City of Hayward
Park Impact Fee Calculations

DISCUSSION DRAFT

April 12, 2019

GROWTH ESTIMATES

Impact fees are meant to have "growth pay for growth" so the first step in developing an impact fee is to quantify future growth in the City of Hayward. Growth estimates have been prepared for population and employment through the year 2040 in order to match the horizon year of the City's General Plan.

Exhibit 1 lists Hayward's population and growth rates from 2010 to 2018 and projections to the year 2040.

Exhibit 1. Population

	Population	CAGR(1)
2010	144,186	
2011	146,357	1.5%
2012	149,965	2.5%
2013	152,491	1.7%
2014	154,641	1.4%
2015	157,409	1.8%
2016	159,465	1.3%
2017	161,455	1.2%
2018	162,030	0.4%
2040	183,533	0.6%
Growth (2)	**22,078**	**0.6%**

(1) CAGR = Compound Annual Growth Rate.
(2) Growth = 2040 Population – 2018 Population.
Source for population:
- *for years 2010 to 2018: California Department of Finance Population Estimates for Cities, Counties, and State; and*
- *for 2040: City of Hayward General Plan.*

In addition to residential population growth, Hayward expects businesses to grow. Business development is included in this methodology because Hayward's parks and recreation system serves both its residential population and employees. City parks provide places for employees and customers to take breaks from work and shopping, including restful breaks and/or active exercise to promote healthy living.

Exhibit 2 shows employment in Hayward from 2010 to 2018 and projected growth for the year 2040.

Exhibit 2. Employment

	Employment	CAGR(1)
2010	64,134	
2011	65,249	1.7%
2012	67,372	3.3%
2013	68,752	2.0%
2014	70,407	2.4%
2015	72,864	3.5%
2016	74,369	2.1%
2017	75,821	2.0%
2018	76,845	1.4%
2040	89,900	0.7%
Growth (2)	**13,055**	**0.7%**

(1*) CAGR = Compound Annual Growth Rate.*
(2) Growth = 2040 Employment – 2018 Employment.
Sources for employment:
- *for years 2010 to 2017: Bureau of Labor Statistics, Local Area Unemployment Statistics, annual average employment;*
- *for 2018: Bureau of Labor Statistics, Local Area Unemployment Statistics, average of employment through November 2018 and preliminary employment estimates for December 2018; and*
- *for 2040: City of Hayward General Plan Background Report.*

Exhibit 3 lists employment by industry in Hayward for 2018 and projections for the year 2040.

Exhibit 3. Employment by Industry

	2018	2040	CAGR(1)
Services	13,576	17,012	1.0%
Manufacturing	10,717	11,180	0.2%
Government	9,757	8,799	-0.5%
Healthcare	9,151	13,400	1.7%
Retail Trade	7,727	7,326	-0.2%
Wholesale Trade	7,456	7,861	0.2%
Construction & Resources	6,117	9,594	2.1%
Accommodations & Food Service	4,425	6,050	1.4%
TCU	4,369	4,806	0.4%
FIRE	2,653	2,558	-0.2%
Education	899	1,313	1.7%
Total	**76,845**	**89,900**	**0.7%**

(1) CAGR = Compound Annual Growth Rate.
Sources for employment:
- *for 2018: employment by industry is estimated by allocating 2018 total employment from Exhibit 2 by the share of employment by industry from the Hayward General Plan; and*
- *for 2040: employment by industry is estimated by using growth rates by industry for the Oakland-Hayward-Berkeley MD from the California Employment Development Department and adjusted to projected total 2040 employment from Exhibit 2.*

It is clear from Exhibits 1, 2 and 3 that Hayward expects growth of population and businesses in the future, so there is a rational basis for park impact fees that would have future growth pay for parks that are needed to provide appropriate levels of service to new development.

Population and employment are both expected to grow, but they should not be counted equally because employees and visitors spend less time in Hayward than residents, therefore they have less benefit from Hayward's parks. There is a well-established and widely-used technique for accounting for these differences in impact fees, and it involves "equivalency." Appendix A describes equivalency and explains how the "equivalent population coefficients" were developed for this study of park impact fees for the City of Hayward. The results allow business to pay its proportionate share of parks for growth based on the "equivalent population" that nonresidential development generates.

Exhibit 4 multiplies the equivalent population coefficients (from Appendix A) by the actual population and employment data from Exhibits 1 and 3 to calculate the "equivalent" population for the base year (2018), the horizon year (2040) and the growth between 2018 and 2040.

Exhibit 4. Growth of Equivalent Population

Land-Use Category	Equivalent Population Coefficient (1)	2018 Base Year Full Population (2)	2018 Base Year Equivalent Population (3)	2040 Base Year Full Population (2)	2040 Horizon Year Equivalent Population (3)	2018-2040 Growth Full Population (4)	2018-2040 Growth Equivalent Population (5)
Residential	0.94	162,030	151,903	183,533	172,062	21,503	20,159
Nonresidential							
Services	0.51	13,576	6,864	17,012	8,602	3,437	1,738
Manufacturing	0.58	10,717	6,223	11,180	6,493	464	269
Government	0.71	9,757	6,888	8,799	6,212	(958)	(676)
Healthcare	0.98	9,151	8,933	13,400	13,081	4,249	4,148
Retail Trade	2.00	7,727	15,481	7,326	14,677	(401)	(804)
Wholesale Trade	0.62	7,456	4,616	7,861	4,867	406	251
Construction & Resources	0.20	6,117	1,215	9,594	1,906	3,477	691
Accommodations & Food Service	1.04	4,425	4,601	6,050	6,292	1,626	1,690
TCU	0.60	4,369	2,623	4,806	2,886	437	263
FIRE	0.51	2,653	1,341	2,558	1,293	(95)	(48)
Education	0.54	899	482	1,313	703	413	221
Total	**N/A**	**N/A**	**211,172**	**N/A**	**239,074**	**N/A**	**27,902**

(1) From Appendix A Equivalent Population Coefficients.
(2) From Exhibits 1 and 3.
(3) Equivalent Population = Equivalent Population Coefficient x Full Population.
(4) 2018-2040 Growth Full Population = 2040 Full Population – 2018 Full Population.
(5) 2018-2040 Growth Equivalent Population = 2040 Equivalent Population – 2018 Equivalent Population.

