

Appendix J3 Parking Study

Appendices

This page intentionally left blank.



Ahead of the Curve
in creative parking solutions

PARKING STUDY

CITY OF HOPE CAMPUS PLAN

DUARTE, CALIFORNIA

Prepared for:
CITY OF HOPE

MARCH 2015
REVISED: JUNE 2016



WALKER
PARKING CONSULTANTS

PARKING STUDY

CITY OF HOPE CAMPUS PLAN

DUARTE, CALIFORNIA

Prepared for:
CITY OF HOPE

MARCH 2015
REVISED: JUNE 2016



WALKER
PARKING CONSULTANTS



TABLE OF CONTENTS

EXECUTIVE SUMMARY	III
INTRODUCTION	1
BACKGROUND	1
STUDY AREA	1
DEFINITIONS OF TERMS	6
MUNICIPAL AND ADA PARKING REQUIREMENTS	7
CITY OF DUARTE PARKING STANDARDS	7
CITY OF IRWINDALE PARKING STANDARDS	8
CITY OF DUARTE BICYCLE PARKING REQUIREMENTS	11
CITY OF IRWINDALE BICYCLE PARKING REQUIREMENTS	12
ADA REQUIREMENTS	12
SUPPLY/DEMAND ANALYSIS METHODOLOGY	14
PARKING SPACE INVENTORY AND EXISTING CONDITIONS ANALYSIS	14
EFFECTIVE PARKING SUPPLY	16
PARKING OCCUPANCY	19
SURVEY DAY ACTIVITY	21
BED CENSUS	21
OUTPATIENT VISITS	21
STAFF	21
PHYSICIANS	22
USER GROUP DEMAND RATIOS	22
2015 DESIGN DAY PARKING DEMAND	23
2015 DESIGN DAY PARKING ADEQUACY	24
IMPACT OF FOOTHILL GOLD LINE EXTENSION	25
FUTURE CONDITIONS SUPPLY/DEMAND AND CODE-BASED ANALYSES	26
2020 DESIGN DAY PARKING DEMAND	27
2020 DESIGN DAY CODE-REQUIRED PARKING	28
2020 DESIGN DAY PARKING SUPPLY BASED ON PHASING PLAN DEVELOPMENT SCENARIO	30
2020 DESIGN DAY PARKING ADEQUACY	33
2025 DESIGN DAY PARKING DEMAND	33
2025 DESIGN DAY CODE-REQUIRED PARKING	34
2025 DESIGN DAY PARKING SUPPLY BASED ON PHASING PLAN DEVELOPMENT SCENARIO	37
2025 DESIGN DAY PARKING ADEQUACY	39
2030 DESIGN DAY PARKING DEMAND	39
2030 DESIGN DAY CODE-REQUIRED PARKING	40
2030 DESIGN DAY PARKING SUPPLY BASED ON PHASING PLAN DEVELOPMENT SCENARIO	43
2030 DESIGN DAY PARKING ADEQUACY	44
2035 DESIGN DAY PARKING DEMAND	45
2035 DESIGN DAY CODE-REQUIRED PARKING	46
2035 DESIGN DAY PARKING SUPPLY BASED ON PHASING PLAN DEVELOPMENT SCENARIO	48
2035 DESIGN DAY PARKING ADEQUACY	49
PARKING SUPPLY TRIGGERS AND PARKING DEMAND MONITORING	51
RECOMMENDED PARKING SUPPLY PLAN	52



LIST OF TABLES AND FIGURES

Table ES- 1: Current and Future Population Statisticsv

Table ES- 2: Summary of Parking Adequacy..... vi

Table ES- 3: Analyzed Project Phasing Order.....viii

Table 1: City of Duarte Parking Requirements – Current DDC8

Table 2: City of Irwindale Municipal Code Parking Requirements8

Table 3: COH Parking Requirements for Existing Uses in Duarte Based on DDC9

Table 4: COH Parking Requirements for Existing Uses in Irwindale Based on IMC.....10

Table 5: COH Parking Requirements for Existing Uses in Duarte (Without Grandfathering)11

Table 6: General ADA Parking Requirements (non-Hospital/outpatient)13

Table 7: City of Hope Parking Space Inventory (February/December 2014)15

Table 8: Existing City of Hope Parking Inventory Compared to Existing Parking Requirements16

Table 9: Effective Parking Supply18

Table 10: Parking Occupancy – Thursday February 13, 2014.....19

Table 11: Peak Parking Occupancy (%).....20

Table 12: Peak Parking Occupancy by User Group.....21

Table 13: Survey Day Parking Demand and Demand Ratios23

Table 14: 2015 Design Day Parking Demand.....24

Table 15: Design Day Parking Adequacy.....24

Table 16: 2015 to 2035 Hospital Population Statistics26

Table 17: Projected 2020 Design Day Parking Demand28

Table 18: COH Parking Requirements Based on Illustrative Development Scenario Phase 1 Development
& City of Duarte/City of Irwindale Code29

Table 19: COH Bicycle Parking Requirements Based on Illustrative Development Scenario Phase 1 Development
& City of Duarte/City of Irwindale Code30

Table 20: Projected 2020 Design Day Parking Supply32

Table 21: Projected 2020 Design Day Adequacy33

Table 22: Projected 2025 Design Day Parking Demand34

Table 23: COH Parking Requirements Based on Illustrative Development Scenario Phase 2 Development
& City of Duarte/City of Irwindale Code36

Table 24: COH Bicycle Parking Requirements Based on Illustrative Development Scenario Phase 2 Uses & City of Duarte Code.....37

Table 25: Projected 2025 Design Day Parking Supply38

Table 26: Projected 2025 Design Day Adequacy39

Table 27: Projected 2030 Design Day Parking Demand40

Table 28: COH Parking Requirements Based on Illustrative Development Scenario Phase 3 Development
& City of Duarte/City of Irwindale Code42

Table 29: COH Bicycle Parking Requirements Based on Illustrative Development Scenario Phase 3 Uses & City of Duarte Code.....43

Table 30: Projected 2030 Design Day Parking Supply44

Table 31: Projected 2030 Design Day Adequacy45

Table 32: Projected 2035 Design Day Parking Demand46

Table 33: COH Parking Requirements Based on Illustrative Development Scenario Phase 4 Development
& City of Duarte/City of Irwindale Code47

Table 34: COH Bicycle Parking Requirements Based on Illustrative Development Scenario Phase 4 Uses & City of Duarte Code.....48

Table 35: Projected 2035 Design Day Parking Supply49

Table 36: Projected 2035 Design Day Adequacy50

Table 37: Proposed Parking Supply Ratios for Net New Construction52

Table 38: Proposed Order of Project Phasing53

Figure 1: Location Map2

Figure 2: Duarte/Irwindale Jurisdictional Boundary3

Figure 3: City of Hope Parking Facilities - Existing5

Appendix A: Sample Hospital Parking Requirements

EXECUTIVE SUMMARY

Walker Parking Consultants conducted a parking supply/demand study for the City of Hope ("COH") campus for the proposed City of Hope Campus Plan (the "Project"), a potentially four-phase, 20-year development project at the COH campus. The goal of Walker's assignment was to examine current parking conditions and project future parking needs over the course of the Project. Based on Walker's parking supply and demand analysis, on an absolute level, the projected parking supply of 5,453± parking spaces is 52 spaces greater than the projected parking demand of 5,401± parking spaces; however, when factoring in effective supply, and the need to create distinct parking areas to protect convenient parking for certain user groups (patients/visitors, physicians), an effective parking deficit of 212± spaces is projected at the end of the Project's 20+-year horizon based on the potential phasing plan for the Project's illustrative development scenario discussed in the Project's draft Specific Plan. This phasing plan assumes the construction of two parking structures on the COH campus (an over 1,700 space structure on the eastern portion of Lot A, and a 1,230 space parking structure in between Lots E and F), enlargement of Lot G and the 2144 Buena Vista Lot, as well as the loss or reduction in size of several existing lots for construction of new facilities, additional landscaping and pedestrian linkage, and improved internal circulation provided by an improved Campus Loop Road.

COH provides a home for two interrelated entities, the City of Hope National Medical Center, which runs an acute-care hospital facility licensed for 217 patient beds, and the Beckman Research Institute of the City of Hope ("BRI"), which is City of Hope's biological research arm that enables close interaction between leading scientists and City of Hope physicians. In anticipation of the projected increase in demand generated by steady growth of the Center's operations over the course of the planning horizon, COH retained Walker Parking Consultants to perform a parking study to assist in the development of a plan to provide solutions to the current and future parking situation on campus. The parking study includes the following:

- City Parking Code & ADA Requirement Analysis
- Parking Supply and Demand Analysis
- Determination of Parking Supply Triggers

During a February 13, 2014 site visit, Walker collected parking inventory and occupancy data to determine the adequacy of the existing parking system in terms of its ability to accommodate parking demand. Based on the results of our survey, there are currently 3,354 available parking spaces on campus, including the gravel lots south of Lot D and east of Lot A. Approximately, 3,173 spaces, or 95% of the available parking supply was occupied at 11:00 a.m. – the hour believed to be the peak hour -- on the survey day. Subsequent visits revealed similar parking occupancies during peak hours.

The majority of the COH campus is grandfathered into the prior parking requirements of the City of Duarte Development Code (DDC) in existence before the DDC was amended in 2010. COH currently provides more parking than would be required based on those former provisions of the DDC. COH also meets federal and state requirements for the provision of the number of accessible spaces on the campus overall, and in the visitor parking areas. It should

be noted that Walker's review of ADA compliance was limited to the number of spaces provided, and did not include a full review of accessibility in terms of location, signage and geometrics.

Using existing population data and growth assumptions supplied by COH and our survey day observations, Walker projected parking demand at four different points along COH's planning horizon for the Project. The scenarios addressed parking demand in 2020, 2025, 2030 and 2035, and roughly correspond with the end of each of the four potential phases of the proposed Project identified in the Specific Plan's illustrative development scenario. The following current and projected employment and patient activity levels serve as the basis for this study's recommendations:

Table ES- 1: Current and Future Population Statistics

Hospital Statistics:	2015 Design Day	Latest Fiscal Year	2020 Population Projection	CAGR 2015-2020	2025 Population Projection	CAGR 2020-2025	2030 Population Projection	CAGR 2025-2030	2035 Population Projection	CAGR 2030-2035
Total Beds in Service	185	185	217	3.2%	288	5.8%	288	0.0%	288	0.0%
Average Daily Bed Census	158	165	200	4.8%	230	2.8%	250	1.7%	250	0.0%
Outpatient Visits	817	136,042	167,114	4.2%	205,282	4.2%	252,167	4.2%	309,761	4.2%
Full-Time Employees	2,436	2,436	2,893	3.5%	3,436	3.5%	4,081	3.5%	4,847	3.5%
Part-Time Employees	564	564	564	0.0%	564	0.0%	564	0.0%	564	0.0%
Contractors	1,063	1,063	1,063	0.0%	1,063	0.0%	1,063	0.0%	1,063	0.0%
Total Employees	4,063	4,063	4,520	2.2%	5,063	2.3%	5,708	2.4%	6,474	2.6%
Physicians	366	366	435	3.5%	516	3.5%	613	3.5%	728	3.5%
Residences	40	40	40	0.0%	36	-2.1%	80	17.3%	80	0.0%

Source: City of Hope, Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract and per diem, and full-time equivalent (FTE) employees.

Walker's analysis indicates that while the campus currently operates at a parking surplus based on applicable code requirements, based on the supply and demand methodology employed in this report, the campus is currently operating at a small parking deficit. While only 95% of the available parking supply was utilized during the peak parking demand hour on this study's survey day, the parking supply and demand methodology used in this report projects a theoretical deficit when one considers projected Design Day parking demand, effective supply and parking "adequacy."

The Design Day parking projection is reflective of the expected parking demand on the 12th busiest day of the year on the COH campus; while the effective supply is based on the need for a parking cushion to provide for vehicles moving in and out of spaces, spaces unavailable due to maintenance, and to reduce the time necessary for parking patrons to find the last few available spaces. Parking adequacy is a theoretical calculation comparing design day parking demand to effective supply. On an absolute level, parking supply currently exceeds parking demand when the ancillary gravel lots are included in the parking supply. On a theoretical level a parking deficit exists because patrons and employees have to drive through multiple parking lots to locate a parking space, and latecomers end up parking in the ancillary gravel parking lots which are temporary parking areas that do not provide a good customer experience.

Over the course of the proposed Project's planning horizon, assuming parking structure construction and surface lot expansion occurs as described herein, COH will operate with a parking surplus throughout the life of the Project. At the end of the Project's 20-year buildout period (2035), the campus is projected to have a small effective parking deficit.

Table ES- 2: Summary of Parking Adequacy

	2015 Design Day	2020 Design Day	2025 Design Day	2030 Design Day	2035 Design Day
Demand	3,227	3,558	4,070	4,688	5,401
Supply	3,354	4,476	5,629	5,453	5,453
Effective Supply	3,186	4,223	5,365	5,189	5,189
Adequacy ¹	(41)	665	1,295	501	(212)
Parking Supply Needed	-	-	-	-	220

¹ = Parking Adequacy is the difference between the effective parking supply and parking demand
Source: Walker Parking Consultants, 2014-16

Walker recommends that COH periodically performs a parking demand analysis on the campus to determine whether the established user group parking demand ratios, on which this current analysis is based, are remaining consistent over time, increasing or decreasing. Periodic evaluation would allow for potential recalibration of the projected future parking demand and needed supply in the event that user group parking demand ratios were to change over time. This is particularly salient given the recent emergence of the use of ride sharing applications as a viable means of transportation, as well as recent improvements in autonomous vehicle technology, both of which are likely to result in lower user group demand ratios in the future, compared to today, as the technology becomes more accepted.

