

# City of Dunedin Parking Study

November 2009



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## Executive Summary



The purpose of the Dunedin Parking Study is to analyze the current parking supply and demand; provide parking recommendations; and conduct an assessment of alternative forms of transportation for a greener environment. The study area is defined as the limits of the Community Redevelopment Area, which is bound by Hancock Street, Jackson Street, and Bay Street to the north, New York Avenue to the east, Scotland Street to the south, and the Gulf of Mexico to the west.



Community input from local residents, business owners and visitors was very important to understand the parking issues and concerns of Downtown Dunedin, and to create an effective parking plan. This input revealed that visitors and local residents have difficulty in locating City parking facilities and that better signage is necessary for the Downtown. The City of Dunedin has some wayfinding signage in place for the Downtown, but no parking directional signs. A more comprehensive wayfinding signage system plan needs to be implemented to provide a cohesive design through branding and a hierarchical approach to direct visitors to the Downtown, places of interest and parking facilities. The survey responses underscore the conclusions of BASE Consultants. The main issues with Downtown parking are insufficient parking at special events and ineffective signage directing visitors to public parking lots. In addition, a public parking garage has strong support from the community



BASE Consultants performed a complete inventory of on-street and off-street City parking within the Downtown CRA. The total public parking available in the Downtown core is 542 spaces. After applying a 95% factor to account for the fact that all parking is not available to patrons looking for a space, the effective parking supply within the Downtown is 514 spaces. This effective supply will be used to compare the parking supply with the parking demand.



The parking demand is determined by performing occupancy counts on typical busy days. Based on the particular conditions of the City of Dunedin, the occupancy counts were performed on a Special Event day, during the Green Market, and on a Saturday during the daytime. The peak parking accumulations observed during the three different survey days are as follows:

- Green Market - 385 occupied spaces
- Saturday – 297 occupied spaces
- Special Event – 512 occupied spaces

After adjusting for seasonality, it was determined that the parking adequacy (effective supply minus parking demand) during a large Special Event such as Mardi Gras can be a **deficit** of **1,534** spaces. The parking occupancies during the Green Market and Saturday were not adjusted for seasonality since April (when the counts were performed) is still considered high season for the City of Dunedin.

In addition to the observed parking demand, the principles of shared parking have been used to determine the theoretical peak parking demand that will be experienced by the study area, as well as specifically the Downtown/Main Street corridor. Based on the findings of the theoretical shared parking demand, the maximum demand of 488 spaces will occur at 8:00 p.m. on a weekday in December. The City's current parking supply is not sufficient to handle the theoretical demand. If and when the 180 "at risk" parking spaces are removed from the supply, the parking adequacy is projected to be a **deficit** of **154** spaces.

Based on the results of the parking occupancy surveys, BASE recommends that the City consider adding a parking garage in the near future. To take advantage of economies of scale and cost per space efficiencies, the garage should add between 400 and 500 spaces (four to five levels) with ground floor retail. This garage would serve the needs of visitors to the Downtown and the Pinellas Trail, as well as Special Events parkers. In addition to a parking garage, in order to effectively manage the parking situation during special events, we recommend that the City take the following steps.

- Utilize available parking supply at the Stadium.
- Create and distribute special events parking map.
- Consider charging \$5.00 per day for parking in the lots closest to Main Street, especially during the busiest events.
- Provide additional temporary signage directing visitors to parking locations during special events.
- Make Downtown merchants aware of special event parking policies and locations.

Other alternatives to manage parking within the Downtown District are to create pedestrian friendly environments with sidewalk and bicycle connections and improve the public transit system to reduce driving automobiles to the Downtown. The City has several policies in the Comprehensive Plan and the Land Development Code to improve pedestrianways and bicycleways not only within the Community Redevelopment

District, but citywide. The City has also initiated communications with Pinellas Suncoast Transit Authority (PSTA) and the Pinellas County Metropolitan Planning Organization (MPO) to enhance the transit system and needs to continue the dialogue when funding opportunities become available. Partnering with the Downtown Merchants Association for an interim trolley system may be beneficial to determine the viability of such a transit route.

Other modes of transportation, such as golf carts, Segways, bicycle rickshaws and horse drawn carriages may be viable alternatives to reduce parking demand within the Downtown District, attract more tourists and provide convenience to local residents. However, there are inherent problems to share the roadway or sidewalk with these energy-efficient vehicles, which is primarily SAFETY. In addition, the Downtown may lose its appeal of being the “*Best Walking Town in America.*” To implement these alternative modes of transportation, the City may have to conduct traffic management studies to prevent traffic congestion; adopt planning policies to regulate their use; and provide additional staff to register, inspect and regulate the vehicles. There may be some associated operating costs for the Community Redevelopment Agency, such as regulatory signage, traffic control devices, public information/literature, electric charging station and staffing.

# 1.0 Introduction

## 1.1 BACKGROUND

The City of Dunedin is located in Pinellas County, on the West Coast of Florida. The major destinations in Dunedin include the Dunedin Causeway, Honeymoon Island and Caladesi Island State Parks, Downtown and Main Street, the Pinellas Trail, and Dunedin Stadium, spring home of the Toronto Blue Jays. Dunedin's population is 37,561 (Bureau of Economic and Business Research (BEBR), University of Florida), but as many as 40,000 visit the City during special events such as Mardi Gras, and Wines the Blues. In addition to special events, the City hosts a Downtown Green Market on Friday mornings, from 8:00 a.m. to 1:00 p.m. between the months of October and May, and on the second Saturday of every month from April to October.

In 1988, the City of Dunedin established a Community Redevelopment District (CRA) in the downtown area. The Pinellas Trail runs through the Downtown creating a haven for walkers, skaters and bikers with quaint boutiques and galleries, and delightful restaurants. The Main Street has on-street parking, as well as some parking lots to accommodate visitors and special events.

## 1.2 PURPOSE OF STUDY

The purpose of the Dunedin Parking Study is to analyze the current parking supply and demand; provide parking recommendations; and conduct an assessment of alternative forms of transportation for a greener environment. There are several terms used in this report that are unique to the field of parking consulting. Please refer to **Appendix A** for the definitions.

The study area is defined as the limits of the Community Redevelopment Area, which is bound by Hancock Street, Jackson Street, and Bay Street to the north, New York Avenue to the east, Wood Street and Scotland Street to the south, and the Gulf of Mexico to the west (see Figure 1).

The report is divided into the following sections.

1. Parking Needs Assessment
  - Community Involvement - Parking survey
  - Parking code comparison
  - Current parking supply and demand analysis
  - Shared parking demand
  - Future parking demand



Main Street



Pinellas Trail



On-street parking



Surface parking

2. Parking Recommendations

- Parking enforcement
- Surface parking
- Structured parking
- Special events parking
- Parking wayfinding system

3. Alternative Transportation Assessment

- Public transit system
- Bicycleways
- Pedestrianways
- Golf carts
- Electric personal assistive mobility devices
- Bicycle rickshaws
- Horse-drawn carriages

Figure 1: City of Dunedin Community Redevelopment District



## 2.0 Parking Needs Assessment

In order to create a parking plan for the Dunedin CRA that will effectively solve the parking issues, it is critical to assess the current and future parking needs for Downtown Dunedin.

Several assessments were conducted to determine the perceived and actual parking concerns.

- Community involvement by listening to the Downtown business community and soliciting public input through an on-line parking survey.
- Code comparison of the City's parking standards to other local municipalities of similar size.
- Inventory of on-street and off-street City parking to determine available parking supply.
- Parking demand and adequacy analysis during peak demands and special events.
- Theoretical parking demand for the Downtown core utilizing the principles of Shared Parking.

### 2.1 COMMUNITY INVOLVEMENT

Community input from local residents, business owners and visitors was very important to understanding the parking issues and concerns of Downtown Dunedin to create an effective parking plan.

Dunedin's business community is very involved in the City's economic development, and the business owners have a vested interest in the success of the new parking plan. In order to understand the needs of Dunedin's business owners, BASE Consultants attended the CRA Roundtable event, Share in the Vision, on March 20, 2009, as well as the CRA Update to the City Commission on May 12, 2009. The common themes relating to parking that came out of these discussions were:

- Better parking signs are needed.
- Alternatives to single-occupant vehicle trips into the Downtown should be explored.
- The City should explore alternative parking locations within the Downtown as the more expensive parcels are developed.