The totals in Exhibit 4 provide the equivalent population for the purpose of development of park impact fees for Hayward. The total equivalent population for the base year (2018) is 211,172 and the horizon year (2040), is 239,074, therefore equivalent population growth between 2018 and 2040 is 27,902.

PARK IMPACT FEES

Overview

Impact fees for Hayward's parks use an inventory of the City's existing acreage and current equivalent population to determine the current level of service ratio for parks. The current level of service ratio is multiplied by the projected equivalent population growth to estimate the acres of parks needed to serve growth at the current level of service. The cost of park acquisition and development per acre is multiplied by the number of acres needed to serve growth at the current level of service to arrive at the investment in parks needed to serve growth. The investment needed for growth is then adjusted by the value of the remaining park in-lieu fee fund balance and estimated program administration costs to arrive at the investment to be paid by growth. The investment to be paid by growth is divided by the growth in equivalent population to arrive at the growth cost per equivalent population. The amount of the maximum allowable park impact fee is

determined by multiplying the growth cost per equivalent population by the equivalent population per unit for each type of development.

These steps are described below in the formulas, descriptions of variables, exhibits and explanations of calculations for parks impact fees. Throughout the chapter the term "person" is used as the short name that means equivalent population or equivalent person.

Formula 1: Parks Level of Service Ratio

The current level of service ratio is calculated by dividing the existing acreage of Hayward Area Recreation and Park District (HARD) parks in Hayward by the total current equivalent population in Hayward.

$$(1)\quad \begin{matrix}\textit{Existing Acres}\\ \textit{of Parks}\end{matrix} \div \begin{matrix}\textit{Current Equivalent}\\ \textit{Population}\end{matrix} = \begin{matrix}\textit{Current Level of}\\ \textit{Service Ratio}\end{matrix}$$

Equivalent population was described above and is explained in Appendix A. There is one new variable that requires explanation: (A) Existing Acres of Parks.

Variable (A): Existing Acres of Parks

The acreage of each park in Hayward, managed by HARD, is listed in Appendix B. The total existing parks acreage includes all existing parks and facilities in the following categories: Local Parks; Community Parks; Special Use Facilities; School Recreation Sites; and Linear Parks, Greenways and Trails. Appendix B additionally includes the total acreage in Hayward and the subtotal by category from the HARD Parks and Recreation Master Plan.

The total existing inventory of parks in the City of Hayward is 1,052.6 acres of parks. Exhibit 5 lists the total existing inventory of parks by category.

Exhibit 5. HARD Park Inventory in Hayward by Park Type, Acres, 2018

Type	Inventory
Local Parks	133.2
Community Parks	63.6
Special Use Facilities	232.4
School Recreation Sites	20.0
Linear Parks, Greenways and Trails	603.4
Total	**1,052.6**

Exhibit 6 lists the total existing inventory of parks and divides it by the current equivalent population of 211,172 (from Exhibit 4), divided by 1,000 to calculate the current level of service ratio of 4.98 acres of parks per 1,000 equivalent population.

Exhibit 6. Level of Service Ratio

Inventory		Current Equivalent Population		Level of Service Ratio
1,052.6 acres	÷	211,172	=	4.98 acres per 1,000 pop

Formula 2: Total Park Acres to Serve Growth

Impact fees must be related to the needs of growth. The first step in determining growth's needs is to calculate the total number of acres needed to serve growth with the same level of service ratio that benefits the current population. The acres of parks needed for growth are calculated by multiplying the level of service ratio by the equivalent population growth from 2018 to 2040 (divided by 1,000).

$$(2)\ \begin{matrix}\textit{Current Level of}\\ \textit{Service Ratio}\end{matrix} \times \begin{matrix}\textit{Growth of Equivalent}\\ \textit{Population}\end{matrix} = \begin{matrix}\textit{Park Acres}\\ \textit{to Serve Growth}\end{matrix}$$

There are no new variables used in Formula 2. Both variables were developed in previous formulas and exhibits.

Exhibit 7 shows the calculation of the total acres of parks needed for growth. The current level of service ratio is calculated in Exhibit 6. The growth in equivalent population is calculated in Exhibit 4. The result is that Hayward needs to add 139.1 acres of parks in order to serve the growth of 27,902 additional people who are expected to be added to the City's existing equivalent population.

Exhibit 7. Total Park Acres Needed for Growth

Level of Service Ratio		2018-2040 Growth		Total Park Acres Needed for Growth
4.98 acres per 1,000 pop	x	27,902	=	139.1

Formula 3: Park Acres Needed for Growth

The park acres needed for growth is calculated by subtracting any existing reserve capacity from the total park acres needed to serve growth.

$$(3)\ \begin{matrix}\textit{Total Park Acres}\\ \textit{Needed for Growth}\end{matrix} - \begin{matrix}\textit{Reserve}\\ \textit{Capacity}\end{matrix} = \begin{matrix}\textit{Park Acres Needed}\\ \textit{for Growth}\end{matrix}$$

Total Park Acres Needed for Growth was described in Formula 2. There is one new variable that requires explanation: (B) Reserve Capacity.