Walker also reviewed the potential phasing plan for the illustrative development scenario provided in the draft Specific Plan to determine if adequate parking would be provided on campus for employees and patients during construction. It is Walker's understanding that the proposed Specific Plan is being designed with flexibility to allow a wide range of development over a 20-year period, and that the conceptual phasing plan has been prepared as a potential (but not required) development scenario over the life of the plan. For purposes of this analysis, and in order to be as conservative as possible, Walker has used the phasing plan to estimate code-based parking requirements and demand through each of the potential four phases of the Project's build-out.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



WALKER
PARKING CONSULTANTS

JUNE 2016

37-8404.00

Table ES- 3: Analyzed Project Phasing Order

Phase	Project	Project Goal	Campus Infrastructure Additions	Spaces Added/ (Lost)	Supply	Effective Supply	Demand	Surplus/ Deficit		
	Present Day					3,354	3,186	3,227	(41)	
1	1	2144 Buena Vista Lot Expansion	738 spaces	586	3,940	3,717	3,227	490		
	2	Lot A Parking Structure (during construction)			(545)	3,395	3,203	3,227	(24)	
		Lot A + Parking Structure (complete)		1,750 spaces	1,700	5,095	4,807	3,227	1,580	
	3	Permanent Closure of Lot A Ancillary			(278)	4,817	4,544	3,227	1,317	
	4	Demolition		(29,810) GSF		4,817	4,544	3,227	1,317	
		Outpatient Expansion		280,000 GSF		4,817	4,544	3,227	1,317	
	5	Research Building		80,000 GSF	(245)	4,572	4,313	3,227	1,086	
	6	Demolition		(38,903) GSF	(116)	4,456	4,204	3,227	977	
		Office Expansion		50,000 GSF		4,456	4,204	3,227	977	
7	Campus Loop Road			(280)	4,176	3,940	3,227	713		
	Lot G Expansion		545 spaces	300	4,476	4,223	3,227	996		
END OF PHASE 01 PROJECTIONS					1,122	4,476	4,223	3,558	665	
2	TBD	Inpatient Expansion		210,000 GSF	(117)	4,359	4,112	3,558	554	
		Research Expansion		82,992 GSF	12	4,371	4,124	3,558	566	
		Office Demolition		(61,361) GSF						
		Warehouse Demolition		(9,586) GSF						
		Lot C Expansion			101 spaces	4,472	4,219	3,558	661	
		Industrial Expansion		14,648 GSF		4,472	4,219	3,558	661	
		Parking Structure 2 (during construction)			spaces	(73)	4,399	4,150	3,558	592
		Parking Structure 2 (Complete)		1,230 spaces	1,230 spaces	5,629	5,365	3,558	1,807	
END OF PHASE 02 PROJECTIONS					1,153	5,629	5,365	4,070	1,295	
3	TBD	Assembly Demolition		(28,973) GSF		5,629	5,357	4,070	1,287	
		Inpatient Demolition		(70,697) GSF		5,629	5,357	4,070	1,287	
		Outpatient Expansion		160,000 GSF		5,629	5,357	4,070	1,287	
		Office Expansion		51,929 GSF	25	5,654	5,380	4,070	1,310	
		Hospitality (Hotel) Expansion		60,451 GSF		5,654	5,380	4,070	1,310	
		Warehouse Demolition		(18,779) GSF		5,654	5,380	4,070	1,310	
		Industrial Expansion		40,000 GSF		5,654	5,380	4,070	1,310	
		Campus Landscaping & Misc.				(201)	5,453	5,189	4,070	1,119
END OF PHASE 03 PROJECTIONS					(176)	5,453	5,189	4,688	501	
4	TBD	Research Expansion		130,000 GSF		5,453	5,189	4,688	501	
		Office Expansion		120,000 GSF		5,453	5,189	4,688	501	
END OF PHASE 04 PROJECTIONS					0	5,453	5,189	5,401	(212)	

Source: Walker Parking Consultants, 2015-2016



WALKER
PARKING CONSULTANTS

INTRODUCTION

Walker conducted a parking supply/demand study for the COH campus for the proposed Project, a 20-year development project at the COH campus. The goal of Walker's assignment was to examine current parking conditions and project future parking needs over the course of the Project. For purposes of this analysis, buildout of the Project was analyzed in four potential phases described in the proposed specific plan for the campus as an illustrative development scenario (which is not required). Walker previously studied the subject property in 2006 as part of a prior project entitlement effort in Duarte. Since then, several physical and programmatic changes have been completed to the COH campus, thereby impacting parking supply/demand conditions. In addition, COH has embarked on a campus facilities master planning process, with the goal to develop a comprehensive specific plan governing development at the COH campus over the next 20 years.

BACKGROUND

The COH campus is located primarily in the City of Duarte, California, with a few support service buildings and a clinical building located within the City of Irwindale. COH provides a home for two interrelated entities, the City of Hope National Medical Center, which runs an acute-care hospital (inpatient) facility licensed for 217 patient beds, with additional clinical (outpatient) services, and the Beckman Research Institute of the City of Hope ("BRI"), which is COH's biological research arm that enables close interaction between leading scientists and COH physicians. COH is a designated National Cancer Institute Cancer Center, which is a full-service medical center composed of inpatient, outpatient, research and administrative facilities, working together for the cure and treatment of catastrophic diseases for its patient population.

With growth of the COH campus expected over a 20-year period under the proposed specific plan, COH is interested in determining the parking supply needed to provide adequate parking on campus to support the demand generated by the various uses on the campus.

STUDY AREA

The COH campus is located approximately 17 miles northeast of downtown Los Angeles. The campus is bound by Duarte Road to the north, the Santa Fe Flood Control Basin to the east and south, and Buena Vista Street, the Duarte Flood Control Channel and Cinco Robles Drive to the west.

Figure 1 shows the general location of the COH campus and Figure 2 shows the jurisdictional boundary line between Duarte and Irwindale.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



WALKER
PARKING CONSULTANTS

JUNE 2016

37-8404.00

Figure 1: Location Map



Source: Google Earth Pro, 2015

Figure 2: Duarte/Irwindale Jurisdictional Boundary



Source: Google Earth Pro, Walker Parking Consultants, 2015

Parking at the COH campus is currently provided in surface parking lots. There are currently 10 surface parking lots and two unpaved ancillary areas used for parking, as well as small pockets of parking scattered around the campus, which currently provide a total of 3,354 parking spaces on the campus. A brief description of the existing parking areas is provided below.

JUNE 2016

37-8404.00

Lot A is the primary visitor/patient parking lot on the COH campus, and also provides some physician only parking and priority employee parking area. There are approximately 595 striped parking spaces in Lot A, of which approximately $\frac{3}{4}$ are dedicated to patient/visitor use. The **Lot A ancillary** parking area is an unpaved, unlit gravel area east of Lot A. This is an unstriped area, which has the capacity to hold approximately 278 parked vehicles, and is primarily used by employees and visitors when other parking area are full. This area is within the City of Irwindale and is owned by the U.S. Army Corps of Engineers, which leases the area to COH.

Lot B is located south of the Info Sciences building on the eastern edge of the COH campus. Lot B has approximately 116 striped parking spaces, approximately $\frac{1}{3}$ of which are reserved. The rest of Lot B is split between employee parking and a valet parking area for the Main Hospital valet operation.

Lot C is located south of lot B and provides approximately 389 striped parking spaces for employees.

The **Population Sciences Lot** is located south of the population sciences building and provides approximately 85 striped parking spaces for employees.

The **2240 Buena Vista lot** is located at the FLASH building on the southwest corner of the COH campus and provides parking for facilities, employees and visitors. There are approximately 126 striped parking spaces in the 2240 Buena Vista lot.

The **2144 Buena Vista lot** is located north of Village Road across the street from the FLASH building. This is an overflow parking lot with approximately 152 striped parking spaces.

Lot D is an approximately 411 space parking lot located to the west of the population sciences building utilized for employee parking.

The **Lot D ancillary** parking area is an unpaved, unlit gravel area just south of Lot D. It is an unstriped area with an approximate capacity of 165 parking spaces.

Lot E is an approximately 378 space parking lot located to the west of Heritage Park and north of Lot D utilized for employee parking.

Lot F is located west of the Hilton building on the western edge of the COH campus. Lot F has approximately 118 striped parking spaces, split between employee parking and a valet parking area for the Helford Hospital valet operation.

Lot G is located south of Parsons Village on the western edge of the COH campus. Lot G has approximately 245 striped parking spaces primarily for employee parking. Approximately 25 of the parking spaces in Lot G are reserved for Hope and Parsons Village use.

Figure 3 shows the location of the existing COH parking facilities.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



WALKER
PARKING CONSULTANTS

JUNE 2016

37-8404.00

Figure 3: City of Hope Parking Facilities - Existing



Source: Google Earth Pro, Walker Parking Consultants, 2015



DEFINITIONS OF TERMS

Several terms or jargon used in this report have unique meanings when used in the parking industry. To help clarify these terms and enhance understanding by the reader, the following definitions are presented.

- **Adequacy** - The difference between the effective parking supply and parking space demand.
- **Demand Ratio** - The ratio of the observed number of occupied parking spaces compared to a reference statistic. For example, if there are 1,000 employees and an observed peak of 400 occupied spaces in the employee lot, the demand ratio is 0.40 spaces (400/1000) per employee.
- **Design Day** - The day that represents the level of parking demand that the parking system is designed to accommodate. In most of the hundreds of parking studies that we have conducted, this level of activity is typically equal to the 85th to 95th percentile of absolute peak activity. Although we will occasionally design to a higher-than-typical design standard, such as one exceeded less than one day per month or even the absolute peak level of demand, we do not typically design to these extreme conditions because the result is an abundance of spaces that remain unused most of the time.
- **Effective Supply** - The total supply of parking spaces, adjusted to reflect the cushion needed to provide for vehicles moving in and out of spaces, spaces unavailable due to maintenance, and to reduce the time necessary for parking patrons to find the last few available spaces. The effective supply varies as to the user group and type of parking, but typically the effective supply is 85 percent to 95 percent of the total number of spaces. The adjustment factor is known as the Effective Supply Factor.
- **Inventory** - The total number of marked parking spaces within the study area.
- **Parking Generation** - The peak accumulation of parked vehicles generated by the land uses present under any given set of conditions.
- **Patron or User** - Any individual parking in a study area.
- **Peak Hour** - The peak hour represents the busiest hour of the day for parking demand. On a medical campus, this usually occurs between the hours of 9:00 a.m. and 4:00 p.m. when staffing and outpatient activity is the highest.
- **Survey Day** - The day that occupancy counts within a study area are recorded. This day should represent a typical busy day.

MUNICIPAL AND ADA PARKING REQUIREMENTS

CITY OF DUARTE PARKING STANDARDS

Chapter 19.38 of the DDC contains Duarte's current off-street parking regulations, including parking requirements for specific land uses, which were adopted by the City of Duarte in November 2010.

Prior to the City's DDC reform, only two sections of the former DDC contained parking requirements applicable to the uses on the COH campus: (1) "Schools and Institutional Uses – Hospitals" which required one parking space for each two beds plus one parking space for each paid employee (Former DDC Section 19.78.010(b)(4)(F)) and (2) "Research – Development and Testing Uses" which required one parking space for every 350 square feet of space in research buildings (Former DDC Section 19.78.010(b)(3)(b)). Walker's prior parking analysis conducted for COH in 2006 assessed parking requirements at the COH campus under the former DDC requirements.

The majority of the existing uses on the COH campus were built or approved prior to the City's adoption of revised parking requirements in November 2010. Pursuant to Section 19.38.020 of the current DDC, the parking requirements in the DDC apply to new construction, intensified use, and enlargement or increased capacity and use of land. Therefore, existing land uses on the COH campus within the City of Duarte that were constructed or approved before the revised DDC went into effect on December 23, 2010¹ are subject to the parking space requirements applicable under the former DDC sections described above. Of the existing uses at the COH campus within the City of Duarte, only one building or structure was constructed after December 23, 2010 (the recently completed Kaplan Family Pavilion). As such, existing parking requirements for that structure are subject to the revised parking requirements in the DDC that went into effect on December 23, 2010.

Table 1 shows current City of Duarte parking requirements for various land uses that are potentially applicable for future planned uses at the COH campus within the City of Duarte under the proposed COH specific plan.

¹ The Duarte City Council approved the revised DDC via ordinance on November 23, 2010. Duarte is a general law City; therefore its ordinances take effect 30 days after their final passage (Cal. Gov. Code Section 36937).

Table 1: City of Duarte Parking Requirements – Current DDC

Land Use	Parking Spaces Required
Offices (business or corporate)	1 space per 250 square feet
Offices (medical)	1 space per 200 square feet
Hospitals	As required by conditional use permit and/or Specific Plan
Outpatient Surgery/Care Facilities	1 space per 250 square feet
Assembly/Meeting Facilities	1 space per 5 fixed seats or 1 space per 100sf of floor area used
Manufacturing and General Industrial Uses	1 space per 500 square feet of industrial use plus 1 per 350 square feet of office use
Research and Development	1 space per 350 square feet
Warehousing	1 space per 1,000 square feet
Hotels/Motels	1 space per guest room

Source: City of Duarte Development Code Chapter 19-38

CITY OF IRWINDALE PARKING STANDARDS

Chapter 17.64 of the City of Irwindale Municipal Code (IMC) contains Irwindale's current off-street parking regulations, including parking requirements for specific land uses. As noted earlier, portions of the COH campus are located in the City of Irwindale.

Table 2 shows current City of Irwindale parking requirements for various land uses that are potentially applicable within the City of Irwindale under the proposed COH specific plan.

Table 2: City of Irwindale Municipal Code Parking Requirements

Land Use	Parking Spaces Required
Manufacturing uses, Research and Testing laboratories	1 space for each 2 employees on the maximum (most workers) working shift or 1 space for each 350 square feet for the first 10,000 square feet, and 1 space for each 500 square feet for the next 40,000 square feet, and 1 space for each 1,000 square feet for the next 50,000 square feet, whichever is greater
Medical Offices & Clinics	1 space per 200 square feet
Offices not providing customer service on the premises	1 parking space for each 2 employees on the maximum (most workers) working shift or 1 space for each 350 square feet, whichever is greater
Warehousing and Storage Buildings	1 space for each 1,000 square feet of the first 20,000 square feet of gross floor area, 1 space for each 2,000 square feet for the next 20,000 square feet, and 1 space for each 4,000 square feet for all floor area over 40,000 square feet
In addition to the standards set forth above for manufacturing and related uses and warehousing and storage buildings, each such use shall also provide parking for the office uses(s) on site based upon the requirements set forth above for offices, for the gross floor area thereof devoted to office/administrative use	

Source: City of Irwindale Municipal Code Chapter 17.64

Table 3 summarizes existing parking requirements for the COH campus in the City of Duarte based on the appropriate application of City of Duarte DDC requirements and existing gross square footage and hospital employee information.

As previously discussed, with the exception of the Kaplan Family Pavilion, the existing uses on the COH campus in Duarte were built prior to implementation of the updated DDC in 2010, and are therefore grandfathered under the old DDC requirements. COH provided the current number of employees working in non-research function on the COH campus in Duarte so that

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

the non-research code requirement for the grandfathered portion of the campus could be calculated.