The Dunedin Chamber of Commerce also voiced their concerns with respect to parking.

- Parking spaces are difficult to find between 11:30 a.m. and 2:00 p.m.
- All public parking lots and on-street parking spaces around the west side of Downtown are full.
- Visitors to the Downtown have expressed frustration with finding available parking as well as insufficient signage directing them to the parking locations.
- The Chamber fields many questions on the location of the Blue Jays stadium since there is insufficient signage directing visitors to the stadium.

In addition to the CRA Roundtable and Chamber of Commerce input, BASE Consultants and HHI Design, in collaboration with the City, developed an online survey designed to solicit feedback from the Dunedin community with regards to the parking situation in the Downtown. The survey consists of 14 questions, the majority of them closed-ended, meaning that respondents have to select one of the presented choices as answers. Some questions allow respondents to submit their comments. The survey was hosted by Zoomerang ([www.zoomerang.com](http://www.zoomerang.com)) and respondents were able to access the survey from May 1<sup>st</sup> through June 30<sup>th</sup>. The web address for the survey was sent to all Dunedin residents and business owners on the water bill. The Chamber of Commerce distributed the web address to its members as well. For condominium owners who don't receive water bills, the City contacted condominium associations to disseminate the survey web address. Out of a pool of 19,451 potential respondents, 334 individuals responded to the survey. This represents a completion rate of 1.7%. The complete survey results are included in **Appendix B**. Survey highlights include:

- 63% of respondents are Dunedin residents.
- 24% of respondents are Dunedin business owners.
- 83% of respondents visit the Downtown at least once a week.
- 64% of respondents believe that more parking is required Downtown.
- The two main issues with Downtown parking as identified by respondents were:
  - Not enough parking for special events – 71%
  - Difficult to find public parking lots – 37%



DUNEDIN COMMUNITY REDEVELOPMENT DISTRICT  
PARKING STUDY QUESTIONNAIRE

Questions marked with an asterisk (\*) are mandatory.

4 \* What is your overall impression of the parking situation in the Downtown?

- Adequate parking
- Need more parking
- Other, please specify

5 \* What problems do you currently experience with respect to parking in the Downtown? (more than one answer, as applicable)

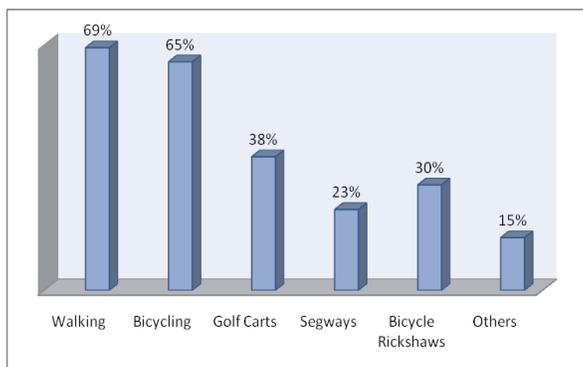
- Difficult to find public parking lots
- Public parking lots too far from the businesses
- Lack of parking during special events (Mardi Gras, Wines the Blues, Green Market, Blue Jays games)
- Overflow parking in the adjacent neighborhoods
- Other, please specify

6 If you use handicap spaces, have you had difficulty in finding parking and/or accessing onto the sidewalks?

- Yes
- No
- Not applicable

On-line Parking Survey

- The same amount of respondents (5%) have and have not had difficulty using handicap spaces.
- 98% of respondents will not walk for more than 15 minutes from their parking to their destination.
- 70% of business owners would like the City to provide designated employee parking to free up prime parking spots for visitors. However, only 29% of business owners would pay for employee parking.
- 76% of respondents are willing to use a well-designed and secure parking garage.
- 63% of respondents cite a lack of sufficient and effective signage directing visitors to the public parking lots.
- 52% of respondents are willing to pay between \$5 and \$10 a day to park closer to special events.
- The locations identified as lacking adequate parking are:
  - Main Street and Douglas Avenue – 59%.
  - Main Street and Broadway Street – 47%.
- The majority of respondents identify walking and biking as opportunities to reduce single-occupant vehicle trips to the Downtown.
- Only 38% of respondents identify golf carts as desirable opportunities to reduce single-occupant vehicle trips to the Downtown.
- Only 23% of respondents identify Segways as desirable opportunities to reduce single-occupant vehicle trips to the Downtown.
- Only 30% of respondents identify bicycle rickshaws as desirable opportunities to reduce single-occupant vehicle trips to the Downtown.



On-line Parking Survey Results  
Alternative Modes of Transportation

The survey responses underscore the conclusions of BASE Consultants. The main issues with Downtown parking are insufficient parking at special events and ineffective signage directing visitors to public parking lots. In addition, a public parking garage has strong support from the community. It is worth noting that the majority of respondents believe that walking and bicycling are the best alternatives to single-occupancy vehicle trips to the Downtown, and that a small

minority of respondents would like to see the options of golf carts, Segways, and bicycle rickshaws explored.

## 2.2 CODE COMPARISON

As part of the scope of the parking study, the current Dunedin parking code has been compared to the parking code of other Florida cities with similar downtowns: Winter Park, Winter Garden, Delray Beach, and Naples. In addition, the parking requirements recommended by ULI have been included for comparison.

Currently, Dunedin's code has separate parking requirements for the downtown zoning districts. It is worth noting that covered restaurant dining areas located outside have a different parking requirement of 1 space per 800 square feet, and uncovered dining areas located outside do not require parking. Dunedin is the only city in our comparison that has less-stringent requirement for restaurants, since restaurants are usually a large generator of parking demand.

### 2.2.1 Transient Lodging

Dunedin separates the parking requirements for transient lodging into bed and breakfast establishment and hotels. This is due to the fact that the current downtown composition and layout favors bed and breakfast-type establishments over hotels. However, neither ULI nor the comparison cities make a distinction between different types of lodging. The City Code requires 0.5 spaces per 1 unit for hotels. Even though many tourists take taxis and other public transportation to hotels, ULI has determined that the starting assumption should be that 100% of the hotel's guests will travel by private car. The comparison cities seem to agree with this assumption. In addition, the City does not require additional parking for any auxiliary commercial space within the hotel. ULI and most of the comparison cities require additional parking to cover the needs of hotel restaurants, bars, ballrooms, and conference rooms. *Table 1* shows the code comparison for transient lodging.



Hotel

**Table 1: Parking Comparison of Transient Lodging**

<b>Transient Lodging</b>	
Dunedin	
Bed and breakfast	1 space per unit plus 1
Hotel	0.5 space per unit
Motel	1 space per unit
ULI**	1.18 spaces per unit
Delray Beach*	0.7 spaces per unit
Naples***	1.25 spaces per unit
Winter Garden*	1 space per unit
Winter Park	1 space per unit

\* Additional parking is required for auxiliary uses

\*\* Includes 1 space per unit for guests and 0.18 spaces per unit for employees

\*\* Hotels with more than 100 rooms have separate parking requirements

### 2.2.2 Commercial/Retail



Commercial/Retail

Dunedin’s parking requirement for retail is 1 parking space per 400 square feet of gross floor area (GFA). The comparison cities also use the gross floor area requirement in calculating parking, but require on average 1 parking space per 300 square feet. ULI approaches retail requirements a little differently: it uses gross leasable area (GLA), which excludes elevator shafts, electric/utility rooms, etc., but includes commonly used areas such as mezzanines, hallways, etc. ULI’s requirement is 1 parking space per 250 square feet of GLA. *Table 2* shows the code comparison for commercial/retail space.

**Table 2: Parking Comparison of Commercial/Retail Space**

<b>Commercial/Retail</b>	
Dunedin	1 space per 400 s.f. GFA
ULI*	1 space per 250 s.f. GLA
Delray Beach**	1 space per 300 s.f. GFA
Naples**	1 space per 300 s.f. GFA
Winter Garden**	1 space per 333 s.f. GFA
Winter Park**	1 space per 250 s.f. GFA

\* GLA does not include elevator shafts, electric/utility rooms, etc. but includes commonly used areas such as mezzanines, hallways, etc.

\*\* GFA includes all of the floor area in the building such as elevator shafts, utility rooms, etc.