Variable (B): Reserve Capacity

Existing reserve capacity includes any park acres that HARD has acquired in the City of Hayward and is holding in reserve to serve the needs of growth.

HARD and the City of Hayward have acquired 54.9 acres for the future La Vista Park, which will serve the needs of growth through 2040.

Exhibit 8 shows the calculation of the acres of parks that are needed for growth. The total acres of parks needed for growth (from Exhibit 7) is reduced by the value of existing reserve capacity, 54.9 acres, and the result shows that 84.2 acres of additional parks are needed to serve future growth.

Exhibit 8. Park Acres Needed for Growth

Total Park Acres Needed for Growth		Reserve Capacity		Park Acres Needed for Growth
139.1	-	54.9	=	84.2

Formula 4: Investment Needed for Growth

The second step in determining growth's needs is to calculate the total investment in parks needed for growth, or the total cost of parks land acquisition and development to serve growth with the same level of service ratio that benefits the current population. The investment needed for growth is calculated by multiplying the park cost per acre by the number of acres needed to serve growth.

$$(4)\ \begin{matrix}Park\ Cost\\ per\ Acre\end{matrix} \times \begin{matrix}Park\ Acres\\ Needed\ for\ Growth\end{matrix} = \begin{matrix}Investment\ Needed\\ for\ Growth\end{matrix}$$

There is one new variable used in Formula 4 that requires explanation: (C) Park Cost per Acre.

Variable (C): Park Cost per Acre

The park impact fees are based on costs per acre for land acquisition and development that will be provided by the Hayward Area Parks and Recreation District. The calculations for the weighted average cost per acre for land acquisition and development are shown in Appendix C. Park acquisition costs are based on recent purchases for property appropriate for park development by category in the HARD service area. Park development costs are based on recent cost estimates for park development by category provided by HARD. Exhibit 9 details the weighted average cost per acre for park land acquisition and development.

Exhibit 9. Park Acquisition and Development Cost per Acre

	Cost per Acre
Land Acquisition	$690,098
Park Development	$1,370,832
Total	**$2,060,930**

Exhibit 10 shows the calculations for the investment needed for growth. The total park cost per acre for land acquisition and development (from Exhibit 9) is multiplied by the additional acres of parks needed for growth (from Exhibit 8) resulting in the investment needed for growth. The result is that the City, in coordination with the Hayward Area Recreation and Park District, will need to invest nearly $173.5. million in impact fee eligible parks acquisition and development to serve growth through 2040.

Exhibit 10. Investment Needed for Growth

Park Cost per Acre		Park Acres Needed for Growth		Investment Needed for Growth
$2,060,930	x	84.2	=	$173,492,446

Formula 5: Investment to be Paid by Growth

The future investment in parks that needs to be paid by growth may be reduced if the City has other revenues that it can invest in its parks and may include an adjustment for the administration costs of the park impact fee program. Additionally, the investment in parks that needs to be paid by growth must be reduced by the current park in-lieu fee fund balance that will be used to pay for the capital costs of parks facilities to serve growth.

The City of Hayward and the Hayward Area Recreation and Parks District have indicated that there are no other sources of funding available to pay for the eligible costs for park acquisition and development to serve growth. The investment to be paid by growth is calculated by adding the investment needed for growth, the total park in-lieu fee fund balance and program administration costs together to arrive at the investment to be paid by growth.

$$(5)\quad \begin{matrix}\textit{Investment}\\ \textit{Needed}\\ \textit{for Growth}\end{matrix} + \begin{matrix}\textit{Park In}-\textit{Lieu}\\ \textit{Fee Fund}\\ \textit{Balance}\end{matrix} + \begin{matrix}\textit{Park Impact}\\ \textit{Fee Program}\\ \textit{Administration}\end{matrix} = \begin{matrix}\textit{Investment}\\ \textit{to by Paid}\\ \textit{by Growth}\end{matrix}$$

There are two new variables in Formula 5 that require explanation: (D) Park In-Lieu Fee Fund Balance and (E) Park Impact Fee Program Administration.

Variable (D): Park In-Lieu Fee Fund Balance

The City of Hayward has a remaining fund balance in each of their five existing park in-lieu fee accounts. These existing funds will be used to pay for the park capital facilities to serve new development in Hayward. The total balance across all funds as reported by the City of Hayward is $8,664,918. The investment needed for growth must be reduced by the available park in-lieu fee fund balance.

Variable (E): Park Impact Fee Program Administration

Park impact fee program administration costs are estimated at 2% of total park costs for the administration of the park impact fee program, consistent with administration cost estimates used in many other California jurisdictions. Program administration costs are estimated by multiplying the investment needed for growth from Exhibit 10 by the 2% estimated for program administration, resulting in estimated program administration costs of nearly $3.5 million.

Exhibit 11 shows the calculation for the investment to be paid by growth. The investment needed for growth (from Exhibit 10), existing park in-lieu fee fund balance and program administration costs are summed together to arrive at the investment to be paid by growth of $168,297,377.

Exhibit 11. Investment to be Paid by Growth

	Park Investment
Investment Needed for Growth	$173,492,446
Park In-Lieu Fee Fund Balance	
Zone A	($2,064,920)
Zone B	($2,335,758)
Zone C	($2,681,902)
Zone D	($1,229,738)
Zone E	($352,599)
Total Available Park In-Lieu Fee Funds	*($8,664,918)*
Park Impact Fee Program Administration	$3,469,849
Investment to be Paid by Growth	**$168,297,377**

Formula 6: Growth Cost per Equivalent Person

The growth cost per equivalent person is calculated by dividing the investment in parks that is to be paid by growth by the amount of equivalent population growth.

$$(6)\ \frac{\textit{Investment to be Paid by Growth}}{\textit{Growth of Equivalent Population}} = \textit{Growth Cost per Equivalent Population}$$

There are no new variables used in Formula 6. Both variables were developed in previous formulas.