Table 3: COH Parking Requirements for Existing Uses in Duarte Based on DDC

Land Use	Unit	Quantity	City Parking Code Requirement	Parking Spaces Required
Research Building	Square Feet (SF)	457,936	1 space per 350 sf ¹	1,308
Hospital	Beds	217	1 space per 2 beds ²	109
	Employees	2637 ⁴	1 space per 5 employees ²	527
Assembly	Square Feet (SF)	7,882	1 space per 100 sf ³	79
Total				2,023

1 = Former DDC 19.78.010(b)(3)(b)

2 = Former DDC 19.78.010(b)(4)(F)

3 = Current DDC 19.38.050, Table 3-7 (Applies only to Kaplan Family Pavilion constructed in 2014)

4 = The City of Hope currently employs 2,388 total full-time non-research employees during daytime shifts in buildings located in Duarte. 249 contract employees from Environmental Services and the cafeteria should also be counted towards this total, resulting in a total of 2,637 City of Hope and contract hospital employees. There are 317 total full-time nonsearch employees that work during non-peak hours, if these employees were included in the analysis there would be 2,954 hospital employees, and the parking required would increase by 64 spaces. Total square footage of existing non-research uses within the jurisdiction of Duarte is 956,741. This calculation approach is consistent with the methodology used in the 2006 analysis, which the City adopted as part of the City's Mitigated Negative Declaration for the then proposed Arnold & Mabel Beckman Center for Cancer Immunotherapeutics & Tumor Immunology [CITI] Building

Source: City of Hope, Walker Parking Consultants, 2015

As shown in Table 3, based on the DDC requirements for grandfathered land uses and the Kaplan Family Pavilion, COH is currently required to provide 2,023 parking spaces under existing conditions for the uses within the City of Duarte at the COH campus.

Table 4 summarizes existing parking requirements for the COH campus in the City of Irwindale based on the appropriate application of City of Irwindale IMC requirements and existing gross square footage and employee information.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

Table 4: COH Parking Requirements for Existing Uses in Irwindale Based on IMC

Land Use	Unit	Quantity	City Parking Code Requirement ¹	Parking Spaces Required
Medical Office/Clinic	Square Feet (SF)	60,672	1 space per 200 sf	303
Office	Square Feet (SF)	26,849	1 space per 350 sf	77
Industrial	Square Feet (SF)	55,681 70% Indstrl, 30% Office	First 10,000 sf 1 space per 350 sf Next 40,000 sf 1 space per 500 sf >50,000 sf 1 space per 1000 sf	134
Warehouse	Square Feet (SF)	29,130	First 20,000 sf 1 space per 1000 sf Next 20,000 sf 1 space per 2000 sf >40,000 sf 1 space per 4000 sf	25
Total				539

1 = IMC 17.64

Source: City of Hope, Walker Parking Consultants, 2015

As shown in Table 4, based on the IMC requirements, COH is currently required to provide 539 parking spaces under existing conditions for the uses within the City of Irwindale at the COH campus. The combined existing parking requirement for the COH campus as a whole is 2,562 parking spaces. COH's existing parking supply of 3,354 parking spaces significantly exceeds this code-based parking requirement.

As a point of reference, Table 5 summarizes the amount of parking required for the COH campus in the City of Duarte based solely on the DDC without any grandfathering of uses that existed before the current DDC was enacted. Table 5 is being provided for informational purpose, however the new DDC provisions do not apply to the buildings constructed before December 23, 2010.

Table 5: COH Parking Requirements for Existing Uses in Duarte (Without Grandfathering)

Land Use	Unit	Quantity	City Parking Code Requirement ¹	Parking Spaces Required
Outpatient Clinic	SF	243,650	1 space per 250 sf	975
Research Building	Square Feet (SF)	457,936	1 space per 350 sf	1,308
Hospital	Beds	217	2.5 spaces per bed ²	543
Hotel	Rooms	40	1 space per room	40
Assembly	Square Feet (SF)	69,295	1 space per 100 sf	693
Office	Square Feet (SF)	159,447	1 space per 250 sf	638
Industrial	Square Feet (SF)	18,228	1 space per 500 square feet	36
Warehousing	Square Feet (SF)	30,114	1 space per 1,000 square feet	30
Total				4,263

1 = Current DDC 19.38.050

2 = Requirement based on review of other Los Angeles County jurisdictions' treatment of hospital parking rates (See Appendix A)

Source: City of Hope, Walker Parking Consultants, 2015

As shown in Table 5, based on only current DDC requirements, COH would be required to provide 4,263 parking spaces under existing conditions for the uses within the City of Duarte at the COH campus. Combined with the 539 parking spaces required for uses in the City of Irwindale, a total of 4,802 parking spaces would be required on the campus as a whole. However, these figures are only theoretical as the new DDC provisions do not apply to the buildings constructed before December 23, 2010.

CITY OF DUARTE BICYCLE PARKING REQUIREMENTS

The current DDC, section 19.38.220, lists bicycle parking requirements in the City of Duarte. For the hospital land use, 5 bicycle parking spaces are required for the first 25 vehicle spaces plus 1 bicycle parking space for every 10 additional vehicle spaces, up to a maximum of 20 bicycle parking spaces.

The DDC is silent on whether large, campus-style land uses, such as the COH campus, should be considered a single land use when calculating bicycle parking requirements or if each component of the campus program must satisfy its own bicycle parking requirements.

Bicycle parking requirements did not exist previously and were included in the 2010 DDC update. Therefore, existing uses are grandfathered in under the old code requirements, which was no required bicycle parking. However the new bicycle parking requirements would apply to uses on the COH campus built after 2010. The only new use on campus constructed after 2010 is the Kaplan Family Pavilion, which is a private assembly use which would not be required to provide bicycle parking spaces as there is no bicycle requirement for private assembly uses in the DDC.

CITY OF IRWINDALE BICYCLE PARKING REQUIREMENTS

Section 17.66.030 of the IMC includes transportation demand and trip reduction measures that nonresidential development greater than 25,000 square feet are subject to.

Included in this section is the following requirement for bicycle parking:

- Bicycle racks or other secure bicycle parking shall be provided to accommodate four bicycles per the first fifty thousand square feet of nonresidential development and one bicycle per each additional fifty thousand square feet of nonresidential development. Calculations which result in a fraction of 0.5 or higher shall be rounded up to the nearest whole number.

The IMC is silent on whether large, campus-style land uses, such as the COH campus, should be considered a single development when calculating bicycle parking requirements or if each component of the campus program must satisfy its own bicycle parking requirements. There is currently 172,332 square feet of COH buildings within the City of Irwindale. If treated as a single development, COH would be required to provide bicycle parking for six bicycles to satisfy City of Irwindale bicycle parking requirements. If each use is treated separately, then each of the four uses within the City of Irwindale (Clinic, Office, Industrial and Warehousing) would be required to provide four bicycle spaces for a total of sixteen bicycle parking spaces.

ADA REQUIREMENTS

The Americans with Disabilities Act (ADA) and the 2013 California Building Code require parking for the disabled. These statutes require that hospitals and health-care centers for ambulatory patients receiving outpatient medical care must devote 10 percent of the patient and visitor parking supply for disabled access ("DA"), of which one in six must be van-accessible. Disabled parking space requirements for the rest of the hospital parking supply (for employees, physicians and contractors and for other building uses, such as research buildings, are calculated based on the information in Table 6, with one in six accessible spaces required to be van accessible.

The 2013 CBC requirements state that when one more than one parking facility is provided on a site, the number of accessible parking spaces provided shall be calculated according to the number of spaces required for each parking facility.

The CBC also states, "Parking spaces shall be permitted to be located in different parking facilities if substantially equivalent or greater accessibility is provided in terms of distance from an accessible entrance or entrances, parking fee, and user convenience."

As detailed on below in Table 8, the COH campus currently satisfies applicable ADA parking requirements related to the number of ADA spaces required.



Table 6: General ADA Parking Requirements (non-Hospital/outpatient)

Total Number of Spaces Provided in Parking Facility	Minimum Number of Required Accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20, plus 1 for each 100, or fraction thereof over 1000

Source: 2013 California Building Code, 2010 ADA Standards for Accessible Design (US Justice Dept.)

SUPPLY/DEMAND ANALYSIS METHODOLOGY

The methodology of the supply/demand parking analysis provided in this study consists of reviewing background information, user group statistics and prospective project plans provided by the hospital administration, and occupancy counts collected by Walker Parking Consultants. This data is used to develop parking demand ratios for various user groups, which are considered to be representative of overall parking demand. These ratios are used to project current parking adequacy, and are also applied to future statistics for the same user groups in conjunction with anticipated changes in the parking space supply to project future parking adequacy. Parking adequacy is expressed in terms of parking space surpluses and deficits.

Conducting a supply/demand parking analysis for a medical center/hospital campus such as the COH campus is appropriate because, in our experience, municipal code requirements tend to either significantly understate or significantly overstate the parking required for a medical center/hospital campus. A good illustration of this is the old and new DDC parking requirements shown in Table 3 (2,023) and Table 5 (4,263). A center like COH, with a variety of medical facilities and services, achieves a certain level of economies of scale, and also benefits from efficiencies in labor distribution, for example a physician on campus may be involved in both outpatient and inpatient care.

It is important to define the conditions upon which a parking system should be designed. Some organizations intend to provide adequate parking for every potential parking facility user, every day of the year. Consequently, a substantial number of parking spaces are vacant throughout most of the year. The benefit of such a parking system is that parkers, whether it is employees, visitors, or patients, always have adequate parking. As is commonly the case, most organizations would rather have fewer of their assets utilized as parking; therefore, these organizations plan for a parking system that meets the needs of its parking patrons *most* days of the year, but less than every day of the year. The disadvantage of this type of parking system is that from time to time, parking demand may exceed the parking supply. This could become critical when a large event is scheduled at times when parking demand is expected under normal conditions, to be at its highest.

The level at which parking demand should be accommodated is a policy decision. For the purposes of this analysis, adequate parking conditions are defined as those that satisfy the design statistics recommended in this study.

PARKING SPACE INVENTORY AND EXISTING CONDITIONS ANALYSIS

The baseline of the study is the inventory of the available parking supply. On February 13, 2014, Walker reviewed the study area parking supply inventory to describe the number of spaces, user assignments (e.g. employee, physician, patient, visitor, etc.), and restrictions. This inventory includes marked parking spaces designated and used by the basic parking user groups at the hospital and the associated medical research office buildings.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

The parking supply on the City of Hope campus is comprised of several small surface lots, seven distinct large lots (Lot A, Lot D, Lot E, Lot F, Lot G, 2144 Buena Vista and 2240 Buena Vista), and two gravel overflow lots. One of the gravel overflow lots (Lot A Ancillary) is owned by the Army Corps of Engineers, and is leased to COH. The smaller lots on the southeastern edge of the COH campus have been grouped together and are designated as Lot B and Lot C.

Walker performed parking space inventory counts of COH's parking supply on Thursday February 13, 2014. Walker's inventories are summarized in Table 7. Walker staff revisited the site on Friday December 12, 2014 and confirmed that no significant changes in the parking space inventory occurred since the original survey in February 2014. Additionally, observed parking demand in December 2014 was consistent with the peak parking demand observed in February 2014, which is discussed further below.

Table 7: City of Hope Parking Space Inventory (February/December 2014)

User Group/ Parking Lot	Patient/ Visitor	Physician	Employee	Miscellaneous Reserved	Total
Lot A	455	61	66	13	595
Lot A Ancillary*			278		278
Lot B	47		28	41	116
Lot C			387	2	389
Lot D			411		411
Lot D Ancillary*			165		165
Lot E			377	1	378
Lot F	58		54	6	118
Lot G			199	46	245
Utah			4	10	14
CBG			28	3	31
Population Sciences			83	2	85
2144 Buena Vista			152		152
2240 Buena Vista	15		99	12	126
Hospital Zone	20	115	73	43	251
Total Excluding Ancillary	595	176	1,961	179	2,911
Total Including Ancillary	595	176	2,404	179	3,354

Note: * = Parking supply for unstriped ancillary lots is estimated
 Source: Walker Parking Consultants, 2014

As shown in Table 7, the existing paved parking supply at the COH campus is 2,911± parking spaces. The two gravel ancillary lots provide an additional 443± parking spaces, for an overall total of 3,354± parking spaces at the campus. Currently, the campus is served entirely by

surface parking lots. On-street parking is available on Duarte Road. Available on-street parking has not been included in the inventory shown in Table 7 since the City of Duarte has jurisdiction over it and could enact parking rules that would preclude its use by COH staff, patients and visitors. The City of Duarte is currently considering time restrictions or a residential permit program due to resident concerns. However, on-street parking occupancy information was collected and is included in the campus occupancy counts since most, if not all, of the parking occurring on Duarte Road appears related to COH staff and visitors.

Table 8 compares the existing COH parking supply to parking required for COH land uses based on the City of Duarte and City of Irwindale parking requirements discussed in the previous section, as well as the number of accessible spaces required based on the existing configuration of parking lots on the campus.

Table 8: Existing City of Hope Parking Inventory Compared to Existing Parking Requirements

Spaces Required per City Code	Existing Inventory	Surplus/ Deficit
2562	3354	792 space surplus
ADA Spaces Required Based on Existing Parking Supply	ADA Spaces Provided	Difference
131	137	6 space surplus
Visitor Lot ADA Spaces Required	Visitor Lot ADA Spaces Provided	Difference
51	52	1 space surplus

Source: Walker Parking Consultants, 2014

As shown in Table 8, COH provides parking at a rate that is higher than what is required based on the combined code-based parking requirements in effect in the Cities of Duarte and Irwindale at the time the vast majority of the buildings at the COH campus were constructed. Visitor ADA spaces required shown in Table 8 are based on the assumption that approximately 500± parking spaces on the COH campus are for hospital/outpatient patients and visitors. Based on the existing supply of parking on campus, Federal and State accessible parking requirements for the number of signed accessible spaces are met. It should be noted that Walker's review of ADA compliance was limited to the number of spaces provided, and did not include a full review of accessibility in terms of location, signage, van accessible spaces and geometrics.

EFFECTIVE PARKING SUPPLY

Walker Parking Consultants estimates the effective parking supply by applying an *effective supply factor* to the physical parking supply within each parking area in the parking system inventory. It is a generally accepted principle in parking supply/demand analyses that a supply of parking operates at optimum efficiency when occupancy is no more than 85% to



JUNE 2016

37-8404.00

95% of the total supply. The unused stalls provide a "cushion" to allow for the dynamics of vehicles moving in and out of parking stalls and to reduce the time required to search for the last few available spaces. This cushion also allows for daily, weekly and seasonal variations as well as vacancies created by restricting facilities to certain users, miss-parked vehicles, broken glass and minor construction.