Office

### 2.2.3 Office

Dunedin’s parking requirement for office in the Downtown district is 1 space per 400 square feet of GFA. The comparison cities, with the exception of Delray, utilize an average requirement of 1 space per 300 square feet of GFA. The City of Delray Beach is encouraging more office development in its CRA district, so they have recently updated the office parking requirement to 1 space per 300 square feet of net floor area (NFA), which removes public lobbies, public exit corridors, public stairs, public mechanical/electrical rooms, public restroom facilities and public elevators from the GFA. ULI’s parking requirement is 1 space per 263 square feet of GFA. *Table 3* shows the code comparison for office space.

**Table 3: Parking Comparison of Office Space**

Office	
Dunedin	1 space per 400 s.f. GFA
ULI*	1 space per 263 s.f. GFA
Delray Beach**	1 space per 300 s.f. NFA
Naples*	1 space per 300 s.f. GFA
Winter Garden*	1 space per 333 s.f. GFA
Winter Park*	1 space per 250 s.f. GFA

\* GFA includes all of the floor area in the building such as elevator shafts, utility rooms, etc.

\*\* NFA refers to floor area minus public lobbies, public exit corridors, public stairs, public mechanical/electrical rooms, public restroom facilities and public elevators.



Restaurant

### 2.2.4 Restaurant

Dunedin’s parking requirements for restaurants are separated into three categories: for indoor space, 1 parking space per 400 square feet of GFA is required. For covered outdoor seating space, 1 parking space per 800 square feet is required. For uncovered outdoor seating space, no additional parking is required. None of the comparison cities separate their parking requirements thusly, and neither does ULI. The parking requirements for restaurants for the comparison cities vary, but all require more parking for restaurant uses compared to Dunedin. ULI requires 1 space per 50 square feet of gross leasable area. *Table 4* shows the code comparison for restaurant space.

**Table 4: Parking Comparison of Restaurant Space**

<b>Restaurant</b>	
Dunedin	
Interior space	1 space per 400 s.f. GFA
Exterior covered space	1 space per 800 s.f. GFA
Exterior uncovered space	No additional parking required
ULI*	1 space per 50 s.f. GLA
Delray Beach**	1 space per 167 s.f. GFA
Naples**	1 space per 100 s.f. GFA
Winter Garden	
Patrons	1 space per 4 seats
Employees	1 space per 3 employees
Winter Park	1 space per 50 s.f. of patron use

- \* GLA does not include elevator shafts, electric/utility rooms, etc. but includes commonly used areas such as mezzanines, hallways, etc.
- \*\* GFA includes all of the floor area in the building such as elevator shafts, utility rooms, etc.

**2.2.5 Residential**

Currently, Dunedin does not have a large amount of residential zoning within the CRA. The parking requirement for residential areas is 1 space per unit, with no additional parking required for visitors. The comparison cities require on average 2 spaces per unit, and only Naples requires an additional 0.1 parking space per unit for visitors. ULI requires 1.7 spaces per unit for residents and 0.15 spaces per unit for visitors. *Table 5* shows the code comparison for residential units.



*Residential*

**Table 5: Parking Comparison of Residential Units**

<b>Residential</b>	
Dunedin	1 space per unit
ULI	
Residential	1.7 spaces per unit
Visitors	0.15 spaces per unit
Delray Beach	N/A
Naples	
Residential	2 spaces per unit
Visitors	0.1 spaces per unit
Winter Garden	2 spaces per unit
Winter Park	2.5 spaces per unit

## 2.3 PARKING SUPPLY

BASE Consultants performed a complete inventory of on-street and off-street City parking within the Downtown CRA. Private parking lots that were reserved for users of a particular establishment were not counted in the inventory, since, realistically, these spaces are not available to the public.

Currently, public parking is provided in 7 lots as well as on the street. All available parking is located within 5 minutes of Downtown. The complete parking supply is shown on *Figure 2* and *Table 6*.

It is worth noting that the Ocean Optics, Church, and Louden Lots (180 spaces) are considered “at risk”. This means that, depending on economic factors, these parking spaces could be removed from the available supply with only 60-day notice if the land is used for more valuable developments. These lots are denoted with an asterisk (\*) throughout the report to indicate the “at risk” status.



1. Church Lot\*



2. Scotland Lot



4. Monroe Street Lot



6. Louden Lot\*



3. Historical Society Lot



5. Ocean Optics Lot\*



7. Marina Lot

Figure 2: Existing Downtown Parking Lots

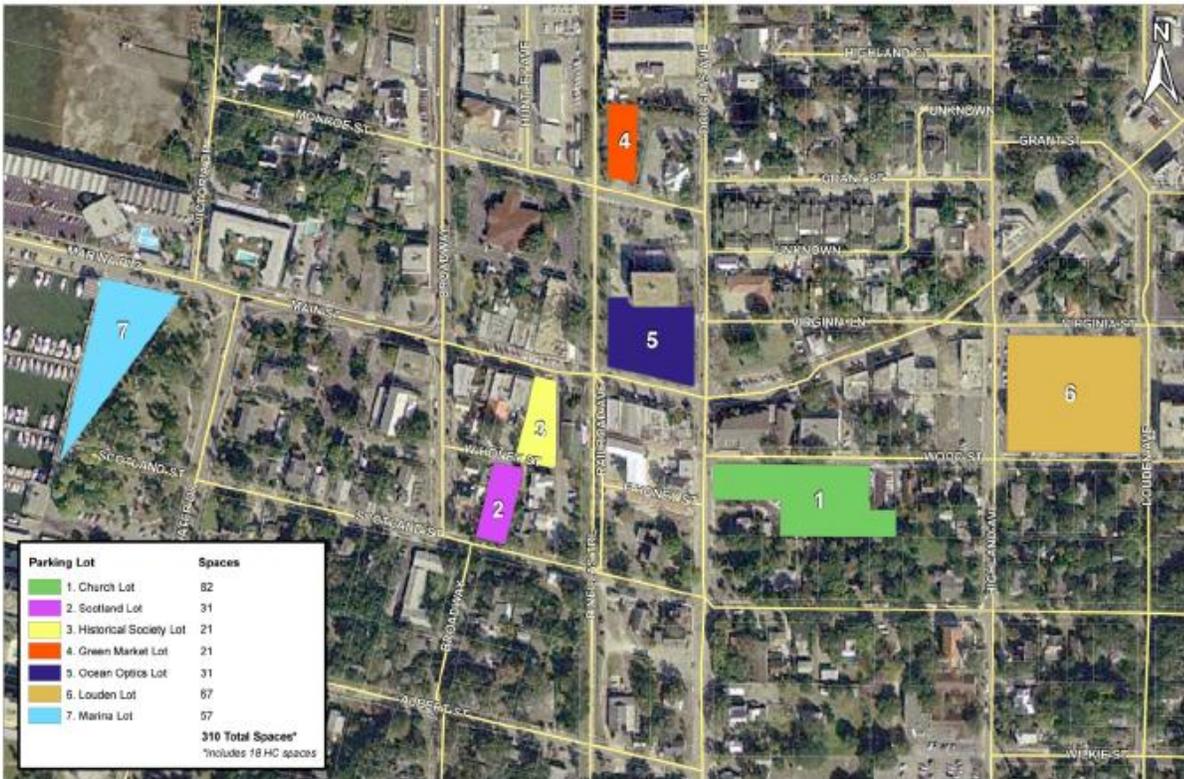


Table 6: Downtown Dunedin Available Parking

Location	Standard Spaces	Handicap Spaces	Total Parking Supply
Church Lot*	78	4	82
Scotland Lot	30	1	31
Historical Society Lot	20	1	21
Monroe Street Lot	20	1	21
Ocean Optics Lot*	29	2	31
Louden Lot*	62	5	67
Marina Lot	53	4	57
<b>Total Off Street Parking</b>	<b>292</b>	<b>18</b>	<b>310</b>
<b>Total On-Street Parking</b>	<b>218</b>	<b>14</b>	<b>232</b>
<b>Total Public Parking</b>	<b>510</b>	<b>32</b>	<b>542</b>

The total public parking available in the Downtown core is 542 spaces. However, the effective supply available needs to reflect the fact that all parking is not 100% available to patrons looking for a space. It is a generally accepted parking principle that approximately 5% to 15% of the parking supply needs to be taken out of the effective parking supply. These excess parking spaces provide a buffer to allow for improperly parked vehicles, minor construction, and the dynamics of cars going in and out of the parking spaces. Converting the total parking supply into an effective parking supply ensures that patrons spend less time searching for the last few available parking spaces. If parking occupancy exceeds the effective parking supply, drivers may become frustrated while looking for a parking space and may have a perception of inadequate supply even though there may be a few empty spaces available. Because of the proximity of Dunedin's public parking lots to the destinations (as well as to each other), the total parking supply will be adjusted by 95%. This means that, out of 542 total parking spaces available, 514 will be considered the effective parking supply and used to compare the parking supply with the parking demand. The total parking inventory, supply adjustment factor, and resulting effective parking supply are shown in *Table 7*.