Exhibit 12 shows the calculation of the cost per equivalent person for parks that needs to be paid by growth. The investment in parks to be paid by growth (from Exhibit 11) is divided by the growth in equivalent population (from Exhibit 4). The result shows the cost for parks to be paid by growth is $6,031.64 per equivalent person.

Exhibit 12. Growth Cost per Equivalent Person

Investment to be Paid by Growth		2018-2040 Growth		Growth Cost per Equivalent Population
$168,297,377	÷	27,902	=	$6,031.64

Formula 7: Maximum Allowable Impact Fee per Unit of Development

The maximum allowable amount to be paid by each new development unit depends on the equivalent population coefficient and the population density by development type. The cost per unit of development is calculated by multiplying the growth cost per equivalent person by the equivalent population per unit for each type of development.

There is one new variable used in Formula 7 that requires explanation: (F) equivalent population per unit.

Variable (F): Equivalent Population per Unit

The equivalent population per unit is calculated by multiplying the equivalent population coefficient by the number of persons per unit of development, as shown in Appendix A. For residential development this is the number of persons per dwelling unit estimated from the U.S. Census American Community Survey 5-Year Estimates 2013-2017 for the City of Hayward. For nonresidential development, this is employees per square foot from the U.S. Energy Information Administration's Commercial Buildings Energy Consumption Survey.

Exhibit 13 shows the calculation of the maximum allowable parks impact fee per unit of development. The growth cost per equivalent person of $6,031.64 from Exhibit 12 is multiplied by the equivalent population per unit (from Exhibit A8) to calculate the impact fee per unit of development for parks.

Exhibit 13. Maximum Allowable Park Impact Fee per Unit of Development

Type of Development	Growth Cost per Equivalent Population		Equivalent Population per Unit			Park Impact Fee per Unit
Residential						
Single-Family	$6,031.64	x	3.33	dwelling unit	=	$20,056.11
Multifamily	$6,031.64	x	2.72	dwelling unit	=	$16,414.66
Mobile Home and Other	$6,031.64	x	2.20	dwelling unit	=	$13,280.05
Nonresidential						
Office/Other Commercial	$6,031.64	x	0.0013	square foot	=	$7.88
Retail	$6,031.64	x	0.0016	square foot	=	$9.72
Industrial	$6,031.64	x	0.0001	square foot	=	$0.78
Government	$6,031.64	x	0.0015	square foot	=	$9.00
Education	$6,031.64	x	0.0005	square foot	=	$2.87

APPENDIX A. EQUIVALENT POPULATION COEFFICIENTS AND EQUIVALENT POPULATION PER UNIT

What is "Equivalency"

When governments analyze things that are different from each other, but which have something in common, they sometimes use "equivalency" as the basis for their analysis.

For example, many water and sewer utilities calculate fees based on an average residential unit, then they calculate fees for business users on the basis of how many residential units would be equivalent to the water or sewer service used by the business. This well-established and widely practiced method uses "equivalent residential unit" (ERUs) as the multiplier that uses the rate for one residence to calculate rates for businesses. If a business needs a water connection that is double the size of an average house, that business is 2.0 ERUs, and would pay fees that are 2.0 times the fee for an average residential unit.

Another use of "equivalency" that is used in public sector organizations is "full time equivalent" (FTE) employees. One employee who works full-time is 1.0 FTE. A half-time employee is 0.5 FTE. By adding up the FTE coefficients of all part-time employees, the total is the FTE (full-time equivalent) of all the full and part-time employees.

Equivalency and Park Impact Fees

Equivalency can be used to develop park impact fees that apply to new nonresidential development as well as residential development. Equivalent population coefficients for park impact fees use the same principles as ERUs or FTEs to measure differences among residential population and different kinds of businesses in their availability to benefit from Hayward's parks. They document the nexus between parks and development by quantifying the differences among different categories of park users.

The analysis that calculates the equivalent population coefficients takes into account several factors and reports the result as a statistic that allows each category of business to include its share of growth based on the "equivalent population" that it generates. The "equivalency" calculation recognizes that employees and visitors have less time in Hayward to benefit from Hayward's parks (in the same way that part-time employees spend less time on the job than full-time employees).

The equivalent population coefficients are used in two ways. First, they are multiplied by the number of employees in different types of businesses in Hayward to count employees and visitors to businesses as "equivalent

population" in Hayward. This provides a total population of residents, employees and visitors that will be used to calculate the park value per equivalent population. Second, the adjusted park cost per equivalent population is multiplied by the equivalent population coefficients for each business type and the number of persons per dwelling unit to calculate the impact fee for each type of development.

Calculation of Equivalent Population Coefficients for Park Impact Fees

There are two parts to the equivalent population coefficient: (1) employees and residents and (2) visitors.

Exhibit A1[1] presents the data for the following factors used in analyzing employees and residents: the number of days per week and hours per day that different types of locations are typically in use, the percent of hours that the populations are typically at the location and the resulting number of hours per week that each employee or resident is in their residential or business location in Hayward and therefore proximate to Hayward's parks.

[1] The original version of Exhibits A1 through A3 were developed by Dr. Arthur C. Nelson, a leading scholar and researcher in the field of impact fees. The table appeared in Nelson's 2004 *Planner's Estimating Guide.* The underlying employee data has been updated to the 2008 edition of *Trip Generation* by the Institute of Transportation Engineers.