When occupancy exceeds the optimum level, there may be delays and frustration in finding a space or the patron may be forced to use an undesirable space, such as one at a greater or uncomfortable walking distance, or may park improperly or illegally. The parking supply may be perceived as inadequate even though vacant spaces are still available in the system.

As a result, the effective parking supply is used for analysis of the adequacy of the parking system rather than the total supply. This cushion typically varies between 5% and 15% of the total parking capacity depending on the type of parking supply and type of user.

For this analysis, patients/visitor parking has been adjusted to 90% of capacity, while physician and employee parking has been adjusted to 95% of capacity. Patient/visitor parking requires more of a cushion because patients and visitors tend to be less knowledgeable of the parking system since they visit the site infrequently and generally stay for a shorter duration. Therefore if parking is difficult to find, they perceive a parking shortage quicker and experience more frustration than employees and physicians who travel to COH nearly every day and who tend to stay for 8-12 hour shifts at a time. Reserved parking is considered to be 100% available, because these spaces are generally fewer in number and not shared with other users.

The parking inventory, supply adjustment factors, and resulting effective parking supply are shown in Table 9.

As shown in Table 9, the "effective" parking supply of paved parking areas is calculated as approximately 2764± parking spaces. The two ancillary lots provide an additional 422± parking spaces of effectively supply for an overall total effective supply of 3,186± parking spaces. Thus, the parking cushion – the difference between the parking space inventory and the effective parking supply – is between 147 (paved spaces only) and 168 (including ancillary lots) parking spaces.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

Table 9: Effective Parking Supply

	Inventory	Effective Factor	Effective Supply		Inventory	Effective Factor	Effective Supply
Lot A				Lot G			
Patient/Visitor	455	90%	410	Employee	199	95%	190
Physician	61	95%	58	Misc/ Reserved	46	100%	46
Employee	66	95%	63	Total	245		236
Misc/ Reserved	13	95%	13	Utah			
Total	595		544	Employee	4	100%	4
Lot A Ancillary				Misc/ Reserved	10	100%	10
Employee	278	95%	265	Total	14		14
Lot B				CBG			
Patient/Visitor (Valet)	47	100%	47	Employee	28	95%	27
Employee	28	95%	27	Misc/ Reserved	3	100%	3
Misc/ Reserved	41	100%	41	Total	31		30
Total	116		115	Population Sciences			
Lot C				Employee	83	95%	79
Employee	387	95%	368	Misc/ Reserved	2	95%	2
Misc/ Reserved	2	100%	2	Total	85		81
Total	389		370	2144 Buena Vista			
Lot D				Employee	152	95%	145
Employee	411	95%	391	2240 Buena Vista			
Lot D Ancillary				Patient/Visitor	15	90%	14
Employee	165	95%	157	Employee	99	95%	95
Lot E				Misc/ Reserved	12	100%	12
Employee	377	95%	359	Total	126		121
Misc/ Reserved	1	100%	1	Hospital Zone			
Total	378		360	Patient/Visitor (Valet)	20	100%	20
Lot F				Physician	115	95%	110
Patient/Visitor (Valet)	58	100%	58	Employee	73	95%	70
Employee	54	95%	52	Misc/ Reserved	43	95%	41
Misc/ Reserved	6	95%	6	Total	251		241
Total	118		116				
Total Excluding Ancillary	2,911		2,764				
Total Including Ancillary	3,354		3,186				

Source: Walker Parking Consultants, 2014

PARKING OCCUPANCY

An important first step in determining parking demand patterns at the COH campus was to study the occupancy of the existing parking supply at the campus. Walker Parking Consultants collected parking occupancy data for parking facilities within the COH campus study area on Thursday, February 13, 2014. Based on discussions with COH staff, it was determined that the Survey Day was representative of a typical busy day on campus. Walker supplemented these counts with conversations with staff members charged with managing the parking system, and further observations at the COH campus on Thursday February 20, 2014 and Friday December 12, 2014.

Table 10: Parking Occupancy – Thursday February 13, 2014

Parking Lot	Inventory	Occupancy					
		10-11 AM	11-Noon	12-1 PM	1-2 PM	2-3 PM	3-4 PM
Lot A	595	590	600	567	587	550	448
Lot A Ancillary*	278	276	278	266	258	241	214
Lot B	116	122	123	113	116	121	113
Lot C	389	398	397	388	397	390	357
Lot D	411	398	411	379	374	374	352
Lot D Ancillary*	165	19	82	77	68	67	63
Lot E	378	371	373	366	368	370	364
Lot F	118	79	85	100	102	104	99
Lot G	245	224	224	222	228	228	204
Utah	14	13	13	9	11	11	10
CBG	31	29	30	29	28	27	24
Population Sciences	85	79	80	78	80	78	74
2144 Buena Vista	152	41	38	37	36	42	34
2240 Buena Vista	126	91	92	90	96	97	92
Hospital Zone	251	254	262	256	260	248	252
Unstriped/On-Street	N/A	84	85	80	79	64	54
Total Excluding Ancillary	2,911	2,773	2,813	2,714	2,762	2,704	2,477
Total Including Ancillary	3,354	3,068	3,173	3,057	3,088	3,012	2,754

Note: * = Parking supply for unstriped ancillary lots is estimated

Source: Walker Parking Consultants, 2014

Peak parking demand was observed between 11:00 am and Noon with 3,173 spaces or 95% of the total supply, including ancillary lots, occupied.

It should be noted that observed peak parking demand was 611 spaces greater than the existing minimum parking requirement for the COH Campus, but 1,629 spaces less than what

would be required if the entire Duarte portion of the campus was subject to the new DDC parking requirements adopted in November 2010.

Table 11 summarizes peak occupancy per lot.

Table 11: Peak Parking Occupancy (%)

Parking Lot	Inventory	11-Noon Occupancy	Occupancy (%)
Lot A	595	600	101%
Lot A Ancillary*	278	278	100%
Lot B	116	123	106%
Lot C	389	397	102%
Lot D	411	411	100%
Lot D Ancillary*	165	82	50%
Lot E	378	373	99%
Lot F	118	85	72%
Lot G	245	224	91%
Utah	14	13	93%
CBG	31	30	97%
Population Sciences	85	80	94%
2144 Buena Vista	152	38	25%
2240 Buena Vista	126	92	73%
Hospital Zone	251	262	104%
Unstriped/On-Street	N/A	85	N/A
Total Excluding Ancillary	2,911	2,813	97%
Total Including Ancillary	3,354	3,173	95%

Note: * = Parking supply for unstriped ancillary lots is estimated
Source: Walker Parking Consultants, 2014

The parking supply at the COH campus is generally designated for specific user groups. Lot A is the patient/visitor lot, with a small section signed for physicians only. Parts of Lot B and Lot F are valet only, which generally serve visitor/patient parking as well. Part of the 'Hospital Zone' parking is also designated as physician only. Aside from these designations, the remainder of the parking on the COH campus is generally designated for employees, although it is not signed as "employee only." Accordingly, some cross utilization of the parking areas likely occurs, and was observed by Walker staff. For the purpose of this analysis, Walker assumed that each lot was occupied by the intended user type. While it appeared that approximately 20 percent of the visitor spots were occupied by employees based on our observations on February 13 and February 20, 2014, this was balanced by the observation that patients/visitors were seen parking in the Lot A Ancillary lot and other lots due to the inability of finding a space in the visitor lot. Table 12 shows peak parking occupancy by user group.

Table 12: Peak Parking Occupancy by User Group

User Group	Supply	Current Peak Occupancy	% Occupied
Patients/Visitors	595	593	100%
Overnight Hospitality (Hotel)	26	11	42%
Employees ¹	2,114	2,397	113%
Physicians	176	172	98%
Totals	2,911	3,173	109%
Employees w/Ancillary Lots	2,557	2,397	94%
Total w/Ancillary Lots	3,354	3,173	95%

Source: Walker Parking Consultants, 2014

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

Parking occupancy in patient/visitor spaces was virtually 100% full during the peak hour of parking demand, with the open visitor spaces being in the valet only area of Lot F. Parking in Lot A was over 100% capacity, with vehicles observed parked at the edge of drive aisles and next to trees. Additionally, many vehicles were observed circulating in Lot A looking for a space, and patients/visitors were observed parking in and walking from the gravel Ancillary lot east of Lot A.

SURVEY DAY ACTIVITY

Walker collected activity data for the survey day of February 13, 2014. The activity data included the inpatient bed census for that day, outpatient visits for that day, the total number of employees, and the total number of physicians. The activity data for the campus is as follows:

BED CENSUS

Data delivered from COH shows that the bed census for the survey day was 155 occupied beds.

OUTPATIENT VISITS

COH staff gathered information on outpatient visits for the entire campus on our survey day. The total number of outpatient visits equaled 764.

STAFF

For purposes of this analysis, the total number of “employees” at the COH campus on the survey day was 4,063. The number of employees included (1) the total number of individuals employed on a full-time basis by COH Medical Center and BRI (2,436 employees); (2) the total number of individuals employed on a part-time basis by COH Medical Center and BRI (564 employees); and (3) a portion of non-employee “contractors” working at the COH campus (1,063 employees). The number did not take into account how many “employees” were

JUNE 2016

37-8404.00

necessarily present at the time of the occupancy counts. The parking ratio takes into account that only a percentage of the total employees are present at the peak hour. The balance of COH Medical Center staff and BRI staff changes over time, because BRI, in general, operates during the daytime shift while the hospital operates 24 hours a day. It is therefore assumed that an increase in BRI staff would increase the overall peak daytime parking more than the same increase in COH Medical Center staff.

PHYSICIANS

The total number of physician employees on the survey day was 366. These physicians were likely not all on campus at the same time.

USER GROUP DEMAND RATIOS

To model the number of parking spaces required to meet the parking needs of all parking patrons at the COH campus, parking occupancy at the campus was compared to various hospital user-group population statistics provided by COH, including visitors/patients, hospitality (hotel) guests, employees (excluding physicians), and physicians. User group parking demand ratios are the product of the peak parking occupancy data and such user group statistics. The breakdown of occupancy by user group was structured to be as representative of the subject property as possible. From this comparison, a parking demand ratio was determined for each group². For example there were 366 reported physician employees of COH on the survey day, and the peak observed parking demand in the designated physician parking areas was 172 parked vehicles. Therefore, the parking demand ratio for physicians was 0.47 parked vehicles per physician (172 parked vehicles / 366 physicians). Where specific data regarding a particular user group could not be determined, comparable data from Walker's database of past parking studies for other hospital projects was used. The parking demand ratio developed for each user group was used to estimate the number of parking spaces needed for each type of patron on the Design Day.

As the survey period was judged to represent average daily activity, the occupancy data was compared to the mean activity of weekday inpatient, outpatient, emergency department, and inpatient days reported over the previous year. The occupancy of physician and staff parking was compared to data provided by COH.

The resulting parking demand ratios are summarized in the following table:

Table 13: Survey Day Parking Demand and Demand Ratios

User Group	Activity Metric	Demand Ratio	Parking Demand
Visitor/Patient	764 Outpatient Visits + 155 Bed Census	0.65 per visit/bed	593
Overnight Hospitality (Hotel)	40 Residences	0.28 per residence	11
Employee (all but MDs) ¹	4,063 Total Employees ¹	0.59 per employee	2,397
Physician	366 Total Physicians	0.47 per physician	172
Total			3,173

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes 564 part-time, 2,436 full-time, and 1,063 contract employees

2015 DESIGN DAY PARKING DEMAND

Walker frequently recommends that hospitals design their parking supply to satisfy at least the 95th percentile level of activity. This level is usually equivalent to a very busy day that may occur once or twice a month. Designing parking to meet the absolute peak level of parking would leave many unused spaces during the majority of the year. Conversely, designing for the average level would mean inadequate parking about half the year. The 95th percentile level of parking demand is typically designated as the “Design Day.”

To estimate current design day parking demand, the previously-determined parking demand ratios for each type of parking patron are multiplied by the design day user-group population statistics. In this case, Walker applies user group statistics that represent the 95th percentile of weekday activity for inpatients, outpatients, and visitors reported over the previous year. From this comparison, a portion of the total design day parking demand is projected by each calculation, which is then added to approximate the number of parking spaces required to meet total parking demand on the design day. COH provided 365 days of outpatient activity and bed census data from which the 12th busiest weekday of the year was determined. On this “Design Day” there was a total of 817 outpatient visits and the bed census was 158. When discussing design day demand, the total numbers of employees and physicians remains constant with the survey day since staffing levels are typically similar from day to day. The following table shows the design statistics and demand ratios used to estimate parking demand under “Design Day” conditions.

Table 14: 2015 Design Day Parking Demand

User Group	Activity Metric	Demand Ratio	Parking Demand
Visitor/Patient	817 Outpatient Visits + 158 Bed Census	0.65 per visit/bed	629
Overnight Hospitality (Hotel)	40 Residences	0.28 per residence	11
Employee (all but MDs) ¹	4,063 Total Employees ¹	0.59 per employee	2,397
Physician	366 Total Physicians	0.47 per physician	172
Total			3,209

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes 564 part-time, 2,436 full-time, and 1,063 contract employees

Projected 2015 design day parking demand is significantly greater than the number of parking spaces required based on application of the City of Duarte's and the City of Irwindale's parking requirements to the existing uses on the COH campus.

However, as noted above, it is Walker's experience, based on hundreds of past hospital parking studies, that municipal code-based parking requirements applied to hospital campuses do not do a good job of modeling the actual parking demand. For this reason, we recommend the use of a user-group demand based ratios to determine parking demand on hospital campuses. Nevertheless, in order to be complete, the analysis below contains both a supply/demand analysis as well as a code-based analysis.

2015 DESIGN DAY PARKING ADEQUACY

Parking adequacy is defined by the difference between the effective parking supply and parking space demand. The Design Day parking adequacy is summarized in Table 15.

Table 15: Design Day Parking Adequacy

User Group	Demand	Effective Supply	Adequacy
Patients/Visitors	629	549	(80)
Overnight Hospitality (Hotel)	11	25	14
Employees ¹	2,397	2,022	(375)
Physicians	172	168	(4)
Totals	3,209	2,764	(445)
Employees w/Ancillary Lots	2,397	2,444	47
Total w/Ancillary Lots	3,209	3,186	(23)

Source: Walker Parking Consultants, 2014-16

Note: 1. Includes 564 part-time, 2,436 full-time, and 1,063 contract employees

JUNE 2016

37-8404.00

A 445-space deficit is projected during Design Day conditions at COH based on the paved parking supply. With the unpaved ancillary lots included in the supply, a 23-space Design Day deficit is projected. Parking demand exceeded the effective supply and therefore based on this methodology would be considered inadequate for all user groups with the exception of the Hope and Parsons Village residences.