**Table 7: Parking Inventory Supply (Adjustment Factor and Effective Supply)**

<b>Location</b>	<b>Total Supply</b>	<b>Adjustment Factor</b>	<b>Effective Supply</b>
Church Lot	82	95%	78
Scotland Lot	31	95%	29
Historical Society Lot	21	95%	20
Monroe Street Lot	21	95%	20
Ocean Optics Lot	31	95%	29
Louden Lot	67	95%	64
Marina Lot	57	95%	54
<b>Total Off Street Parking</b>	<b>310</b>	<b>95%</b>	<b>294</b>
<b>Total On-Street Parking</b>	<b>232</b>	<b>95%</b>	<b>220</b>
<b>Total Public Parking</b>	<b>542</b>	<b>95%</b>	<b>514</b>



Green Market



Saturday



Special Events

## 2.4 PARKING DEMAND AND PARKING ADEQUACY

The parking demand is determined by performing occupancy counts on typical busy days. Based on the particular instances of the City of Dunedin, the occupancy counts were performed on a Special Event day, during the Green Market, and on a Saturday during the daytime. The same methodology was used during all occupancy counts. Data was collected on the following days:

- Friday, April 17 (Green Market)
- Saturday, April 18
- Tuesday, May 5 (Cinco de Mayo event)

The peak parking accumulations observed during the three different survey days are as follows:

- Green Market - 385 occupied spaces
- Saturday – 297 occupied spaces
- Special Event – 512 occupied spaces

The peak demand on the Downtown parking occurs during special events. Peak parking demand is summarized in *Table 8*. More detailed information about the occupancy counts can be found on **Appendix C**.

**Table 8: Peak Parking Demand**

### Green Market

Location	Effective Supply	Peak Demand	Occupancy
Church Lot*	78	44	56%
Scotland Lot	29	31	100%
Historical Society Lot	20	21	100%
Monroe Street Lot	20	17	85%
Ocean Optics Lot*	29	31	100%
Louden Lot*	64	32	50%
Marina Lot	54	33	61%
<b>Total Off Street Parking</b>	<b>294</b>	<b>209</b>	<b>71%</b>
<b>Total On-Street Parking</b>	<b>220</b>	<b>176</b>	<b>80%</b>
<b>Total Public Parking</b>	<b>514</b>	<b>385</b>	<b>75%</b>

## Saturday Daytime

Location	Effective Supply	Peak Demand	Occupancy
Church Lot*	78	7	9%
Scotland Lot	29	31	100%
Historical Society Lot	20	21	100%
Monroe Street Lot	20	12	60%
Ocean Optics Lot*	29	28	97%
Louden Lot*	64	16	25%
Marina Lot	54	36	67%
<b>Total Off Street Parking</b>	<b>294</b>	<b>151</b>	<b>51%</b>
<b>Total On-Street Parking</b>	<b>220</b>	<b>146</b>	<b>66%</b>
<b>Total Public Parking</b>	<b>514</b>	<b>297</b>	<b>58%</b>

## Special Event

Location	Effective Supply	Peak Demand	Occupancy
Church Lot*	78	79	100%
Scotland Lot	29	31	100%
Historical Society Lot	20	21	100%
Monroe Street Lot	20	20	100%
Ocean Optics Lot*	29	31	100%
Louden Lot*	64	67	100%
Marina Lot	54	38	70%
<b>Total Off Street Parking</b>	<b>294</b>	<b>287</b>	<b>97%</b>
<b>Total On-Street Parking</b>	<b>220</b>	<b>225</b>	<b>100%</b>
<b>Total Public Parking</b>	<b>514</b>	<b>512</b>	<b>99%</b>

The next step is to determine parking adequacy, which is obtained by comparing the parking occupancies to the effective parking supply. After subtracting the parking occupancy from the effective supply, we are left with either a positive (parking surplus) or negative (parking deficit) result. By comparing the current peak hour parking demand estimate to the existing effective parking supply, the current adequacy/shortage of the existing parking system can be estimated (see Table 9).

**Table 9: Parking Supply (Adequacy/Shortage)**

**Green Market**

<b>Location</b>	<b>Effective Supply</b>	<b>Peak Demand</b>	<b>Parking Adequacy</b>
Church Lot*	78	44	34
Scotland Lot	29	31	-2
Historical Society Lot	20	21	-1
Monroe Street Lot	20	17	3
Ocean Optics Lot*	29	31	-2
Louden Lot*	64	32	32
Marina Lot	54	33	21
<b>Total Off Street Parking</b>	<b>294</b>	<b>209</b>	<b>85</b>
<b>Total On-Street Parking</b>	<b>220</b>	<b>176</b>	<b>44</b>
<b>Total Public Parking</b>	<b>514</b>	<b>385</b>	<b>129</b>

**Saturday Daytime**

<b>Location</b>	<b>Effective Supply</b>	<b>Peak Demand</b>	<b>Parking Adequacy</b>
Church Lot*	78	7	71
Scotland Lot	29	31	-2
Historical Society Lot	20	21	-1
Monroe Street Lot	20	12	8
Ocean Optics Lot*	29	28	1
Louden Lot*	64	16	48
Marina Lot	54	36	18
<b>Total Off Street Parking</b>	<b>294</b>	<b>151</b>	<b>143</b>
<b>Total On-Street Parking</b>	<b>220</b>	<b>146</b>	<b>74</b>
<b>Total Public Parking</b>	<b>514</b>	<b>297</b>	<b>217</b>

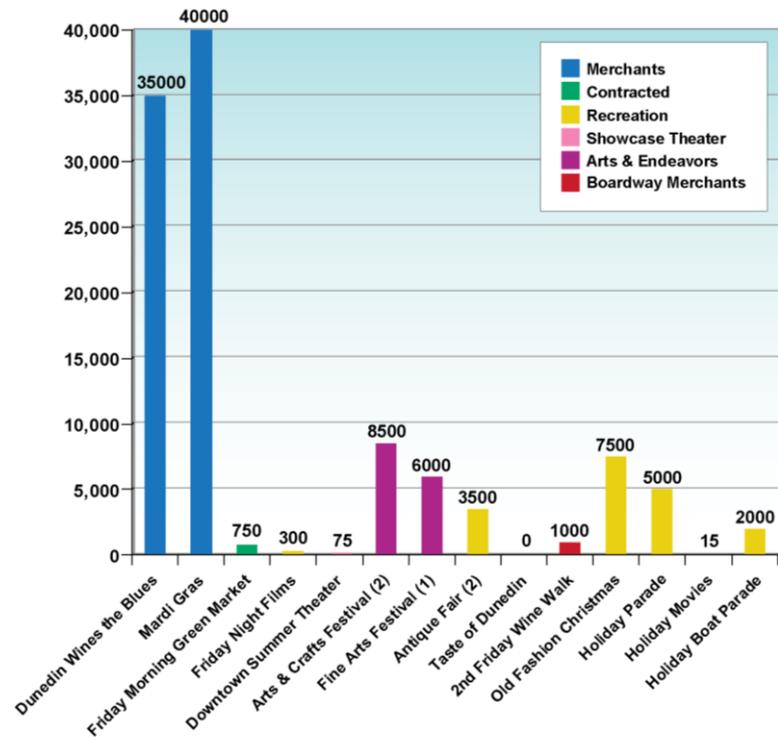
**Special Event**

<b>Location</b>	<b>Effective Supply</b>	<b>Peak Demand</b>	<b>Parking Adequacy</b>
Church Lot*	78	79	-1
Scotland Lot	29	31	-2
Historical Society Lot	20	21	-1
Monroe Street Lot	20	20	0
Ocean Optics Lot*	29	31	-2
Louden Lot*	64	67	-3
Marina Lot	54	38	16
<b>Total Off Street Parking</b>	<b>294</b>	<b>287</b>	<b>7</b>
<b>Total On-Street Parking</b>	<b>220</b>	<b>225</b>	<b>-5</b>
<b>Total Public Parking</b>	<b>514</b>	<b>512</b>	<b>2</b>

Due to the seasonal nature of retail sales, as well as the seasonal nature of Dunedin’s visitors, it is necessary to adjust the peak demand to account for the times of year where Dunedin experiences its peak inflow of visitors. The seasonal adjustment applied to the parking demand is as follows.