Exhibit A1. Resident and Employee Hours in Location

Land-Use Category	Residents and Employees			
	Days per Week at Location (1)	Hours per Day at Location (1)	Percent of Time at Location (1)	Hours in Location per Person (2)
Residential Population	7	15.00	75%	78.75
Employee Population				
Services	5	9.00	80%	36.00
Manufacturing	5	9.00	100%	45.00
Government	5	9.00	80%	36.00
Healthcare	7	9.00	100%	63.00
Retail Trade	7	9.00	100%	63.00
Wholesale Trade	5	9.00	100%	45.00
Construction & Resources	5	9.00	25%	11.25
Accommodations & Food Service	7	9.00	100%	63.00
TCU (3)	5	9.00	100%	45.00
FIRE (4)	5	9.00	80%	36.00
Education	5	9.00	100%	45.00

(1) Assumptions from Planner's Estimating Guide.
(2) Hours in Location per Person = (# days per week x # hours per day x % of time at location)
(3) FIRE = Finance, Insurance and Real Estate
(4) TCU = Transportation, Communication and Utilities

Exhibit A2 presents the data for the following factors used in analyzing visitors: the number of days per week that different types of businesses are typically open, the number of hours that visitors are typically at the business location, the number of visitors per employee at different types of businesses and the resulting number of visitor hours per employee that visitors are in the business location in Hayward and therefore proximate to Hayward's parks.

Exhibit A2. Visitor Hours in Location (per Employee)

Land-Use Category	Visitors		
	Hours per Day at Location (1)	Visitors per Employee (2)	Visitor Hours in Location per Employee (3)
Residential Population	na	na	na
Employee Population			
Services	1	1.2948	6.4740
Manufacturing	1	0.7560	3.7800
Government	1	4.6605	23.3025
Healthcare	2	1.3572	19.0008
Retail Trade	1	15.0424	105.2968
Wholesale Trade	1	1.4004	7.0020
Construction & Resources	1	1.0872	5.4360
Accommodations & Food Service	1	3.4788	24.3516
TCU	1	1.0872	5.4360
FIRE	1	1.2948	6.4740
Education	na	na	na

(1) Assumptions from Planner's Estimating Guide.
(2) Visitors per Employee from Planner's Estimating Guide. This does not include tourists for which no data is available that measures tourists per employee by type of business.
(3) Visitor Hours in Location per Employee = (# days per week x # hours per day x # visitors per employee).

Exhibit A3 presents the last step in calculating the equivalent population coefficient for different types of businesses and residential populations. Employee hours are added to visitor hours per employee for each type of business. The total is divided by 84 hours per week. Parks are considered a "daytime" public facility that is assumed to be available 12 hours per day, 7 days per week for a total of 84 hours[2]. The result of this calculation is the daytime equivalent population coefficient for each type of business and resident. The daytime equivalent population per unit is used in Exhibit 4 to calculate the current and forecasted and growth in equivalent population.

[2] By way of comparison, police and fire facilities are considered to be "24-hour" public facilities, therefore 24 x 7= 168 hours for their equivalent population coefficient calculations.

Exhibit A3. Equivalent Population Coefficients

Land-Use Category	Total		
	Total Hours in Location (1)	Daytime Hours (2)	Daytime Equivalent Population Coefficient (3)
Residential Population	78.7500	84	0.9375
Employee Population			
Services	42.4740	84	0.5056
Manufacturing	48.7800	84	0.5807
Government	59.3025	84	0.7060
Healthcare	82.0008	84	0.9762
Retail Trade	168.2968	84	2.0035
Wholesale Trade	52.0020	84	0.6191
Construction & Resources	16.6860	84	0.1986
Accommodations & Food Service	87.3516	84	1.0399
TCU	50.4360	84	0.6004
FIRE	42.4740	84	0.5056
Education	45.0000	84	0.5357

(1) Total Hours in Location = Hours in Location per Person (from Exhibit A1) + Visitor Hours in Location per Employee (from Exhibit A2).

(2) Daytime Equivalent Population Coefficient = Total Hours in Location per Employee ÷ Daytime Hours (84).

As noted previously, the equivalent population coefficient is multiplied by the employment and population in Hayward to calculate the total equivalent population in Hayward as shown in Exhibit 4.

Calculation of Equivalent Population per Unit

In order to convert the growth cost per equivalent person to the maximum allowable impact fee rate per unit of development, it is necessary to calculate a measure of equivalent population per unit of development. Exhibit A8 shows the calculation of the equivalent population per unit.

For the first step in the equivalent population per unit, the equivalent population coefficients for nonresidential development are combined into five more general weighted average land use categories. Exhibit A4 presents the calculation of the weighted coefficients for each land use category.

Exhibit A4. Weighted Average Equivalent Population Coefficients

Land-Use Category	Growth of Equivalent Population (1)	% Total (2)	Coefficient (3)	Weighted Coefficient (4)
Services	1,738	23.1%	0.5056	0.1167
Healthcare	4,148	55.1%	0.9762	0.5379
Accommodations & Food Service	1,690	22.5%	1.0399	0.2335
FIRE	(48)	-0.6%	0.5056	-0.0032
Office/Other Commercial	**7,529**	**100.0%**		**0.8849**
Retail (5)				**2.0035**
Manufacturing	269	3.6%	0.5807	0.0208
Wholesale Trade	251	3.3%	0.6191	0.0207
Construction & Resources	691	9.2%	0.1986	0.0182
TCU	263	3.5%	0.6004	0.0209
Industrial	**1,474**	**19.6%**		**0.0806**
Government (5)				**0.7060**
Education (5)				**0.5357**

(1) From Exhibit 4.
(2) Percent Total = Growth of Equivalent Population ÷ Total Growth of Equivalent Population by Land Use Category.
(3) From Exhibit A3.
(4) Weighted Coefficient = % Total x Coefficient. The weighted coefficient by Land Use Category is the sum of individual subcategory weighted coefficients.
(5) Coefficients for Retail, Government and Education are from Exhibit A3.