Deficits do not necessarily mean that no parking spaces are available, as these parkers may be accommodated by the parking cushion. However, the inconvenience of extended searching to find these last remaining spaces, parking in a dusty gravel lot, or waiting for space turnover of more convenient spaces, decreases customer service.

IMPACT OF FOOTHILL GOLD LINE EXTENSION

The Gold Line Foothill Extension from Pasadena to Azusa is currently in the final stages of construction and testing, and is likely to be open for service in 2016. As part of the extension, a station stop in Duarte has been constructed on the north side of Duarte Road adjacent to the COH campus's eastern edge.

The extension of the Gold Line, will provide a link from Duarte to/from Downtown Los Angeles as well as to/from Azusa to the east, and will better connect the campus to public transit opportunities (rail and bus) throughout the region.

Specifically, the Gold Line extension will provide an alternative means of transportation to work for employees and physicians who live in close proximity to both existing and planned Gold Line stations, as well as bus lines that connect to those stations or other rail lines that connect to the Gold Line. The 2010 Congestion Management Program for Los Angeles County (Metro, 2010) contains assumptions concerning the expected percentage of trips that will be taken by transit for various land use categories and levels of transit service. The base assumption is that 3.5% of trips generated will be taken by transit. If a commercial project is located within one-quarter mile of a CMP transit corridor, a CMP multi-model transportation center, or a CMP transit center, this percentage increases to 7%, 9% and 15% respectively. Since the Duarte Gold Line station is not part of a transit corridor or transit center, this study assumes that future employee/physician parking demand is reduced by 3.5% to take into account the opening of the Duarte Gold Line station, which is reflected in the future demand ratios for the employee and physician user groups. No reduction has been taken in patient/visitor demand.

The Duarte Gold line station is planning to provide 125 parking spaces for transit commuters as part of the Duarte Gold Line Specific Plan, however, any additional parking demand generated by the station will have to be accommodated elsewhere.

Given the COH campus' proximity to the Gold Line station, COH will likely have to take active enforcement measures to ensure that commuters are not using visitor, employee and physician parking that is in close proximity to the station. Such measures may include some or all of the following:

- Continuous monitoring of patrons parking in Lot A to deter Gold Line commuters from parking on the COH campus.
- Installation of parking access and revenue control equipment in Lot A and the proposed Lot A parking structure that would require transient parkers to pull a ticket to enter the parking facility, with monthly users such as employees/physicians given keycard access.
 - Patients/Visitors could be required to have their tickets validated in a building on the COH campus in order to be able to exit Lot A or the Lot A structure.
 - Parking fees could be charged to all transient users of the parking facility.
 - A combination of parking charges and validations could be implemented for transient parking.

FUTURE CONDITIONS SUPPLY/DEMAND AND CODE-BASED ANALYSES

In the following table Walker shows the anticipated changes to employment and patient activity volumes over the 2015-2035 planning horizon, as provided by COH.

Table 16: 2015 to 2035 Hospital Population Statistics

Hospital Statistics:	2015 Design Day	Latest Fiscal Year	2020 Population Projection	CAGR 2015-2020	2025 Population Projection	CAGR 2020-2025	2030 Population Projection	CAGR 2025-2030	2035 Population Projection	CAGR 2030-2035
Total Beds in Service	185	185	217	3.2%	288	5.8%	288	0.0%	288	0.0%
Average Daily Bed Census	158	165	200	4.8%	230	2.8%	250	1.7%	250	0.0%
Outpatient Visits	817	136,042	167,114	4.2%	205,282	4.2%	252,167	4.2%	309,761	4.2%
Full-Time Employees	2,436	2,436	2,893	3.5%	3,436	3.5%	4,081	3.5%	4,847	3.5%
Part-Time Employees	564	564	564	0.0%	564	0.0%	564	0.0%	564	0.0%
Contractors	1,063	1,063	1,063	0.0%	1,063	0.0%	1,063	0.0%	1,063	0.0%
Total Employees	4,063	4,063	4,520	2.2%	5,063	2.3%	5,708	2.4%	6,474	2.6%
Physicians	366	366	435	3.5%	516	3.5%	613	3.5%	728	3.5%
Residences	40	40	40	0.0%	36	-2.1%	80	17.3%	80	0.0%

Source: City of Hope, Walker Parking Consultants, 2014-2016

It is Walker's understanding that the draft Specific Plan has been designed with flexibility to allow a wide range of development over a 20-year period, and that the conceptual phasing plan has been prepared as a potential (but not required) illustrative development scenario over the life of the plan. For purposes of this analysis, and in order to be as conservative as possible, Walker has used the phasing plan to estimate code-based parking requirements and demand through each of the potential four phases of the Project build-out corresponding to roughly 5-year intervals.

Moreover, the potential illustrative development scenario set forth in the draft Specific Plan for the Project calls for two parking structures to be built on the COH campus over the plan's 20-year buildout. These are described below.

JUNE 2016

37-8404.00

Garage 1 – Lot A Parking Structure

Lot A is an ideal place to put a parking structure to accommodate the future parking demand of visitors, patients, and potentially physicians. The potential development scenario calls for construction of a 1,700± space parking structure on the eastern portion of Lot A, resulting in an approximate net increase of 1,255± parking spaces. Lot A is large and could accommodate a rectangular parking structure.

Garage 2 – Parking Structure in between Lot E and Lot F

This site is fairly convenient to the activity centers of the campus. The Project calls for the construction of a 1,230±-space parking structure, replacing existing modular building between Lot E and Lot F. The proposed site could accommodate a rectangular structure and could be used for patient/visitor and/or employee parking due to its convenient location.

In addition to the proposed parking structures, which could be reduced depending on ultimate development plans, surface parking lots could also be developed to accommodate demand.

2020 DESIGN DAY PARKING DEMAND

Future Design Day parking demand for Year 2020, a five-year planning horizon, is computed using the parking demand ratios developed for 2015 Design Day conditions. These parking demand ratios are applied to projected 2020 employment and patient activity levels. Table 17 provides 2020 Design Day parking demand projections.

Note that these projections assume the following changes to employment and patient activity volumes over the 2015-2020 time frame:

- The average daily bed census increases by 4.8% per year for five years;
- Outpatient volumes increases at a 4.2% growth rate per year for five years;
- Full-time employees are added at a 3.5% growth rate per year for five years;
- The number of part-time employees and contractors remains constant;
- Physicians are added at a 3.5% growth rate per year for five years;
- The number of residences in Hope Village and Parsons Village is unchanged.
- Due to the completion of the Duarte Gold Line Station and Gold Line extension in 2016 employee and physicians parking demand at COH will decrease by 3.5%.

These assumptions are based in whole or in part on the projections that COH provided to Walker.

Table 17: Projected 2020 Design Day Parking Demand

User Group	Activity Metric	Demand Ratio	Parking Demand
Visitor/Patient	1,004 Outpatient Visits + 200 Bed Census	0.65 per visit/bed	777
Overnight Hospitality (Hotel)	40 Residences	0.28 per residence	11
Employee (all but MDs) ¹	4,520 Total Employees ¹	0.57 per employee	2,573
Physician	435 Total Physicians	0.45 per physician	197
Total			3,558

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

2020 DESIGN DAY CODE-REQUIRED PARKING

Table 18 shows City of Duarte and City of Irwindale code-based parking requirements at the COH campus resulting from proposed development at the campus that could occur during Phase 1 of the conceptual phasing plan illustrative development scenario utilized for this analysis. The parking requirements are based on the following proposed land use changes occurring at COH during Phase 1:

- Demolition of 29,810 square feet of outpatient clinic space in Duarte
- Demolition of 25,058 square feet of office space in Duarte
- Demolition of 13,845 square feet of office space in Irwindale
- Construction of a 280,000 square foot outpatient clinic expansion in Duarte
- Construction of a 50,000 square foot clinical support office in Irwindale
- Repurposing of 5,635 square feet of existing clinic space to research space in Duarte

To determine the parking requirement of the remaining non-research grandfathered uses on the Duarte portion of the COH campus, the following methodology was employed:

- The total square footage of grandfathered uses demolished during the phase was divided by the total square footage of grandfathered uses at the beginning of the phase to determine the percentage reduction in square footage.
- The derived percentage reduction was then applied to the number of grandfathered hospital employees associated with the grandfathered square footage to determine the remaining grandfathered employees.
- For the year 2020 analysis, 60,503 square feet of grandfathered space in Duarte was assumed to be either demolished or repurposed out of a total of 956,741 square feet of grandfathered space in Duarte, representing 6.3% of the grandfathered space. The total number of grandfathered employees for existing conditions was 2,637. Reducing the number by 6.3% yields 2,470 grandfathered employees remaining (and 896,238 grandfathered square feet remaining) for 2020 conditions.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

Table 18: COH Parking Requirements Based on Illustrative Development Scenario Phase 1 Development & City of Duarte/City of Irwindale Code

City	Land Use	Unit	Quantity	City Parking Code Requirement	Parking Spaces Required
Duarte	Research	Square Feet (SF)	543,571	1 space per 350 square feet	1,553
	Outpatient Clinic	Square Feet (SF)	280,000	1 space per 250 sf	1,120
	Hospital	Beds	217	1 space per 2 beds ¹	109
		Employees	2470 ²	1 space per 5 employees ¹	494
	Assembly	Square Feet (SF)	7,882	1 space per 100 sf	79
<i>Subtotal City of Duarte</i>					3,355
Irwindale	Medical Office/Clinic	Square Feet (SF)	110,672	1 space per 200 sf	553
	Office	Square Feet (SF)	13,004	1 space per 350 sf	37
	Industrial	Square Feet (SF)	55,681	First 10,000 sf 1 space per 350 sf	134
			70% Indstrl, 30% Office	Next 40,000 sf 1 space per 500 sf >50,000 sf 1 space per 1000 sf	
	Warehouse	Square Feet (SF)	29,130	First 20,000 sf 1 space per 1000 sf Next 20,000 sf 1 space per 2000 sf >40,000 sf 1 space per 4000 sf	25
<i>Subtotal City of Irwindale</i>					749
Grand Total					4,104

1 = Former DDC 19.78.010(b)(3)(b)

2 = In order to calculate the parking requirement for the grandfathered portion of the campus in 2020 the square footage of grandfathered uses to be demolished was subtracted from the total grandfathered square footage of the COH campus and then the percentage reduction in grandfathered uses was applied to the existing paid hospital employee count. Total square footage of remaining grandfathered non-research uses is 896,238±.

Source: City of Hope, Walker Parking Consultants, 2015

Projected 2020 design day parking demand is approximately 500 spaces less than the number of parking spaces required based on application of the City of Duarte's and the City of Irwindale's parking requirements to the potential net new development that could occur during Phase 1 of the specific plan project's implementation at the COH campus.

As mentioned previously, both the DDC and IMC are silent on whether large, campus-style land uses, such as the COH campus, should be considered a single land use when calculating bicycle parking requirements or if each component of the campus program must satisfy its own bicycle parking requirements. If each use for which there are bicycle parking requirements is considered separately, bicycle parking would be required as shown in Table 19.

Table 19: COH Bicycle Parking Requirements Based on Illustrative Development Scenario Phase 1 Development & City of Duarte/City of Irwindale Code

City	Land Use	Quantity (SF)	City Bicycle Parking Code Requirement	Bicycle Parking Required
Duarte	Research	543,571	No Requirement	-
	Outpatient Clinic	280,000	5 spaces for first 25 vehicle spaces plus 1 space/10 additional vehicle spaces, max of 20 spaces	20
	Hospital	425,721	Grandfathered under old DDC	-
	Assembly	7,882	No Requirement	-
	<i>Subtotal City of Duarte</i>			
Irwindale	Medical Office/Clinic	110,672	4 spaces for first 50,000 square feet plus one space for each additional 50,000 square feet	5
	Office	13,004		4
	Industrial	55,681 70% Indstrl, 30% Office		4
	Warehouse	29,130		4
	<i>Subtotal City of Irwindale</i>			
Grand Total				37

Source: City of Hope, Walker Parking Consultants, 2015

2020 DESIGN DAY PARKING SUPPLY BASED ON PHASING PLAN DEVELOPMENT SCENARIO

Projected 2020 Design Day parking supply is based on the projects shown in Phase 1 of the proposed phasing plan for the illustrative development scenario in the Project’s draft Specific Plan, and the effects the Phase 1 projects have on the parking supply. Projected 2020 parking supply assumes the following changes to parking supply on the COH Campus resulting from Phase 1 of the proposed plan:

- Approximately three-quarters of parking lot A would be removed to make way for construction of a new parking structure. Assuming the parking structure has an approximately 102,600 square foot footprint and is one at-grade level and four supported levels for a total of five levels of parking, the new parking structure would have approximately 1,700± parking spaces (assuming an average of 325 square feet of area per parking space for the structure).
- The ancillary gravel lot east of parking lot A would be taken out of service.
- Parking lot B would be closed permanently for construction and construction staging.
- The capacity of parking lot C would decrease by approximately 50 parking spaces due to construction of the campus loop roadway.
- The capacity of parking lot D would decrease by approximately 134 parking spaces due to construction of the campus loop roadway, construction of a new research building and increased landscaping. This assumes the reconfigured lot D would be approximately 90,000 square feet and assumes an average of 325 square feet of area per parking space.



- The new research building would be constructed on the ancillary gravel lot south of parking lot D.
- The capacity of parking lot E would decrease by approximately 28 parking spaces due to construction of the campus loop roadway.
- The capacity of parking lot F would decrease by approximately 18 parking spaces due to construction of the campus loop roadway.
- The capacity of parking lot G would increase by approximately 300 parking spaces as it incorporates vacant land to the northwest and to the south of the existing parking lot. This assumes the reconfigured lot G would be approximately 177,000 square feet and assumes an average of 325 square feet of area per parking space.
- The 14 parking spaces labeled "Utah" would be removed due to construction of the campus loop roadway.
- The capacity of the population sciences lot would decrease by approximately 17 parking spaces due to construction of the campus loop roadway.
- The capacity of the 2144 Buena Vista lot would increase by approximately parking 586 spaces as it incorporates vacant land to the east and north of the existing lot. This assumes the reconfigured 2144 Buena Vista lot would be approximately 240,000 square feet and assumes an average of 325 square feet of area per parking space.
- Parking capacity in the "Hospital Zone" would decrease by approximately 99 spaces due to construction of the campus loop roadway.