- November through April – 100%
- May – 85%
- June through September – 70%
- October – 85%

**Figure 3: Special Events Attendance**



In addition, the City provided BASE Consultants with visitor data for special events, so the observed parking demand can be adjusted to reflect the peak demand experienced during Mardi Gras, up to 40,000, which is greater than the number of households. Even during Cinco de Mayo (~10,000 visitors), a small event by comparison, all public parking was occupied and we observed private lots charging for parking. The observed demand during Special Events was adjusted upwards by 400%. *Figure 3* shows the estimated number of visitors for the City’s special events. Based on this seasonality adjustment, the City has a parking **deficit** of **1,534** spaces for an event such as Mardi Gras. *Table 10* shows the parking adequacy adjusted for seasonality. Only the Special Events parking had to be adjusted since the Green Market and Saturday parking counts were performed in April.

Table 10: Parking Adequacy Adjustment for Seasonality

## Special Events

Location	Effective Supply	Observed Demand	Adjusted Demand	Parking Adequacy
Church Lot	78	79	316	-238
Scotland Lot	29	31	124	-95
Historical Society Lot	20	21	84	-64
Monroe Street Lot	20	20	87	-67
Ocean Optics Lot	29	31	124	-95
Louden Lot	64	67	268	-204
Marina Lot	54	38	152	-98
<b>Total Off Street Parking</b>	<b>294</b>	<b>287</b>	<b>1,148</b>	<b>-854</b>
<b>Total On-Street Parking</b>	<b>220</b>	<b>225</b>	<b>900</b>	<b>-680</b>
<b>Total Public Parking</b>	<b>514</b>	<b>512</b>	<b>2,048</b>	<b>-1,534</b>

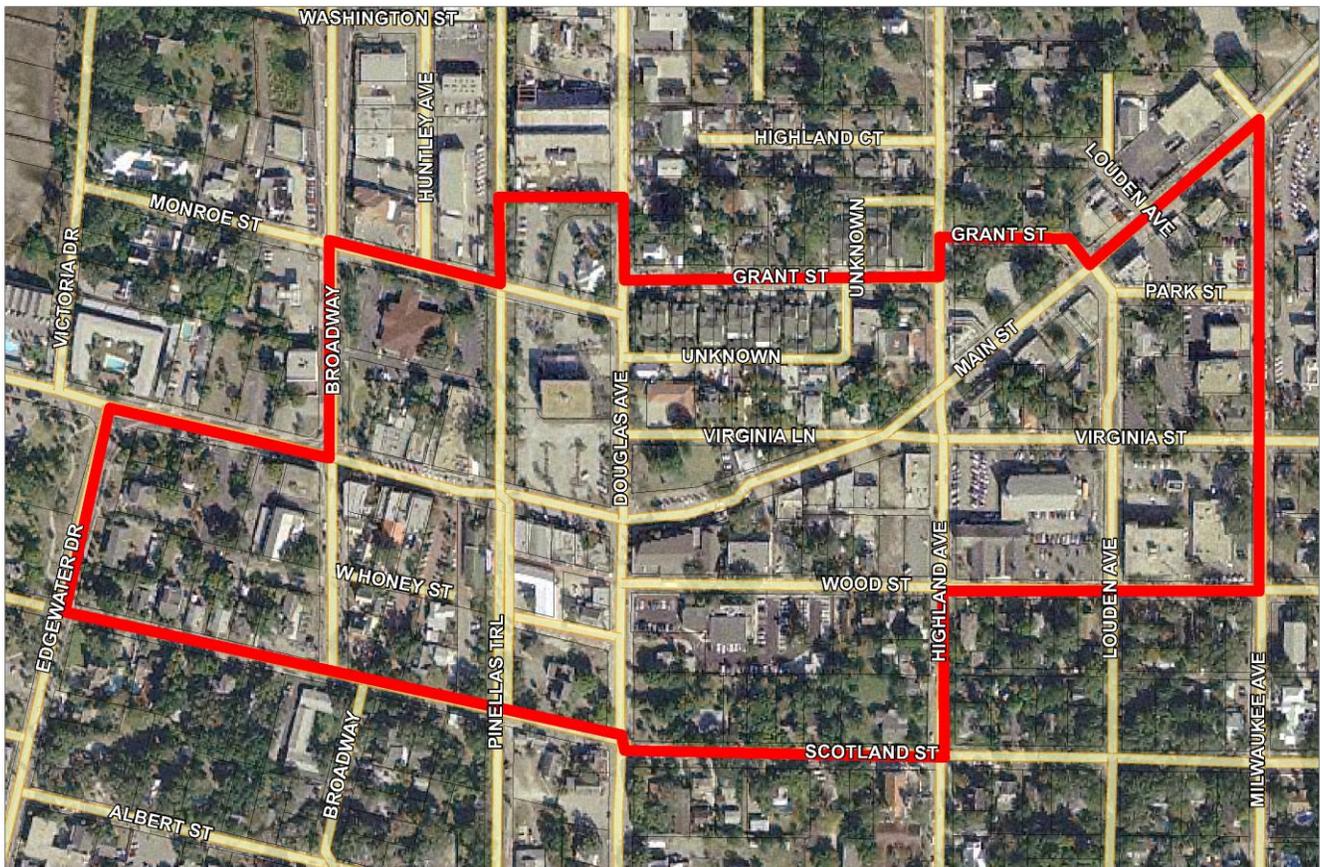
## 2.5 SHARED PARKING DEMAND FOR MAIN STREET

In addition to the observed parking demand, the principles of shared parking have been used to determine the theoretical peak parking demand that will be experienced by the study area, as well as specifically the Downtown/Main Street corridor. The first step in developing this theoretical parking demand is determining the baseline estimated parking needs based on land uses for both the entire study area and the Downtown/Main Street corridor. The standards for parking demand are obtained from “*Shared Parking*”, 2<sup>nd</sup> Edition, published in 2005 by the Urban Land Institute and the International Council for Shopping Centers. **Appendix D** provides the shared parking demand process and results. *Table 11* summarizes the land uses within the Downtown/Main Street corridor, which is shown on Figure 4. The land use information was obtained from the Pinellas County Property Appraiser’s Office website.

Table 11: Land Uses within Main Street

Land Use	Size
Shopping	47,271 s.f.
Restaurant - Fine Dining	5,130 s.f.
Restaurant - Family	12,161 s.f.
Nightclub/Bar	6,518 s.f.
Office	26,068 s.f.
Residential (Rent)	28 units
Hotel	9 rooms

Figure 4: Main Street Corridor



For the purpose of this study, the design hour time periods are defined as Weekday Day (6:00 AM to 5:00 PM), Weekday Evening (6:00 PM to 12:00 AM), Weekend Day (6:00 AM to 5:00 PM) and Weekend Evening (6:00 PM to 12:00 AM). Since the majority of shared parking demand occurs along the Main Street/Downtown corridor, a sub-zone was created that includes the land uses along Main Street, between Edgewater Drive and Milwaukee Avenue. The following assumptions were made in calculating the theoretical parking demand:

- Single family residential land uses were not included.
- Businesses that provide on-site surface parking for patrons and employees only, but do not provide public parking, were not included.

The results of the shared parking demand are included in the following tables.

Peak Weekday Day Demand for Main Street Corridor

The results for a weekday day peak indicate that the highest parking demand will be achieved in the month of December at 1:00 PM (lunch crowd), when 441 spaces are required. Peak demand for a weekday day by land use is defined in *Table 12*.