The weighted average equivalent population coefficients by land use category from Exhibit A4 and the residential population coefficient from Exhibit A3 are multiplied by a measure of population per unit.

The measure of population per unit for residential development types is the number of persons per dwelling unit, calculated for single family, multifamily and mobile home dwelling units using the number of occupied dwelling units by unit type and estimated population by unit type from the 2013-2017 American Community Survey 5-Year Estimates for Hayward, California, shown in Exhibit A5. Tables from the American Community Survey used in the analysis include Selected Housing Characteristics and Tenure by Household Size by Units in Structure.

Exhibit A5. Persons per Dwelling Unit

	Persons per Dwelling Unit
Single-family	3.55
Multifamily	2.90
Mobile Home and Other	2.35
Total	**3.27**

The measure of population per unit for nonresidential development is the square feet per employee for each type of development based on the U.S. Energy Information Administration's Commercial Buildings Energy Consumption Survey[3], converted to square feet per employee by industry, shown in Exhibit A6.

Exhibit A6. Square Feet per Employee and Employees per Square Foot

	Square Feet per Employee	Employees per Square Foot (1)
Services (2)	780	0.0013
Manufacturing (3)	1,193	0.0008
Government (4)	473	0.0021
Healthcare (5)	546	0.0018
Retail Trade (6)	1,243	0.0008
Wholesale Trade (7)	1,843	0.0005
Construction & Resources (4)	473	0.0021
Accommodations & Food Service (8)	1,212	0.0008
TCU (4)	473	0.0021
FIRE (4)	473	0.0021
Education (9)	1,124	0.0009
Weighted Average (10)	**900**	**0.0011**

(1) Employees per square foot = 1 ÷ square feet per employee.
(2) Services is the average square feet per employee from the Services and Office activity categories.
(3) Manufacturing is matched to the square feet per employee from the Other category.
(4) Government, Construction & Resources, TCU and FIRE were matched to the Office activity category.
(5) Healthcare is matched to the Health Care activity category.
(6) Retail Trade is matched with the Mercantile category.
(7) Wholesale Trade is matched with the Warehouse and Storage activity category.
(8) Accommodations & Food Service is the average of the Lodging and Food Service activity categories.
(9) Education is matched to the Education category.
(10) The weighted average square feet per employee is weighted by current employment by industry from Exhibit 3.

The square feet per employee are combined into give more general land use categories, following the desired structure for the impact fee rates as shown in Exhibit A7. The employees per square feet (from Exhibit A6) are combined into a weighted average square feet per employee, weighted on equivalent population growth by category from Exhibit 4.

[3] Sourced from the U.S. Energy Information Administration Commercial Buildings Energy Consumption Survey, https://www.eia.gov/consumption/commercial/data/2012/bc/cfm/b1.php.

Exhibit A7. Weighted Average Employees per Square Foot

	Growth of Equivalent Population (1)	% Total (2)	Employees per Square Foot (3)	Weighted Employees per Square Foot (4)
Services	1,738	23.1%	0.0013	0.0003
Healthcare	4,148	55.1%	0.0018	0.0010
Accommodations & Food Service	1,690	22.5%	0.0008	0.0002
FIRE	(48)	-0.6%	0.0021	0.0000
Office/Other Commercial	**7,529**	**100.0%**		**0.0015**
Retail (5)				**0.0008**
Manufacturing	269	18.3%	0.0008	0.0002
Wholesale Trade	251	17.0%	0.0005	0.0001
Construction & Resources	691	46.9%	0.0021	0.0010
TCU	263	17.8%	0.0021	0.0004
Industrial	**1,474**	**100.0%**		**0.0016**
Government (5)				**0.0021**
Education (5)				**0.0009**

(1) From Exhibit 4.
(2) Percent Total = Growth of Equivalent Population ÷ Total Growth of Equivalent Population by Land Use Category
(3) From Exhibit A6.
(4) Weighted Employees per Square Foot = % Total x Employees per Square Foot. Weighted employees per square foot by Land Use Category is the sum of individual subcategory weighted employees per square foot.
(5) Employees per Square Foot for Retail, Government and Education are from Exhibit A6.

Exhibit A8 shows the calculation for the equivalent population per unit. The equivalent population coefficient, from Exhibit A4 is multiplied by the population per unit from Exhibits A5 and A7, resulting in the equivalent population per unit.

Exhibit A8. Equivalent Population per Unit

Type of Development	Equivalent Population Coefficient (1)	Population per Unit (2)	Unit	Equivalent Population per Unit (3)
Residential				
Single-Family	0.9375	3.55	dwelling unit	3.33
Multifamily	0.9375	2.90	dwelling unit	2.72
Mobile Home and Other	0.9375	2.35	dwelling unit	2.20
Nonresidential				
Office/Other Commercial	0.8849	0.0015	square foot	0.0013
Retail	2.0035	0.0008	square foot	0.0016
Industrial	0.0806	0.0016	square foot	0.0001
Government	0.7060	0.0021	square foot	0.0015
Education	0.5357	0.0009	square foot	0.0005

(1) Equivalent Population Coefficient from Exhibit A4.
(2) Population per unit from Exhibits A5 and A7.
(3) Equivalent Population per Unit = Equivalent Population Coefficient x Population per Unit.

The equivalent population per unit is multiplied by the growth cost per equivalent person in Exhibit 12 to calculate the maximum allowable park impact fee rates for residential and nonresidential development in Hayward.