These assumptions are based in whole or in part on our analysis of the potential phasing program in the draft Specific Plan's illustrative development scenario.

Table 20 summarizes projected 2020 design day parking supply, compared to the existing on-campus parking supply.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



WALKER
PARKING CONSULTANTS

JUNE 2016

37-8404.00

Table 20: Projected 2020 Design Day Parking Supply

Parking Lot	2014	Projected 2020
Lot A/Parking Structure 1	595	1750
Lot A Ancillary	278	0
Lot B	116	0
Lot C	389	339
Lot D	411	277
Lot D Ancillary	165	0
Lot E	378	350
Lot F	118	100
Lot G	245	545
Utah	14	0
CBG	31	31
Population Sciences	85	68
2144 Buena Vista	152	738
2240 Buena Vista	126	126
Hospital Zone	251	152
Parking Structure 2		
Total Excluding Ancillary	2,911	4,476
Total Including Ancillary	3,354	

Source: Walker Parking Consultants, 2014-2015

As shown in Table 20, with the anticipated changes to the parking supply in Phase 1, there are projected to be 4,476± parking spaces on the City of Hope campus at the end of Phase 1.

2020 DESIGN DAY PARKING ADEQUACY

The projected 2020 Design Day parking adequacy is summarized in Table 21. The breakdown of the projected 2020 parking supply into specific user groups is based on the following assumptions:

- Patient/visitor parking will consist of the remaining surface parking spaces in parking Lot A (150± spaces), the bottom three levels of the new parking structure (approximately 960± parking spaces), and the visitor parking outside the FLASH building (15 spaces),
- 25 parking spaces in Lot G will continue to be reserved for Hope & Parsons Village.
- One level of the new parking structure (approximately 320± spaces) is reserved for physicians.
- All other parking is for employees.
- Installation of an Automated Parking Guidance System in the parking structure improves parking efficiency (effective supply factors increase).

Table 21: Projected 2020 Design Day Adequacy

User Group	Demand	Supply	Effective Supply	Adequacy
Patients/Visitors	777	1,125	1,035	258
Overnight Hospitality (Hotel)	11	25	25	14
Employees ¹	2,573	3,006	2,856	283
Physicians	197	320	307	110
Totals	3,558	4,476	4,223	665

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

As shown in Table 21, based on the allocation of parking spaces discussed above, the parking supply will be adequate for all user groups in 2020 after completion of Phase 1 of the Project.

However, since the COH campus currently experiences parking shortages based on the supply and demand methodology used in this report, it is recommended that the first two parking projects constructed in Phase 1 of the Project be the expansion of the 2144 Buena Vista parking lot followed by construction of the 1,700± space parking structure on the eastern portion of parking lot A.

2025 DESIGN DAY PARKING DEMAND

Future Design Day parking demand for Year 2025, a ten-year planning horizon, is computed using the parking demand ratios developed for 2015 Design Day conditions. These parking demand ratios are applied to projected 2025 employment and patient activity levels.

Table 22 provides 2025 Design Day parking demand projections. Note that these projections assume the following changes to employment and patient activity volumes over the 2020-2025 timeframe:

- The average daily bed census increases by 2.8% per year for five years;
- Outpatient volumes increase at a 4.2% growth rate per year for five years;
- Full-time employees are added at a 3.5% growth rate per year for five years;
- The number of part-time employees and contractors remains constant;
- Physicians are added at a 3.5% growth rate per year for five years;
- The number of 'hotel rooms' in Hope Village and Parsons Village is reduced by 4.
- Due to the completion of the Duarte Gold Line Station and Gold Line extension in 2016 employee and physicians parking demand at COH will decrease by 3.5%.

Table 22: Projected 2025 Design Day Parking Demand

User Group	Activity Metric	Demand Ratio	Parking Demand
Visitor/Patient	1,233 Outpatient Visits + 230 Bed Census	0.65 per visit/bed	944
Overnight Hospitality (Hotel)	36 Residences	0.28 per residence	10
Employee (all but MDs) ¹	5,063 Total Employees ¹	0.57 per employee	2,882
Physician	516 Total Physicians	0.45 per physician	234
Total			4,070

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

2025 DESIGN DAY CODE-REQUIRED PARKING

Table 23 shows City of Duarte and City of Irwindale code-based parking requirements at the COH campus resulting from proposed development at the campus that could occur during Phase 2 of the conceptual phasing plan illustrative development scenario utilized for this analysis. The parking requirements are based on the following proposed land use changes occurring at COH during Phase 2:

- Construction of a 210,000 square foot hospital expansion, increasing the number of beds in service from 217 to 288 in Duarte
- Construction of a net new 82,992 square feet of research space (consisting of 173,000 square feet of new research space, minus approximately 90,000 square feet of demolished research space) in Duarte
- Demolition of 48,357 square feet of office space in Duarte
- Demolition of 13,004 square feet of office space in Irwindale
- Demolition of 3,619 square feet of hospitality (hotel) space
- Demolition of 6,830 square feet of warehousing space in Duarte
- Demolition of 2,756 square feet of warehousing space in Irwindale
- Demolition of 3,352 square feet of industrial space in Duarte
- Construction of 18,000 square feet of industrial space in Irwindale

To determine the parking requirement of the remaining non-research grandfathered uses on the Duarte portion of the COH campus, the following methodology was employed:

- The total square footage of grandfathered uses demolished during the phase was divided by the total square footage of grandfathered uses at the beginning of the phase to determine the percentage reduction in square footage.
- The derived percentage reduction was then applied to the number of grandfathered hospital employees associated with the grandfathered square footage to determine the remaining grandfathered employees.
- With construction of the inpatient hospital expansion in Phase 2, it is Walker's opinion that the expanded inpatient hospital would transition from grandfathered status to having to satisfy the current DDC. The current DDC does not provide a specific parking requirement for hospitals; rather it requires a conditional use permit or specific plan. Based on research conducted by Walker into parking requirements for other prominent hospitals in the greater Los Angeles area, we believe that a parking requirement of 2.5 spaces per bed is appropriate and a conservative standard for the DDC analysis. Appendix A lists hospital parking requirements in other area cities with prominent hospitals.
- For the year 2025 analysis, 487,879 square feet of grandfathered space in Duarte was assumed to be either demolished or repurposed out of a total of 896,238 square feet of grandfathered space in Duarte, representing 54.4% of the grandfathered space. The total number of grandfathered employees for year 2020 conditions was 2,470. Reducing the number by 54.4% yields 1,125 grandfathered employees remaining (and 408,359 grandfathered square feet remaining) for 2025 conditions.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

Table 23: COH Parking Requirements Based on Illustrative Development Scenario Phase 2 Development & City of Duarte/City of Irwindale Code

City	Land Use	Unit	Quantity	City Parking Code Requirement	Parking Spaces Required
Duarte	Research	Square Feet (SF)	626,563	1 space per 350 square feet	1,790
	Outpatient Clinic	Square Feet (SF)	280,000	1 space per 250 sf	1,120
	Hospital	Beds	339	2.5 spaces per bed	848
	Hospital (Grandfathered)	Employees	1125 ²	1 space per 5 employees ¹	225
	Assembly	Square Feet (SF)	7,882	1 space per 100 sf	79
<i>Subtotal City of Duarte</i>					4,062
Irwindale	Medical Office/Clinic	Square Feet (SF)	110,672	1 space per 200 sf	553
	Office	Square Feet (SF)	-	1 space per 350 sf	-
	Industrial	Square Feet (SF)	73,681	First 10,000 sf 1 space per 350 sf Next 40,000 sf 1 space per 500 sf >50,000 sf 1 space per 1000 sf	163
	Warehouse	Square Feet (SF)	26,374	First 20,000 sf 1 space per 1000 sf Next 20,000 sf 1 space per 2000 sf >40,000 sf 1 space per 4000 sf	23
<i>Subtotal City of Irwindale</i>					739
Grand Total					4,801

1 = Former DDC 19.78.010(b)(3)(b)

2 = In order to calculate the parking requirement for the grandfathered portion of the campus in 2025 the square footage of grandfathered uses to be demolished was subtracted from the total grandfathered square footage of the COH campus and then the percentage reduction in grandfathered uses was applied to the existing paid hospital employee count. Total square footage of remaining grandfathered non-research uses is 408,359±.

Source: City of Hope, Walker Parking Consultants, 2015

Projected 2025 design day parking demand is approximately 700 parking spaces less than the number of parking spaces required based on application of the City of Duarte's and the City of Irwindale's parking requirements to the potential net new development that could occur during Phase 2 of the Project's implementation at the COH campus.

As mentioned previously, both the DDC and IMC are silent on whether large, campus-style land uses, such as the COH campus, should be considered a single land use when calculating bicycle parking requirements or if each component of the campus program must satisfy its own bicycle parking requirements. If each use for which there are bicycle parking requirements is considered separately, then bicycle parking would be required at the end of Phase 2 as shown in Table 24.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

Table 24: COH Bicycle Parking Requirements Based on Illustrative Development Scenario Phase 2 Uses & City of Duarte Code

City	Land Use	Quantity (SF)	City Bicycle Parking Code Requirement	Bicycle Parking Required
Duarte	Research	625,563	No Requirement	-
	Outpatient Clinic	280,000	5 spaces for first 25 vehicle spaces plus 1 space/10 additional vehicle spaces, max of 20 spaces	20
	Hospital	635,721		20
	Assembly	7,882	No Requirement	-
	<i>Subtotal City of Duarte</i>			
Irwindale	Medical Office/Clinic	110,672	4 spaces for first 50,000 square feet plus one space for each additional 50,000 square feet	5
	Office	-		-
	Industrial	73,681 70% Indstrl, 30% Office		4
	Warehouse	26,374		4
	<i>Subtotal City of Irwindale</i>			
Grand Total				53

Source: City of Hope, Walker Parking Consultants, 2015

2025 DESIGN DAY PARKING SUPPLY BASED ON PHASING PLAN DEVELOPMENT SCENARIO

Projected 2025 Design Day parking supply is based on the projects shown in Phase 2 of the proposed phasing plan for the illustrative development scenario in the Project's draft Specific Plan, and the effects the Phase 2 projects have on the parking supply. Projected 2025 parking supply assumes the following changes to parking supply on the COH Campus resulting from Phase 2 of the proposed plan:

- The capacity of parking lot C would increase by approximately 100 parking spaces. Some spaces would be lost as a result of the Central Plant Expansion; however spaces will be gained with the removal of existing warehousing and modular buildings and creation of a new 100,000 square foot parking area.
- The capacity of parking lot E would decrease by approximately 73 parking spaces due to construction of second parking structure and increased landscaping. This assumes the reconfigured lot E would be approximately 90,000 square feet and assumes an average of 325 square feet of area per parking space.
- Parking capacity in the "Hospital Zone" would be removed with the exception of the 20 valet spaces outside the Helford Hospital entrance.
- Construction of the campus's second parking structure, which would replace modular buildings north of parking lot E. Assuming the parking structure has an approximately 80,000 square foot footprint and is four levels plus a roof level, the new parking structure would have approximately 1,230± parking spaces (assuming an average of 325 square feet of area per parking space for the structure).

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

- There will be a small parking area next to the new research expansion proposed in Phase 2 with a capacity of 12 vehicles. This capacity is included as part of lot G's capacity in the table below.
- Parking capacity in the "Hospital Zone" would include 20 valet spaces outside the Helford Hospital entrance and a small 15 space surface parking area south of the inpatient expansion proposed in Phase 2.

These assumptions are based in whole or in part on our analysis of the potential phasing program in the draft Specific Plan's illustrative development scenario.

Table 25 summarizes projected 2025 design day parking supply, compared to the existing and projected 2020 on-campus parking supply.

Table 25: Projected 2025 Design Day Parking Supply

Parking Lot	2014	Projected 2020	Projected 2025
Lot A/Parking Structure 1	595	1750	1750
Lot A Ancillary	278	0	0
Lot B	116	0	0
Lot C	389	339	440
Lot D	411	277	277
Lot D Ancillary	165	0	0
Lot E	378	350	277
Lot F	118	100	100
Lot G	245	545	557
Utah	14	0	0
CBG	31	31	31
Population Sciences	85	68	68
2144 Buena Vista	152	738	738
2240 Buena Vista	126	126	126
Hospital Zone	251	152	35
Parking Structure 2			1230
Total Excluding Ancillary	2,911	4,476	5,629
Total Including Ancillary	3,354		

Source: Walker Parking Consultants, 2014-2015

As shown in Table 25, with the anticipated changes to the parking supply in Phase 2, there are projected to be 5,629± parking spaces on the City of Hope campus at the end of Phase 2.

2025 DESIGN DAY PARKING ADEQUACY

The projected 2025 Design Day parking adequacy is summarized in Table 26. The breakdown of the projected 2025 parking supply into specific user groups is based on the following assumptions:

- Patient/visitor parking will consist of the remaining surface parking spaces in parking Lot A (150+ spaces), the bottom three levels of the Lot A parking structure (approximately 960± parking spaces), the bottom level of parking structure 2 (approximately 245± parking spaces, and the visitor parking outside the FLASH building (15 spaces),
- 25 parking spaces in Lot G will continue to be reserved for Hope & Parsons Village.
- One level of the Lot A parking structure (approximately 320± spaces) is reserved for physicians.
- All other parking is for employees.
- Installation of an Automated Parking Guidance System in the parking structures improves parking efficiency (effective supply factors increase).

Table 26: Projected 2025 Design Day Adequacy

User Group	Demand	Supply	Effective Supply	Adequacy
Patients/Visitors	944	1,371	1,261	317
Overnight Hospitality (Hotel)	10	25	25	15
Employees ¹	2,882	3,913	3,772	890
Physicians	234	320	307	73
Totals	4,070	5,629	5,365	1,295

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

As shown in Table 26, based on the allocation of parking spaces discussed above, the parking supply will be adequate for all user groups in 2025 after completion of Phase 2 of the Project.

It should also be noted, that effective parking supply in Phase 2 without the 1,230± space parking structure 2 would be approximately 4,192± parking spaces, which is just over the total projected parking demand of 4,003 parking spaces in 2025. The parking capacity of parking structure 2 is likely to be needed by the end of phase, but construction of the structure could occur later.

2030 DESIGN DAY PARKING DEMAND

Future Design Day parking demand for Year 2030, a fifteen-year planning horizon, is computed using the parking demand ratios developed for 2015 Design Day conditions. These parking demand ratios are applied to projected 2030 employment and patient activity levels.