**Table 12: Peak Weekday Day Demand for Main Street**

Land Use	Peak Demand (spaces)
Shopping	152
Restaurant - Fine Dining	69
Restaurant - Family	113
Nightclub/Bar	1
Office	74
Residential (Rent)	30
Hotel	3
<b>Total</b>	<b>441</b>

Peak Weekday Evening Demand for Main Street Corridor

The results for a weekday evening peak indicate that the highest parking demand will be achieved in the month of

December at 7:00 PM (dinner crowd), when 462 spaces are required. Peak demand for a weekday evening by land use is defined in *Table 13*.

**Table 13: Peak Weekday Evening Demand for Main Street**

Land Use	Peak Demand (spaces)
Shopping	157
Restaurant - Fine Dining	90
Restaurant - Family	101
Nightclub/Bar	58
Office	8
Residential (Rent)	45
Hotel	3
<b>Total</b>	<b>462</b>

Peak Weekend Day Demand for Main Street Corridor

The results for a weekend day peak indicate that the highest parking demand will be achieved in the month of December at noon (lunch crowd), when 404 spaces are required. Peak demand for a weekend day by land use is defined in *Table 14*.

**Table 14: Peak Weekend Day Demand for Main Street**

Land Use	Peak Demand (spaces)
Shopping	135
Restaurant - Fine Dining	53
Restaurant - Family	177
Nightclub/Bar	0
Office	8
Residential (Rent)	28
Hotel	3
<b>Total</b>	<b>404</b>

Peak Weekend Evening Demand for Main Street Corridor

The results for a weekend evening peak indicate that the highest parking demand will be achieved in the month of December at 8:00 PM (dinner and bar crowd), when 488 spaces are required. Peak demand for a weekend evening by land use is defined in *Table 15*.

**Table 15: Peak Weekend Evening Demand for Main Street**

Land Use	Peak Demand (spaces)
Shopping	122
Restaurant - Fine Dining	100
Restaurant - Family	122
Nightclub/Bar	95
Office	0
Residential (Rent)	45
Hotel	4
<b>Total</b>	<b>488</b>

Based on the findings of the theoretical shared parking demand, the maximum demand of 488 spaces will occur at 8:00 PM on a weekend in December. The City's current parking supply is not sufficient to handle the theoretical demand. If and when the 180 "at risk" parking spaces are removed from the supply, the parking adequacy is projected to be a **deficit** of **154** spaces.

**2.6 FUTURE PARKING DEMAND**

The City provided BASE with data regarding proposed major developments within the Downtown/Main Street corridor, Dunedin Station Square and 200 Main Street. Both of these projects are expected to be developed within the next two to ten years. *Table 16* shows the additional land uses currently planned for these developments. It is worth noting that this data may vary as market conditions change.

**Table 16: Future Additional Land Uses**

Land Use	Size
Shopping	19,5961 s.f.
Residential (Own)	82 units

Using the principles of shared parking, the current planned developments within the Main Street corridor will add 202 spaces to the peak parking demand of 488 spaces, bringing the total peak parking demand to 690 spaces. If the City does not expand the current parking supply, and when the 180 “at risk” parking spaces are removed from the supply, the projected parking adequacy is expected to be a **deficit of 356** spaces. A “fee in lieu of parking” program and a parking garage, as discussed in Sections 3.3 and 3.5 respectively, can be a good way for the City to provide the necessary public parking demanded by these developments.

## 3.0 Parking Recommendations

The following section includes the recommendations of BASE Consultants and HHI Design with respect to the City's current parking situation. These recommendations represent the opinions and professional judgment of BASE Consultants and HHI Design. Every reasonable effort has been made to ensure that the data utilized is reliable and reflects the most accurate information possible. These recommendations are based on data, assumptions, estimates, and other information compiled and evaluated by BASE Consultants and HHI Design and provided by the City of Dunedin, its representatives, and the general public, but no responsibility is assumed for any inaccuracies in reporting. Any changes in economic or other factors could have an impact on the recommendations included herein. These are basic recommendations that the City should further explore before making any significant decisions with respect to wayfinding, parking enforcement, and a new parking structure.

### 3.1 PARKING ENFORCEMENT

Currently, the City does not have any staff members dedicated to parking enforcement. It is true that overzealous parking enforcement policies and staff can be a public relations nightmare for any city. However, it is important for visitors and business owners alike to know that the City is monitoring the parking facilities (both on-street and off-street) and enforcing the posted time limits on parking. While interviewing Downtown business owners, some pointed out that the two hour parking limits are never enforced. Turnover in on-street parking is critical for businesses. The on-street spaces closest to shops should be available for patrons and should not be used by business owners, employees, and Pinellas Trail visitors who could occupy the parking space for longer than two hours. Parking enforcement requires staffing and equipment resources, and can be achieved both with simple and cost-effective methods, as well as with more expensive and sophisticated equipment.



*Traditional Hand Chalking*

#### 3.1.1 Traditional Hand Chalking

Traditional hand chalking involves an enforcement officer marking the tires of cars parked on the street and simultaneously noting the time and vehicle license plate on a notebook. After two hours, the enforcement officer returns to the original location. If a vehicle has a chalk mark, the officer can compare the license plate with the information recorded in the notebook. If the information matches, then a citation is issued for exceeding the posted time limit.

### 3.1.2 Electronic Chalking

A more effective enforcement tool is electronic chalking. Electronic chalking can be done several ways:

- The enforcement officer uses a handheld computer to manually enter the license plate and make/model of the vehicle, then returns after the allotted parking time has expired and compares the vehicle information stored in the handheld with the vehicle currently parked in the space. If the vehicle has exceeded the time limit, a citation is issued using the same handheld and an attached printer.
- The enforcement officer uses a handheld computer equipped with license plate recognition software to take a picture of the vehicle's license plate. When the enforcement officer returns after the allotted parking time has expired, he/she compares the vehicle information stored in the handheld with the vehicle currently parked in the space. If the vehicle has exceeded the time limit, a citation is issued using the same handheld and an attached printer.
- A vehicle is equipped with cameras mounted on the roof. As the enforcement officer drives by, the camera takes a picture of the cars parked on the street. The camera records the license plate information, and the picture, along with the time the picture was taken, are sent to an on-board computer. Two hours later, the enforcement vehicle is driven by the same street and the camera takes another set of pictures. Any cars that have exceeded the two hour parking limit are quickly identified by the software and the enforcement officer is alerted of the violation. Many of these systems integrate with law enforcement's lists of stolen vehicles and can issue automated alerts once a license plate has been identified as belonging to a stolen car.



*Electronic handheld with license plate recognition technology*

Many municipalities currently manage their on-street parking time limits with some form of chalking. We recommend that the City further study the possibility of creating enforcement procedures. The beneficiaries of sound parking enforcement will be visitors that can find more available parking and business owners that will see an increase in patrons. If the City decides to enforce parking time limits, we recommend including a *“courtesy ticket”*, meaning that the first offense of exceeding the parking time limit will result in a \$0.00 fine, but the offense will be recorded for that particular vehicle. This

way, the City can retain a friendly image while managing the parking shortage in the Downtown.

### 3.2 EXPANDING AVAILABLE SURFACE PARKING

Most of the City's surface parking locations are in very good shape, with adequate striping, and good lighting at night. A few locations, such as the Honey Lane parking, can use re-striping and re-sealing. An easy fix that can expand the number of cars that use the Loudon lot is to re-pave and re-stripe the entire lot. Currently, parts of the lot have grass on them, and some people may be reticent to parking on the grass. In short, this lot does not look like a typical "official" parking lot, so many visitors may be unsure about whether or not it is appropriate to park on the grass. A complete lot re-striping and re-landscaping will make this lot more appealing to users, since this lot had available parking even when all other surface parking and on-street parking locations were full.



*Aesthetically Pleasing Garages – It can be done!*

Another approach to expanding the surface parking supply is to utilize the existing private parking lots (that do not offer public parking) when the businesses are closed (for office land uses, after 6:00 p.m. and all day on weekends). These periods coincide with the highest public parking demand, both observed, and calculated using Shared Parking principles. One way to entice business owners to share their parking supply when it's not in use is to ensure that the City's self-insurance covers liability for the parking lot while the City is using the facility for public parking.

Additional recommendations regarding surface parking are provided on section 3.4, Special Events Parking.