APPENDIX B. INVENTORY OF EXISTING PARKS

The 2019 Hayward Area Recreation and Park District Parks Master Plan provides a detailed inventory of existing acres throughout the HARD service area, including a detailed inventory of parks in the City of Hayward as of 2018. The parks system in Hayward currently consists of 1,052.6 acres of parks in total. This includes 133.2 acres of Local Parks, 63.6 acres of Community Parks, 232.4 acres of Special Use Facilities, 20.0 acres of School Recreation Sites and 603.4 acres of Linear Parks, Greenways and Trails.

Exhibit B1. HARD Local Parks Inventory in the City of Hayward, 2018

Park Name	Acres
Sorensdale Park	12.7
J.A. Lewis Park	12.6
Centennial Park	11.6
Bidwell Park	10.5
Cannery Park	8.9
Birchfield Park	5.8
Gordon E. Oliver Eden Shores Park	5.6
Old Highlands Park	5.6
Canyon View Park	5.4
Rancho Arroyo Park	4.8
Palma Ceia Park	4.5
Christian Penke Park	4.2
Ruus Park	4.1
College Heights Park	3.9
Greenwood Park	3.5
Eldridge Park	3.4
Silver Star Veterans Park	3.3
Jalquin Vista Park	3.2
Gansberger Park	2.9
Longwood Park	2.9
Fairway Greens Park	2.5
Spring Grove Park	2.3
Stonybrook Park	2.3
Twin Bridges Park	2.1
Stratford Village Park	1.9
Schafer Park	1.3
Bechtel Mini Park	0.8
Haymont Mini Park	0.4
La Placita Park	0.2
Subtotal Local Parks	***133.2***

Detailed parks inventory from Table 3-1 of the Draft HARD Parks and Recreation Master Plan.

Exhibit B2. HARD Community Parks, Special Use Facilities, School Recreation Sites and Linear Parks, Greenways and Trails Inventory in the City of Hayward, 2018

Park Name	Acres
Kennedy Park	14.5
Memorial Park	2.9
Mt. Eden Park	14.1
Southgate Park	8.8
Tennyson Park	9.6
Weekes Park	13.7
Subtotal Community Parks	***63.6***
Alden E. Oliver Sports Park	25.6
Children's Park at Giuliana Plaza	0.2
Douglas Morrison Theater	0.5
HARD District Office	3.6
Hayward Area Senior Center	0.2
Hayward Community Gardens	4.8
Hayward Plunge	1.2
Japanese Gardens	3.6
Mission Hills of Hayward Golf Course	57.8
Shoreline Interpretive Center	0.4
Skywest Golf Course	126.5
Southgate Community Center	0.3
Sunset Park/Swim Center	6.7
Weekes Park Community Center	1.0
Subtotal Special Use Facilities	***232.4***
Stonebrae Elementary School	9.1
Bret Harte Play Field	5.0
El Rancho Verde Park	3.3
Brenkwitz High School	2.6
Subtotal School Recreation Sites	***20.0***
Eden Greenway	36.1
Greenbelt Riding & Hiking Trail	148.0
Hayward Plunge Greenway Trail	30.4
Hayward Shoreline Open Space and Trails	349.0
Nuestro Parquecito	2.3
Taper Park	37.6
Subtotal Linear Parks, Greenways and Trails	***603.4***
Total	**1,052.6**

Detailed parks inventory from Table 3-1 of the Draft HARD Parks and Recreation Master Plan.

APPENDIX C. PARKS LAND ACQUISITION AND DEVELOPMENT COST PER ACRE

Park impact fees are based on a total cost of parks that are needed to serve growth with the same level of service ratio that benefits the current population. In order to provide a defensible and accurate estimate for the cost of park land acquisition and park development cost per acre, the Hayward Area Recreation and Park District provided information on recent land purchases, as well as recent cost estimates for park development, by park category, detailed in Exhibits C1 and C2. All acquisition and development costs for previous years are adjusted to reflect 2019 dollars using a 3% inflation rate, as provided by HARD staff.

Local Parks, Community Parks, Special use Facilities and School Recreation Sites are combined into a single category for the costs of land acquisition. HARD staff provided feedback that the types of land required for these three categories are of parks are similar. Linear Parks, Greenways and Trails have very different acquisition costs, as demonstrated by the acquisition cost for the Valley View property.

Exhibit C1. Parks Land Acquisition Cost per Acre

Property	City	Acquisition Cost (1)	Acreage	Cost per Acre (2)
Local Parks, Community Parks, Special Use Facilities and School Recreation Sites				
Bidwell School Property	Hayward	$6,300,000	5.3	$1,188,679
Mateo Properties	San Leandro	$2,700,000	1.4	$1,888,112
Via Toledo	San Lorenzo	$2,262,271	2.0	$1,148,361
Boston Road Property	Hayward	$788,075	1.0	$788,075
Average Cost per Acre				**$1,253,307**
Linear Parks, Greenways and Trails				
Valley View (EMBUD property)	Castro Valley	$6,499,632	24.0	$270,818

(1) Data on purchase price provided by HARD staff. This reflects the purchase price for each property inflated to 2019 dollars based on a 3% inflation rate provided by HARD staff.
(2) Cost per acre = Acquisition Cost ÷ Acreage.