Table 27 provides 2030 Design Day parking demand projections. Note that these projections assume the following changes to employment and patient activity volumes over the 2025-2030 timeframe:

- The average daily bed census increases by 1.7% per year for five years;
- Outpatient volumes increase at a 4.2% growth rate per year for five years;
- Full-time employees are added at a 3.5% growth rate per year for five years;
- The number of part-time employees and contractors remains constant;
- Physicians are added at a 3.5% growth rate per year for five years;
- With the demolition of the remainder of the units at Hope and Parsons Villages, a new hospitality suite (i.e., hotel) will be constructed on campus, increasing the net new number of hotel rooms from 36 to 80.
- Due to the completion of the Duarte Gold Line Station and Gold Line extension in 2016 employee and physicians parking demand at COH will decrease by 3.5%.

Table 27: Projected 2030 Design Day Parking Demand

User Group	Activity Metric	Demand Ratio	Parking Demand
Visitor/Patient	1,514 Outpatient Visits + 250 Bed Census	0.65 per visit/bed	1,138
Overnight Hospitality (Hotel)	80 Residences	0.28 per residence	22
Employee (all but MDs) ¹	5,708 Total Employees ¹	0.57 per employee	3,250
Physician	613 Total Physicians	0.45 per physician	278
Total			4,688

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

2030 DESIGN DAY CODE-REQUIRED PARKING

Table 28 shows City of Duarte and City of Irwindale code-based parking requirements at the COH campus resulting from proposed development at the campus that could occur during Phase 3 of the conceptual phasing plan illustrative development scenario utilized for this analysis. The parking requirements are based on the following proposed land use changes occurring at COH during Phase 3:

- Removal of 70,697 square feet of hospital uses (including removal of beds taken out of service in Phase 2) in Duarte
- Construction of a 160,000 square foot clinic (outpatient) building in Duarte
- Demolition of 18,071 square feet of pre-existing office space in Duarte
- Construction of a new 70,000 square foot administrative office in Duarte
- Demolition of 28,973 square feet of pre-existing assembly space (cafeteria) in Duarte
- Demolition of 14,149 square feet of pre-existing hospitality (hotel) use (the remainder of Hope & Parsons villages), constituting 36 rooms in Duarte
- Construction of an 80 room hospitality space (i.e., hotel) in Duarte
- Construction of 40,000 square feet of industrial space in Irwindale



JUNE 2016

37-8404.00

- Demolition of 12,405 square feet of pre-existing warehousing space in Duarte
- Demolition of 26,374 square feet of pre-existing warehousing space in Irwindale
- Reacquisition of 20,000 square feet of warehouse space (2254 Buena Vista St) in Irwindale

To determine the parking requirement of the remaining non-research grandfathered uses on the Duarte portion of the COH campus, the following methodology was employed:

- The total square footage of grandfathered uses demolished during the phase was divided by the total square footage of grandfathered uses at the beginning of the phase to determine the percentage reduction in square footage.
- The derived percentage reduction was then applied to the number of grandfathered hospital employees associated with the grandfathered square footage to determine the remaining grandfathered employees.
- For the year 2030 analysis, 73,998 square feet of grandfathered space in Duarte was assumed to be either demolished or repurposed out of a total of 408,359 square feet of grandfathered space in Duarte, representing 18.1% of the grandfathered space. The total number of grandfathered employees for year 2025 conditions was 1,125. Reducing the number by 18.1% yields 921 grandfathered employees remaining (and 334,361 grandfathered square feet remaining) for 2030 conditions.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



WALKER
PARKING CONSULTANTS

JUNE 2016

37-8404.00

Table 28: COH Parking Requirements Based on Illustrative Development Scenario Phase 3 Development & City of Duarte/City of Irwindale Code

City	Land Use	Unit	Quantity	City Parking Code Requirement	Parking Spaces Required
Duarte	Research	Square Feet (SF)	626,563	1 space per 350 square feet	1,790
	Outpatient Clinic	Square Feet (SF)	440,000	1 space per 250 sf	1,760
	Office	Square Feet (SF)	70,000	1 space per 250 sf	280
	Hospital	Beds	264	2.5 spaces per bed	660
	Hospital (Grandfathered)	Employees	921 ²	1 space per 5 employees ¹	184
	Hotel	Rooms	80	1 space per room	80
	Assembly	Square Feet (SF)	7,882	1 space per 100 sf	79
<i>Subtotal City of Duarte</i>					4,833
Irwindale	Medical Office/Clinic	Square Feet (SF)	110,672	1 space per 200 sf	553
	Office	Square Feet (SF)	-	1 space per 350 sf	-
	Industrial	Square Feet (SF)	113,681 70% Indstrl, 30% Office	First 10,000 sf 1 space per 350 sf Next 40,000 sf 1 space per 500 sf >50,000 sf 1 space per 1000 sf	278
	Warehouse	Square Feet (SF)	20,000	First 20,000 sf 1 space per 1000 sf Next 20,000 sf 1 space per 2000 sf >40,000 sf 1 space per 4000 sf	20
<i>Subtotal City of Irwindale</i>					851
Grand Total					5,684

1 = Former DDC 19.78.010(b)(3)(b)

2 = In order to calculate the parking requirement for the grandfathered portion of the campus in 2030 the square footage of grandfathered uses to be demolished was subtracted from the total grandfathered square footage of the COH campus and then the percentage reduction in grandfathered uses was applied to the existing paid hospital employee count. Total square footage of remaining grandfathered non-research uses is 334,361 ±.

Source: City of Hope, Walker Parking Consultants, 2015

Projected 2030 design day parking demand is approximately 1,000 parking spaces less than the number of parking spaces required based on application of the City of Duarte's and the City of Irwindale's parking requirements to the potential net new development that could occur during Phase 3 of the Project's implementation at the COH campus.

As mentioned previously, both the DDC and IMC are silent on whether large, campus-style land uses, such as the COH campus, should be considered a single land use when calculating bicycle parking requirements or if each component of the campus program must satisfy its own bicycle parking requirements. If each use for which there are bicycle parking requirements is considered separately, then bicycle parking would be required at the end of Phase 3 as shown in Table 29.

Table 29: COH Bicycle Parking Requirements Based on Illustrative Development Scenario Phase 3 Uses & City of Duarte Code

City	Land Use	Quantity (SF)	City Bicycle Parking Code Requirement	Bicycle Parking Required
Duarte	Research	625,563	No Requirement	-
	Outpatient Clinic	440,000	5 spaces for first 25 vehicle spaces plus 1 space/10 additional vehicle spaces, max of 20 spaces	20
	Office	70,000		20
	Hospital	565,025		20
	Hotel	80 Rooms	No Requirement	-
	Assembly	7,882	No Requirement	-
	<i>Subtotal City of Duarte</i>			
Irwindale	Medical Office/Clinic	110,672	4 spaces for first 50,000 square feet plus one space for each additional 50,000 square feet	5
	Office	-		-
	Industrial	113,681 70% Indstrl, 30% Office		5
	Warehouse	20,000		4
	<i>Subtotal City of Irwindale</i>			
Grand Total				74

Source: City of Hope, Walker Parking Consultants, 2015

2030 DESIGN DAY PARKING SUPPLY BASED ON PHASING PLAN DEVELOPMENT SCENARIO

Projected 2030 Design Day parking supply is based on the projects shown in Phase 3 of the proposed phasing plan for the illustrative development scenario in the Project's draft Specific Plan, and the effects the Phase 3 projects have on the parking supply. Projected 2030 parking supply assumes the following changes to parking supply on the COH campus resulting from Phase 3 of the proposed plan:

- There will be a small surface lot south of the new medical office building proposed in phase 3 with a capacity of 25 vehicles. This lot is referred to as lot B.
- The capacity of parking lot C would be reduced to only the 100,000 square foot parking area created in Phase 2.
- The parking area referred to as "CBG" in this report would be removed in favor of landscaping and open space.
- The capacity of the population sciences parking area is reduced to 30 spaces due to the addition of landscaping.

These assumptions are based in whole or in part on our analysis of the potential phasing program in the draft Specific Plan's illustrative development scenario.

Table 30 summarizes projected 2030 design day parking supply, compared to the existing and projected 2020 and 2025 on-campus parking supply.



Table 30: Projected 2030 Design Day Parking Supply

Parking Lot	2014	Projected 2020	Projected 2025	Projected 2030
Lot A/Parking Structure 1	595	1750	1750	1750
Lot A Ancillary	278	0	0	0
Lot B	116	0	0	25
Lot C	389	339	440	308
Lot D	411	277	277	277
Lot D Ancillary	165	0	0	0
Lot E	378	350	277	277
Lot F	118	100	100	100
Lot G	245	545	557	557
Utah	14	0	0	0
CBG	31	31	31	0
Population Sciences	85	68	68	30
2144 Buena Vista	152	738	738	738
2240 Buena Vista	126	126	126	126
Hospital Zone	251	152	35	35
Parking Structure 2			1230	1230
Total Excluding Ancillary	2,911	4,476	5,629	5,453
Total Including Ancillary	3,354			

Source: Walker Parking Consultants, 2014-2015

As shown in Table 30, with the anticipated changes to the parking supply in Phase 3, there are projected to be 5,453± parking spaces on the City of Hope campus at the end of Phase 3.

2030 DESIGN DAY PARKING ADEQUACY

The projected 2030 Design Day parking adequacy is summarized in Table 31. The breakdown of the projected 2030 parking supply into specific user groups is based on the following assumptions:

- Patient/visitor parking will consist of the remaining surface parking spaces in parking Lot A (150+ spaces), the bottom three levels of the Lot A parking structure (approximately 960± parking spaces), the bottom level of parking structure 2 (approximately 245± parking spaces), 150 parking spaces in Lot G and the visitor parking outside the FLASH building (15 spaces).
- 25 parking spaces in Lot G will continue to be reserved for hospitality/hotel guests (former Hope & Parsons Village).
- The roof level of the Lot A parking structure (approximately 320± spaces) is reserved for

- physicians.
- All other parking is for employees.
 - Installation of an Automated Parking Guidance System in the parking structures improves parking efficiency (effective supply factors increase).

Table 31: Projected 2030 Design Day Adequacy

User Group	Demand	Supply	Effective Supply	Adequacy
Patients/Visitors	1,138	1,521	1,399	261
Overnight Hospitality (Hotel)	22	25	25	3
Employees ¹	3,250	3,587	3,458	208
Physicians	278	320	307	29
Totals	4,688	5,453	5,189	501

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

As shown in Table 31, based on the allocation of parking spaces discussed above, the parking supply will be adequate for all user groups in 2030 after completion of Phase 3 of the Project.

2035 DESIGN DAY PARKING DEMAND

Future Design Day parking demand for Year 2035, a twenty-year planning horizon, is computed using the parking demand ratios developed for 2015 Design Day conditions. These parking demand ratios are applied to projected 2035 employment and patient activity levels.

Table 32 provides 2035 Design Day parking demand projections. Note that these projections assume the following changes to employment and patient activity volumes over the 2030-2035 timeframe:

- The average daily bed census remains unchanged from 2030;
- Outpatient volumes increase at a 4.2% growth rate per year for five years;
- Full-time employees are added at a 3.5% growth rate per year for five years;
- The number of part-time employees and contractors remains constant;
- Physicians are added at a 3.5% growth rate per year for five years;
- The number of hotel rooms remains at 80.
- Due to the completion of the Duarte Gold Line Station and Gold Line extension in 2016 employee and physicians parking demand at COH will decrease by 3.5%.

Table 32: Projected 2035 Design Day Parking Demand

User Group	Activity Metric	Demand Ratio	Parking Demand
Visitor/Patient	1,860 Outpatient Visits + 250 Bed Census	0.65 per visit/bed	1,362
Overnight Hospitality (Hotel)	80 Residences	0.28 per residence	22
Employee (all but MDs) ¹	6,474 Total Employees ¹	0.57 per employee	3,686
Physician	729 Total Physicians	0.45 per physician	331
Total			5,401

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

2035 DESIGN DAY CODE-REQUIRED PARKING

Table 33 shows City of Duarte and City of Irwindale code-based parking requirements at the COH campus resulting from proposed development at the campus that could occur during Phase 4 of the conceptual phasing plan illustrative development scenario utilized for this analysis. The parking requirements are based on the following proposed land use changes occurring at COH during Phase 4:

- Construction of 130,000 square feet of research space in Duarte
- Construction of 120,000 square feet of office space (support): 60,000 square feet in Duarte, 60,000 square feet in Irwindale

To determine the parking requirement of the remaining non-research grandfathered uses on the Duarte portion of the COH campus, the following methodology was employed:

- The total square footage of grandfathered uses demolished during the phase was divided by the total square footage of grandfathered uses at the beginning of the phase to determine the percentage reduction in square footage.
- The derived percentage reduction was then applied to the number of grandfathered hospital employees associated with the grandfathered square footage to determine the remaining grandfathered employees.
- For the year 2035 analysis, there is no change in the grandfathered space in Duarte. The total number of grandfathered employees for year 2035 conditions remains the same as in 2030 at 921 employees.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



WALKER
PARKING CONSULTANTS

JUNE 2016

37-8404.00

Table 33: COH Parking Requirements Based on Illustrative Development Scenario Phase 4 Development & City of Duarte/City of Irwindale Code

City	Land Use	Unit	Quantity	City Parking Code Requirement	Parking Spaces Required
Duarte	Research	Square Feet (SF)	756,563	1 space per 350 square feet	2,162
	Outpatient Clinic	Square Feet (SF)	440,000	1 space per 250 sf	1,760
	Office	Square Feet (SF)	130,000	1 space per 250 sf	520
	Hospital	Beds	264	2.5 spaces per bed	660
	Hospital (Grandfathered)	Employees	921 ²	1 space per 5 employees ¹	184
	Hotel	Rooms	80	1 space per room	80
	Assembly	Square Feet (SF)	7,882	1 space per 100 sf	79
<i>Subtotal City of Duarte</i>					5,445
Irwindale	Medical Office/Clinic	Square Feet (SF)	110,672	1 space per 200 sf	553
	Office	Square Feet (SF)	60,000	1 space per 350 sf	171
	Industrial	Square Feet (SF)	113,681 70% Indstrl, 30% Office	First 10,000 sf 1 space per 350 sf Next 40,000 sf 1 space per 500 sf >50,000 sf 1 space per 1000 sf	278
	Warehouse	Square Feet (SF)	20,000	First 20,000 sf 1 space per 1000 sf Next 20,000 sf 1 space per 2000 sf >40,000 sf 1 space per 4000 sf	20
<i>Subtotal City of Irwindale</i>					1,022
Grand Total					6,467

1 = Former DDC 19.78.010(b)(3)(b)

2 = No changes to square footage of grandfathered space in Phase 4. Total square footage of remaining grandfathered non-research uses is 334,361 ±.

