permits and approvals if sufficient resources are allocated to the effort.

7.3 Estimated Program Staffing Needs

To assist the City in planning its staffing levels, Figure 7-3 provides staffing estimates for the recommended Near-Term programs. This information is provided as a guide. The City will need to determine its final staffing requirements based on several factors such as: the ability of existing staff to integrate the planning, implementation, and on-going performance and management of the programs into the current duties; the final design of programs and level of effort needed; the extent to which consultants and/or independent contractors are retained to support program efforts; final implementation and program commencement dates, and, more.

Note that the cost estimates anticipate that the City will engage a contractor to provide technical assistance to multi-family and commercial businesses for the organics collection programs and technical assistance to medium/large edible food generators. This consultant support is anticipated during program implementation and on an annual on-going basis. If the City instead chooses to have City staff provide these services, additional staff time beyond that shown in Figure 7-3 will be necessary.

Figure 7-3: Near-Term City Staffing Estimates

	Program/Policy	2018	2019	2020	2021	2022	2023	2024	2025
	SB 1383 Programs								
1A	Mandatory residential organics including food scraps collection	-	-	0.67	0.09	0.09	0.09	0.09	0.09
1B	Mandatory commercial organics including food scraps collection (a)	-	-	0.48	0.16	0.16	0.16	0.16	0.16
2A	Enforcement of mandatory organics and contamination: Residential	-	-	-	-	-	-	0.30	0.30
2B	Enforcement of mandatory organics and contamination: Commercial	-	-	-	-	0.70	0.70	0.70	0.70
3	Organics collection for City facilities (b)	-	-	-	-	-	-	-	-
4	Food recovery program for edible food generators (a)	-	-	0.74	0.78	0.78	0.78	0.78	0.78
5	Food recovery grant program (optional)	-	-	-	-	-	0.19	0.25	0.25
6	Food recovery center sponsored by City (optional)	-	-	-	-	-	0.28	0.33	0.33
7	Food recovery program for City facilities	-	-	-	-	-	-	-	-
8	Food recovery program for large venues and events	-	-	-	0.37	0.22	0.22	0.22	0.22
9	Carpet and textiles recycling program support (b)	-	-	-	-	-	-	-	-
10	"Other" organic materials programs (c)	-	-	-	-	-	-	-	-
	Hauler Service Option Programs								
11	Residential franchise negotiation or competitive procurement (b)	-	-	-	-	-	-	-	-
12	Evaluation of commercial hauling system (b)	-	-	-	-	-	-	-	-
	Total FTE	-	-	**1.88**	**1.40**	**1.94**	**2.42**	**2.82**	**2.82**

(a) For Programs 1B and 4, technical assistance to businesses and multi-family properties is anticipated to be performed by a consultant; therefore, no staff time is included for technical assistance.

(b) Programs 3, 9, 11, and 12 are assumed to be conducted by existing City staff.

(c) Program 10 does not require any effort in the Near-Term Period; therefore, no staffing is shown.

(d) Staffing for development and on-going contract management of the Hauler Transfer Facility is not included. If the City proceeds with the facility, additional staffing will be necessary.

7.4 Summary Implementation Timeline

Figure 7-4 presents a summary of the major events for the Strategic Plan. The activities and timeframes shown reflect the implementation plans described in Sections 7.1 and 7.2 for the recommended programs and Hauler Transfer Facility.

Figure 7-4: Summary Implementation Timelinei

	Activity	Timeframe
	Near-Term Phase (Present through 2025)	
1	Review final SB 1383 regulations and adjust Near-Term programs, as needed	2018 or early 2019
2	Plan and implement organics reduction programs (Programs 1 – 10)	2018 – 2024
3	Negotiate amendment to Republic's residential franchise agreement to incorporate residential food scraps collection	2018
4	Adopt and modify City ordinances for mandatory organics recycling and enforcement programs (Programs 1A, 1B, 2A, 2B) and food recovery programs (Programs 4 and 8)	2018 – 2019
5	Evaluate residential franchise options to determine if City will conduct sole source negotiations or competitive RFP process (Program 11)	2021
6	Evaluate options for the commercial hauling system (Program 12) and issue 5-year notice to commercial haulers to provide opportunity for the City to change the system	2019
7	Plan, design, permit, and construction Hauler Transfer Facility	2019 - 2025
8	Negotiate future residential franchise agreement or conduct competitive RFP process	2022 – 2024
9	Plan and implement changes, if any, to commercial collection system including amendment of policies, negotiations with haulers, or performance of a competitive RFP process	2022 – 2025
	Mid-Term Phase (2026 – 2030)	
1	Reassess City's needs, then-current State and federal regulations, and program and facility options	2026
2	Implement new programs, as needed	2026 – 2030
	Long-Term Phase (2031 – 3036)	
1	Reassess City's needs, then-current State and federal regulations, and program and facility options	2031
2	Implement new programs, as needed	2031 - 2036

CERTIFICATION
ELK GROVE CITY COUNCIL RESOLUTION NO. 2018-104

STATE OF CALIFORNIA)
COUNTY OF SACRAMENTO) ss
CITY OF ELK GROVE)

I, Jason Lindgren, City Clerk of the City of Elk Grove, California, do hereby certify that the foregoing resolution was duly introduced, approved, and adopted by the City Council of the City of Elk Grove at a regular meeting of said Council held on May 23, 2018 by the following vote:

AYES:	*COUNCILMEMBERS:*	*Ly, Suen, Detrick, Hume, Nguyen*
NOES:	*COUNCILMEMBERS:*	*None*
ABSTAIN:	*COUNCILMEMBERS:*	*None*
ABSENT:	*COUNCILMEMBERS:*	*None*

Jason Lindgren, City Clerk
City of Elk Grove, California