Exhibit C2. Parks Development Cost per Acre

Park	City	Acreage	Cost per Acre (1)
Local Parks			
Via Toledo Park (2)	San Lorenzo	2.0	$2,100,000
West Evergreen (3)	San Jose	1.0	$1,223,000
Stojanovich Family Park (3)	Campbell	1.1	$1,033,094
Commodor (3)	San Jose	2.5	$1,012,186
N Rengstorff (3)	Mountain View	1.0	$1,008,000
31 St & Alum Rock (3)	San Jose	1.7	$834,300
Porto Park (3)	Elk Grove	1.3	$546,364
Average Cost per Acre			**$1,108,135**
Community Parks			
Memorial Park (Design & Construction) (4)	Hayward	2.9	$1,738,943
Del Monte (3)	San Jose	4.2	$1,123,323
San Lorenzo Community Park Renovation (5)	San Lorenzo	30.9	$1,118,719
Weekes Community Park Renovation (6)	Hayward	13.7	$990,633
Creekside Sports Park (3)	Los Gatos	3.0	$785,686
McClatchy Park (3)	Sacramento	3.8	$732,661
Vista Montana (3)	San Jose	5.0	$668,669
Springlake N3 (3)	Santa Rosa	7.0	$484,078
La Vista Park (6)	Hayward	54.9	$390,715
Cordelia Park - Phase 3 (3)	Fairfield	8.5	$398,845
Corderos Park (3)	Vacaville	7.2	$227,287
Valley Oak Park (3)	Sacramento	9.3	$232,319
Average Cost per Acre			**$740,990**
Special Use Facilities			
Hayward Area Senior Center Renovation (7)	Hayward	0.26	$15,480,845
Hayward Community Gardens - Phase 1 (2)	Hayward	2.0	$619,756
Kennedy Park (2)	Hayward	13.3	$1,353,383
Average Cost per Acre			**$5,817,995**
School Recreation Site			
Canyon Middle School Sports Complex (8)	Castro Valley		$764,909
Creekside Middle School Sports Complex (8)	Castro Valley		$764,909
El Rancho Verde Park (6)	Hayward	3.3	$1,655,647
Average Cost per Acre			**$1,061,822**
Trails *(9)*			
Pen Creek - Reach 1 (3)		0.3	$3,132,899
Iron Horse Trail (3)		0.4	$3,928,709
San Tomas Spur (3)		1.1	$3,388,770
Cross Alameda Trail (10)		0.5	$6,490,440
Wavecrest Trail (10)		0.3	$1,615,935
Average Cost per Acre			**$3,711,351**

(1) Cost per Acre provided by HARD staff. Details for each specific project are noted below. All development costs are converted to 2019 dollars from the year of development assuming a

3% inflation rate provided by HARD staff.

(2) Data provided by HARD staff.

(3) Data provided by HARD staff, sourced from Callander Associates Landscape Architecture.

(4) Data sourced from the adopted 2017-2020 CIP, inflated to 2019 dollars. This includes only the portion of the project focused on design and construction of new improvements and does not include the costs for a renovation master plan.

(5) Data sourced from the adopted 2017-2020 CIP, inflated to 2019 dollars. This includes only the portion of the project focused on design and construction of new improvements as outlined in Phase 1 and Phase 2.

(6) Data sourced from the adopted 2017-2020 CIP, inflated to 2019 dollars. This includes only the portion of the project focused on design and construction of new improvements.

(7) Data provided by HARD staff. Costs were provided per square foot, which were converted to acres for consistency.

(8) Cost per acre estimates provided by HARD staff. The costs provided were used to develop the overall cost estimates in the 2017-2020 adopted CIP, inflated to 2019 dollars using an assumed 3% inflation rate provided by HARD staff.

(9) Cost for trails provided in cost per linear foot. Linear feet were converted to acres assuming an average trail width of six feet.

(10) Data provided by HARD staff, sourced from PlaceWorks Inc.

The average cost per acre for parks acquisition and development by category are weighted by current acres by type in order to arrive at a development cost reflective of the cost for parks acquisition and development to serve growth at the same level of service as the existing population. Exhibits C3 and C4 demonstrate the calculations to arrive at a weighted average cost per acre for parks acquisition and development.

Exhibit C3. Weighted Average Park Acquisition Cost per Acre

Park Type	Current Acres (1)	% Total (2)	Average Acquisition Cost per Acre (3)	Weighted Average Acquisition Cost per Acre (4)
Local Parks, Community Parks, Special use Facilities and School Recreation Sites	449.2	42.7%	$1,253,307	$534,852
Linear Parks, Greenways and Trails	603.4	57.3%	$270,818	$155,246
Total	**1,052.6**	**100.0%**		**$690,098**

(1) Current Acres are from Exhibit 6.

(2) Percent Total = Current Acres by Category ÷ Total Acres.

(3) Average Acquisition Cost per Acre from Exhibit C1.

(4) Weighted Average Acquisition Cost per Acre = % Total x Average Acquisition Cost per Acre. Total Weighted Average Acquisition Cost per Acre is the sum of Weighted Average Cost per Acre by category.

Exhibit C4. Weighted Average Park Development Cost per Acre

Park Type	Current Acres (1)	% Total (2)	Average Development Cost per Acre (3)	Weighted Average Development Cost per Acre (4)
Local Parks	133.2	12.7%	$1,108,135	$140,228
Community Parks	63.6	6.0%	$740,990	$44,772
Special Use Facilities	232.4	22.1%	$5,817,995	$1,284,535
School Recreation Sites	20.0	1.9%	$1,061,822	$20,175
Trails (5)	6.1	0.6%	$3,711,351	$21,350
Open Space (6)	597.3	56.7%	$0	$0
Total	**1,052.6**	**100.0%**		**$1,370,832**

(1) Current Acres from Exhibit 6.

(2) Percent Total = Current Acres by Category ÷ Total Acres.

(3) Average Development Cost per Acre from Exhibit C2.

(4) Weighted Average Development Cost per Acre = % Total x Average Development Cost per Acre. Total Weighted Average Acquisition Cost per Acre is the sum of Weighted Average Cost per Acre by category.

(5) Trails represent the portion of the Linear Parks, Greenways and Trails category that are developed as trails. Estimates are based on the miles of trails for each park within the category, converted to acres based on an assumed average trail width of six feet.

(6) Open Space represents the remaining undeveloped portion of the Linear Parks, Greenways and Trails category. Development costs are assumed at $0 per acre.