Source: City of Hope, Walker Parking Consultants, 2015

Projected 2035 design day parking demand is approximately 1,000 parking spaces less than the number of parking spaces required based on application of the City of Duarte's and the City of Irwindale's parking requirements to the potential net new development that could occur during Phase 4 of the Project's implementation at the COH campus.

As mentioned previously, both the DDC and IMC are silent on whether large, campus-style land uses, such as the COH campus, should be considered a single land use when calculating bicycle parking requirements or if each component of the campus program must satisfy its own bicycle parking requirements. If each use for which there are bicycle parking requirements is considered separately, then bicycle parking would be required at the end of Phase 4 as shown in Table 34.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



WALKER
PARKING CONSULTANTS

JUNE 2016

37-8404.00

Table 34: COH Bicycle Parking Requirements Based on Illustrative Development Scenario Phase 4 Uses & City of Duarte Code

City	Land Use	Quantity (SF)	City Bicycle Parking Code Requirement	Bicycle Parking Required
Duarte	Research	756,563	No Requirement	-
	Outpatient Clinic	440,000	5 spaces for first 25 vehicle spaces plus 1 space/10 additional vehicle spaces, max of 20 spaces	20
	Office	130,000		20
	Hospital	565,025		20
	Hotel	80 Rooms	No Requirement	-
	Assembly	7,882	No Requirement	-
	<i>Subtotal City of Duarte</i>			
Irwindale	Medical Office/Clinic	110,672	4 spaces for first 50,000 square feet plus one space for each additional 50,000 square feet	5
	Office	60,000		4
	Industrial	113,681 70% Indstrl, 30% Office		5
	Warehouse	20,000		4
	<i>Subtotal City of Irwindale</i>			
Grand Total				78

Source: City of Hope, Walker Parking Consultants, 2015

2035 DESIGN DAY PARKING SUPPLY BASED ON PHASING PLAN DEVELOPMENT SCENARIO

Projected 2035 Design Day parking supply is projected to be the same as projected 2030 design day parking supply as the only construction currently anticipated in Phase 4 is the addition of research lab and office space that will not impact the parking supply. Therefore the 2035 scenario is more a test of the proposed parking supply's ability to accommodate five additional years of employee and patient growth at COH.

Table 35 summarizes projected 2035 design day parking supply, compared to the existing and projected 2020, 2025 and 2030 on-campus parking supply.

Table 35: Projected 2035 Design Day Parking Supply

Parking Lot	2014	Projected 2020	Projected 2025	Projected 2030	Projected 2035
Lot A/Parking Structure 1	595	1750	1750	1750	1750
Lot A Ancillary	278	0	0	0	0
Lot B	116	0	0	25	25
Lot C	389	339	440	308	308
Lot D	411	277	277	277	277
Lot D Ancillary	165	0	0	0	0
Lot E	378	350	277	277	277
Lot F	118	100	100	100	100
Lot G	245	545	557	557	557
Utah	14	0	0	0	0
CBG	31	31	31	0	0
Population Sciences	85	68	68	30	30
2144 Buena Vista	152	738	738	738	738
2240 Buena Vista	126	126	126	126	126
Hospital Zone	251	152	35	35	35
Parking Structure 2			1230	1230	1230
Total Excluding Ancillary	2,911	4,476	5,629	5,453	5,453
Total Including Ancillary	3,354				

Source: Walker Parking Consultants, 2014

2035 DESIGN DAY PARKING ADEQUACY

The projected 2035 Design Day parking adequacy is summarized in Table 36. The breakdown of the projected 2035 parking supply into specific user groups is based on the following assumptions:

- Patient/visitor parking will consist of the remaining surface parking spaces in parking Lot A (150+ spaces), the bottom three levels of the Lot A parking structure (approximately 960± parking spaces), the bottom level of parking structure 2 (approximately 245± parking spaces), 150 parking spaces in Lot G and the visitor parking outside the FLASH building (15 spaces).
- 25 parking spaces in Lot G will continue to be reserved for hotel guests (former Hope & Parsons Village).
- The roof level of the Lot A parking structure and a portion of the fourth level (approximately 360± spaces) is reserved for physicians.
- All other parking is for employees.
- Installation of an Automated Parking Guidance System in the parking structures

improves parking efficiency (effective supply factors increase).

Table 36: Projected 2035 Design Day Adequacy

User Group	Demand	Supply	Effective Supply	Adequacy
Patients/Visitors	1,362	1,521	1,399	37
Overnight Hospitality (Hotel)	22	25	25	3
Employees ¹	3,686	3,547	3,419	(267)
Physicians	331	360	346	15
Totals	5,401	5,453	5,189	(212)

Source: Walker Parking Consultants, 2014-2016

Note: 1. Includes part-time, contract, and full-time equivalent (FTE) employees.

As shown in Table 36, based on the allocation of parking spaces discussed above, the parking supply will be adequate for all user groups in 2035 after completion of Phase 4 of the proposed phasing plan illustrative development scenario in the Project's draft Specific Plan. On an absolute level, the projected parking supply of 5,453± parking spaces is 52 spaces greater than the projected parking demand of 5,401± parking spaces; however, when factoring in effective supply, and the need to create distinct parking areas to protect convenient parking for certain user groups (patients/visitors, physicians), an effective parking deficit of 212± spaces is projected for design day 2035 conditions.

It should be noted that the design day parking analysis assumes no parking management changes occur in the future, besides reallocation of parking among user groups and installation of automate parking guidance systems in the two parking structures, and that existing travel and parking behavior remains the same, except for a 3.5% reduction in employee/physician parking demand due to the Gold Line extension and opening of Duarte station.

Walker typically recommends that large institutions, such as Medical Centers, prepare a parking supply/demand analysis periodically to evaluate if growth assumptions from prior analyses have borne out, and to determine if user group parking demand ratios are remaining consistent over time, increasing or decreasing. A four percent parking deficit projection twenty years out may not necessarily materialize. Specifically, the Los Angeles area's recent promotion of increased transit opportunities, as well as the advent and increasing use of ride hailing apps and increasing research and development of autonomous vehicle technology, may result in decreasing user group parking demand ratios over time. Periodic evaluation would allow for potential recalibration of the projected future parking demand and needed supply in the event that user group parking demand ratios were to change over time.



PARKING SUPPLY TRIGGERS AND PARKING DEMAND MONITORING

This parking demand analysis has modeled the number of parking spaces required to meet the parking needs of all parking patrons at the COH campus utilizing user group parking demand ratios. Based on the growth projections provided by the COH, an increase in parking supply of 2,100± parking spaces is needed over the Project's 20-year planning horizon, increasing parking supply on the COH campus from 3,350± parking spaces today (including the ancillary lots) to 5,450± parking spaces at the end of Project buildout.

Based on the proposed development on the campus that could occur over the course of the Project based on the conceptual phasing plan from the specific plan's illustrative development scenario that is utilized in this analysis, approximately 1,018,000± square feet of net new space could potentially be built on the campus over the 20-year planning horizon.

To provide more guidance on when new parking facilities should be constructed over the course of the Project's buildout, the projected additional parking supply needed has been tied to the projected addition of net new square footage to the COH campus. The proposed parking ratios provided below will allow COH to understand the additional parking supply needed on a building by building basis as elements of the Project are constructed, no matter the order in which they are constructed. The below ratios have been included as part of the draft Specific Plan.

Table 37 shows the proposed parking supply ratio for net new construction on the COH campus that equate to a 2,100± parking supply increase over the currently proposed 20-year planning horizon. The ratios were derived by analyzing the existing uses and square footages on the COH campus and comparing them to existing parking demand patterns. Based on the proposed net change in square feet on the campus per land use type, and the projected increase in parking demand over the currently proposed 20-year planning horizon based on the user group supply/demand analysis, the following parking supply ratios were derived and calibrated to ensure that adequate parking supply is provided to achieve the projected supply of 5,450± parking spaces.

Table 37: Proposed Parking Supply Ratios for Net New Construction

Use	Net Change in Square Feet	Recommended Parking Ratio per KSF	Additional Parking Supply
Outpatient/Clinical Support	410,190	2.50	1,025
Hospital	139,303	1.75	244
Office	121,665	2.00	243
Research	292,992	2.00	586
Misc/Other ¹	54,143	0.50	27
Total	1,018,293		2,126

Source: Walker Parking Consultants, 2014-2015

Note: KSF = thousand square feet

1. Misc/other includes Assembly, Warehousing, Industrial and Hotel land uses

In addition to the parking supply guidance contained in Table 37, Walker recommends that COH periodically performs a parking demand analysis on the campus to determine whether the established user group parking demand ratios, on which this current analysis is based, are remaining consistent over time, increasing or decreasing. Periodic evaluation would allow for potential recalibration of the projected future parking demand and needed supply in the event that user group parking demand ratios were to change over time.

RECOMMENDED PARKING SUPPLY PLAN

Table 38 shows the planned projects/phases in the potential illustrative development scenario. The phases do not currently have a specific project order defined, however Table 38 provides a conceptual project order based on COH's current parking shortfall.

CITY OF HOPE CAMPUS PLAN

PARKING STUDY



JUNE 2016

37-8404.00

Table 38: Proposed Order of Project Phasing

Phase	Project	Project Goal	Campus Infrastructure Additions	Spaces Added/ (Lost)	Supply	Effective Supply	Demand	Surplus/ Deficit		
	Present Day					3,354	3,186	3,227	(41)	
1	1	2144 Buena Vista Lot Expansion	738 spaces	586	3,940	3,717	3,227	490		
	2	Lot A Parking Structure (during construction)			(545)	3,395	3,203	3,227	(24)	
		Lot A + Parking Structure (complete)		1,750 spaces	1,700	5,095	4,807	3,227	1,580	
	3	Permanent Closure of Lot A Ancillary			(278)	4,817	4,544	3,227	1,317	
	4	Demolition		(29,810) GSF		4,817	4,544	3,227	1,317	
		Outpatient Expansion		280,000 GSF		4,817	4,544	3,227	1,317	
	5	Research Building		80,000 GSF	(245)	4,572	4,313	3,227	1,086	
	6	Demolition		(38,903) GSF	(116)	4,456	4,204	3,227	977	
		Office Expansion		50,000 GSF		4,456	4,204	3,227	977	
7	Campus Loop Road			(280)	4,176	3,940	3,227	713		
	Lot G Expansion		545 spaces	300	4,476	4,223	3,227	996		
END OF PHASE 01 PROJECTIONS					1,122	4,476	4,223	3,558	665	
2	TBD	Inpatient Expansion		210,000 GSF	(117)	4,359	4,112	3,558	554	
		Research Expansion		82,992 GSF	12	4,371	4,124	3,558	566	
		Office Demolition		(61,361) GSF						
		Warehouse Demolition		(9,586) GSF						
		Lot C Expansion			101 spaces	4,472	4,219	3,558	661	
		Industrial Expansion		14,648 GSF		4,472	4,219	3,558	661	
		Parking Structure 2 (during construction)			spaces	(73)	4,399	4,150	3,558	592
		Parking Structure 2 (Complete)		1,230 spaces	1,230 spaces	5,629	5,365	3,558	1,807	
END OF PHASE 02 PROJECTIONS					1,153	5,629	5,365	4,070	1,295	
3	TBD	Assembly Demolition		(28,973) GSF		5,629	5,357	4,070	1,287	
		Inpatient Demolition		(70,697) GSF		5,629	5,357	4,070	1,287	
		Outpatient Expansion		160,000 GSF		5,629	5,357	4,070	1,287	
		Office Expansion		51,929 GSF	25	5,654	5,380	4,070	1,310	
		Hospitality (Hotel) Expansion		60,451 GSF		5,654	5,380	4,070	1,310	
		Warehouse Demolition		(18,779) GSF		5,654	5,380	4,070	1,310	
		Industrial Expansion		40,000 GSF		5,654	5,380	4,070	1,310	
		Campus Landscaping & Misc.				(201)	5,453	5,189	4,070	1,119
END OF PHASE 03 PROJECTIONS					(176)	5,453	5,189	4,688	501	
4	TBD	Research Expansion		130,000 GSF		5,453	5,189	4,688	501	
		Office Expansion		120,000 GSF		5,453	5,189	4,688	501	
END OF PHASE 04 PROJECTIONS					0	5,453	5,189	5,401	(212)	

Source: City of Hope draft Specific Plan – Illustrative Development Scenario, Walker Parking Consultants, 2014-16

It should be noted that the data in Table 38 is focused solely on supply and demand for the hospital user groups (patients, visitors, staff, physicians and residents) and does not contain any assumptions or projections for construction related parking demand over the course of the Project.



Given the existing parking supply on campus, it is recommended that the 2144 Buena Vista Surface Lot expansion occur in the beginning of Phase I of the potential development scenario, to provide additional parking for employees and potentially for construction workers, followed by the construction of the Lot A parking structure. Since these two projects are projected to result in a net increase of approximately 1,550± parking spaces, it may be possible to push other surface parking improvements, such as the expansion of Lot G, into a later development phase.

It should be noted that the design day parking analysis assumes no parking management changes occur in the future, besides reallocation of parking among user groups and installation of automate parking guidance systems in the two parking structures, and that existing travel and parking behavior remains the same, except for a 3.5% reduction in employee/physician parking demand due to the Gold Line extension and opening of Duarte station.

Implementation of carpool/vanpool programs and transit incentives could reduce employee parking demand by approximately 2-10% and potentially allow for a reduction in parking supplied on the campus. Instituting mandatory valet parking for patients/visitors would also reduce the needed parking supply on campus.

Based on the projected parking demand over the course of the illustrative development scenarios in the supply/demand analysis, and the number of parking spaces proposed based on the project phasing in Table 38, a small effective parking deficit is projected based on current user group parking ratios is projected at the end of the currently proposed 20-year planning horizon. Walker recommends that COH periodically performs a parking demand analysis on the campus to determine whether the established user group parking demand ratios, on which this current analysis is based, are remaining consistent over time, increasing or decreasing. Periodic evaluation would allow for potential recalibration of the projected future parking demand and needed supply in the event that user group parking demand ratios were to change over time. This is particularly salient given the recent emergence of the use of ride sharing applications as a viable means of transportation, as well as recent improvements in autonomous vehicle technology, both of which are likely to result in lower user group demand ratios in the future, compared to today, as the technology becomes more accepted.