### 3.3 PARKING GARAGE ALTERNATIVE

Based on the results of the parking occupancy surveys, BASE Consultants recommends that the City consider adding a 400 to 500 space parking garage in the near future. The garage may have between 4 and 5 levels of parking and could accommodate ground floor retail. This garage would serve the needs of visitors to the Downtown and the Pinellas Trail, as well as Special Events parkers. In order for a parking garage to be successful and well utilized, it needs to be designed with the transient patron in mind: parking spaces that are wide and easy to get in and out of, high ceilings which keep patrons from feeling claustrophobic, adequate signage directing walking patrons to stairways and elevators and driving patrons to additional parking spaces and exits, and plenty of ambient and artificial light to ensure that patrons feel safe and comfortable.

Once the commercial real estate market in the Downtown recovers, the City will very likely lose 180 spaces in the Church, Ocean Optics, and Loudon lots. A parking garage would be the best way to add additional parking to the public parking supply while ensuring that prime real estate along Main Street is dedicated to revenue-producing land uses, such as retail and office. In the near future, a land acquisition for a parking structure would serve the parking needs of visitors and customers.

See **Appendix E** regarding standards for different level of service (LOS), parking garage design and parking facility costs.

### 3.4 SPECIAL EVENTS PARKING



*Cinco de Mayo Celebration*

Based on the results of the Dunedin stakeholders' survey, as well as the field observations conducted by BASE Consultants' staff, it has been determined that the majority of issues relating to Dunedin's parking situation stem from the increased number of visitors during special events. In addition to the higher parking demand, visitors are often unfamiliar with the available parking locations within the Downtown and clog up the streets looking for parking. Based on our observations and adjusting for seasonality, the parking demand during an event such as Mardi Gras can be up to 2,048 spaces, where the City only has an effective supply of 514. In order to effectively manage the parking situation during special events, we recommend that the City take the following steps:

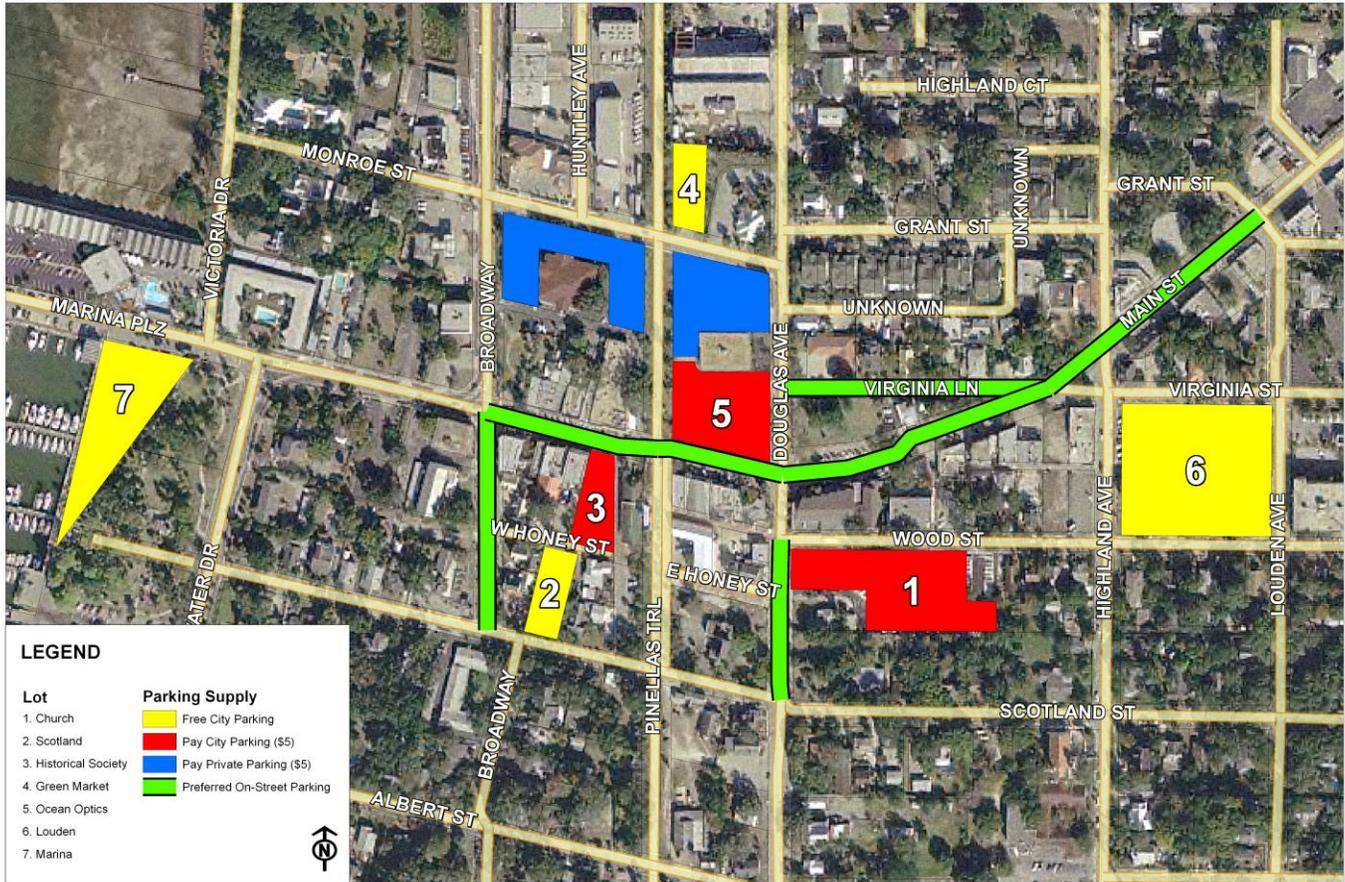


*Special Events Parking*

**Utilize available parking supply at Stadium.** We recommend that the City should explore the possibility of making available all of its parking supply for large events (Mardi Gras, Wines the Blues) where the projected demand will exceed the available Downtown/CRA supply of 514 spaces. Currently, the City has available 228 parking spaces at Blue Jays Stadium. This parking location could be incorporated into the Special Events parking plan, and a shuttle can transport visitors from the Stadium to the Downtown.

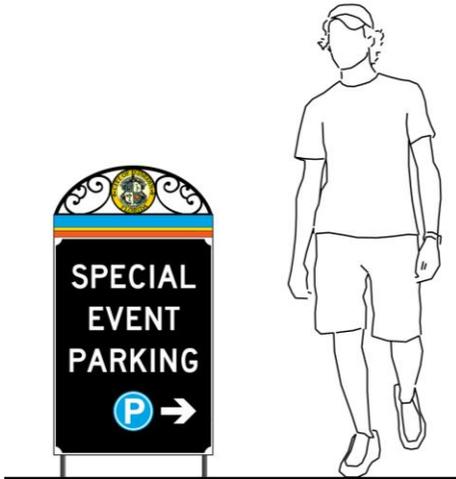
**Create and distribute special events parking map** (see *Figure 5*). The map should clearly identify the locations of public parking lots available for special events parking, as well as any private lots available for special events parking. The map should also include preferred on-street parking locations away from residential neighborhoods, as well as pricing information for the parking lots. The map should be visible and available on the City's website [www.dunedin.gov](http://www.dunedin.gov) and should be included with all special events literature.

Figure 5: Potential Special Events Parking Map



**Consider charging \$5.00 per day for parking in the lots closest to Main Street, especially during the busiest events.** Parking is a commodity, and even though many people consider it to be “free”, there is a cost associated with developing and maintaining parking facilities. Currently, Dunedin’s parking is subsidized by residents and visitors via taxes, but the City should explore the possibility of requiring the users of special events parking to pay for this service. During special events, the City experiences a large number of visitors that utilize public parking but may not participate in transactions that would generate tax revenues to pay for parking. In addition, many of these visitors come from larger neighboring cities, such as Tampa and Clearwater, where it is common to pay for special events parking. The City can expect some pushback from residents, since 49% of survey respondents indicated that they would not be willing to pay to park closer to a special event. However, private lots already charge \$5.00 for special events parking, and during our survey on May 5, we observed the lots being utilized. The institution of paid special events parking can be a huge tool for

controlling the congestion problems during special events. We believe that the City should ensure that the monies generated by paid special events parking are returned to the residents by providing improved services, additional landscape, cleaner parking facilities, etc.



*Temporary Special Events Parking Sign*

**Provide additional temporary signage directing visitors to parking locations during special events.** In addition to the wayfinding recommendations provided in Section 3.6 of this report, the City should provide supplementary signage that will route visitors (and anyone unfamiliar with the Downtown) to the designated special events parking locations quickly and effectively. These signs should be temporary and include the text “Special Events Parking”, where Special Events can be replaced with Mardi Gras, Cinco de Mayo, etc. The City should also consider working with the sheriff department to create a special events arrival and departure plan for visitors that can include street closures, directional changes, and uniformed sheriff officers that can direct traffic into and out of the parking facilities.

**Make Downtown merchants aware of special event parking policies and locations.** When we talked to several Downtown merchants, they mentioned the fact that they are sometimes contacted by out of town visitors inquiring about parking for special events. It is important that the Downtown merchants be aware of all parking policies so they can communicate this information to their patrons. The Downtown merchants are also a great resource for the City because they can communicate patron’s concerns back to the City.

### 3.5 FEES IN LIEU OF PARKING

In a Downtown such as Dunedin's, where vacant lots are smaller in size and where the Downtown would be better served by investing in revenue-producing land uses, parking requirements imposed on developers can present a hurdle to private developers. Many cities have introduced ordinances that allow developers to pay a set fee in place of providing the required number of off-street parking spaces. The fees are paid into a municipal parking trust fund, which is then used by the city to provide public parking spaces (either surface or structured) to replace those spaces that the developer would be required to supply.

Fees in lieu of parking regulations have been implemented all across the United States, as well as Florida. Currently, Orlando, Delray Beach, Hollywood, Miami, Miami Beach, and West Palm Beach all have some form of fees in lieu of parking regulations in the books. The fees paid by developers are a function of the number of parking spaces that are required (and not provided) and the costs of providing a parking space (currently between \$14,000 - \$18,000). The fees can either be set as a flat charge per parking space not provided, or a charge per square foot of floor area. The developer would pay the fees as either a property tax surcharge or as an additional permitting fee.

Fees in lieu of parking is considered a sound parking management strategy, especially for downtown areas that effectively combine land uses and can take advantage of shared parking efficiencies. As with any parking management strategy, there are some drawbacks:

- The lack of on-site developer-controlled parking may make it difficult to attract tenants, and may be perceived by financial institutions (who provide loans to the developer) as a negative.
- If a city does not have public parking and is just establishing a fee in lieu system, the required parking supply has to be provided before the fees to the developer can be assessed. This means that the city would have to construct the required parking up front before receiving the fees from the developers.

We recommend that the City of Dunedin explore fees in lieu of parking as a sound parking management strategy within the Downtown/Main Street corridor.

### 3.6 WAYFINDING SIGNAGE SYSTEM

As part of this study to analyze current and future parking needs for the Dunedin Community Redevelopment District, it is also important to consider a wayfinding signage system to direct visitors to public facilities, tourist oriented businesses, recreational amenities and parking in Downtown Dunedin. Motorists, bicyclists and pedestrians entering the Community Redevelopment District need to be able to identify the wayfinding signs to direct them to key destinations, public parking areas and directional informational signs. A comprehensive wayfinding signage system may include a hierarchical approach comprised of the following components:

1. Gateway
2. Vehicular Directional
3. Parking Directional
4. Pedestrian Directional

The City of Dunedin has some components of this wayfinding signage system approach that could be improved to enhance the overall tourism of the Downtown District (see Figure 6).

The City has numerous gateway monument signs welcoming visitors to the Main Street Downtown District and the Broadway shopping area. These signs are located at:

- a. Downtown District
  - a. Main Street and Skinner Boulevard
  - b. Main Street and Milwaukee Avenue
  - c. Main Street and Highland Avenue
  - d. Main Street and Broadway
  - e. Main Street and Pinellas Trail
2. Broadway Shops
  - a. Main Street and Broadway

In terms of vehicular directional signs, there are standard regulatory signs directing visitors to the Downtown along Main Street (S.R. 580) and Broadway; and to the Mease Dunedin Hospital along Broadway, Park Street, Mease Plaza and Main Street (S.R. 580). However, there are no other vehicular directional signs to key destinations and no parking directional signs to the current six public parking lots, except for on-premise signs, which do not have a consistent design/appearance to identify public parking facilities.



Gateway-Main Street & Skinner Boulevard



Gateway-Main Street & Milwaukee Avenue



Vehicular Directional Signs

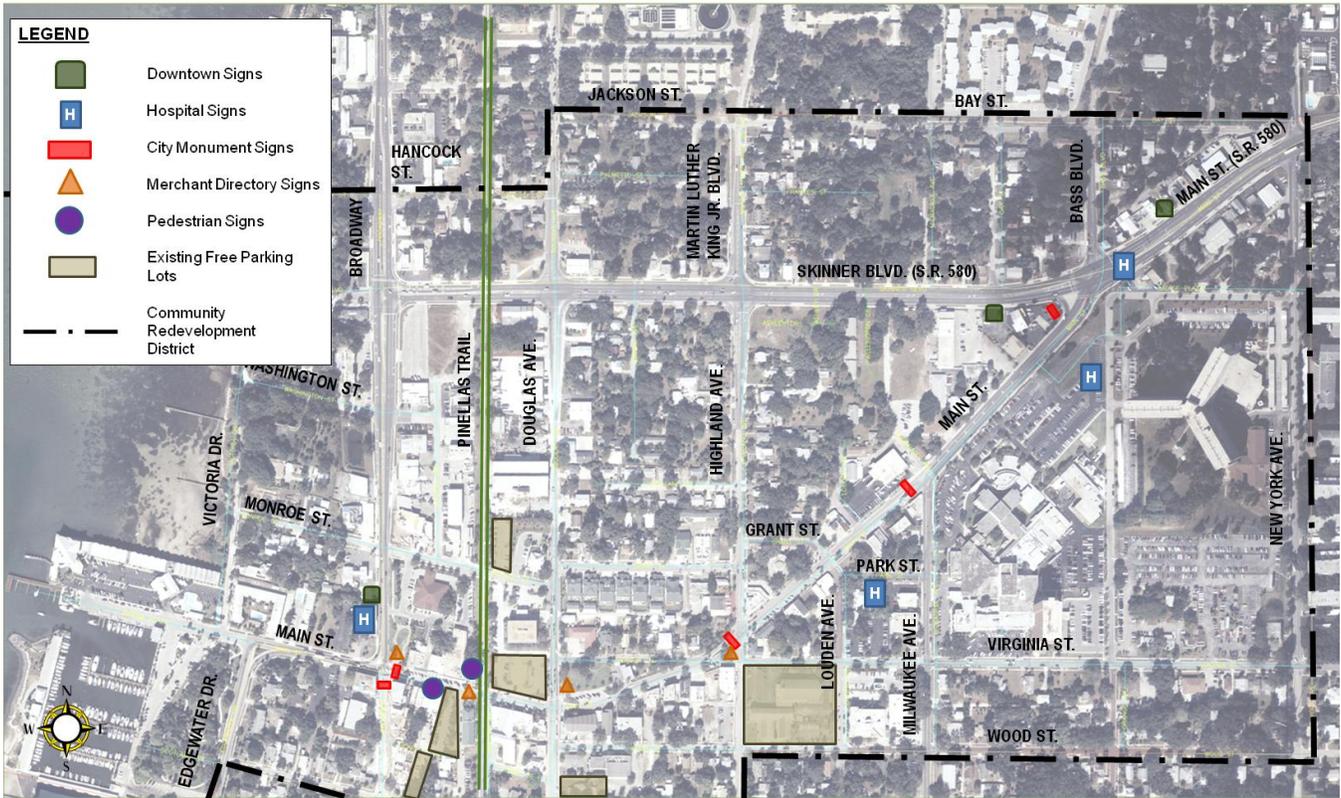


On-Site Parking Signs



Pedestrian Directional Signs

Figure 6: Existing Wayfinding Signage



The Downtown District has a pedestrian directional system in terms of a Downtown Dunedin Merchant Directory at four locations along Main Street – at Highland Avenue, Douglas Avenue, Pinellas Trail and Broadway; and some directional signs on decorative poles at the intersection of Main Street and the Pinellas Trail. These pedestrian directional signs are in limited areas and need to be more noticeable, particularly the directional name plates.

To better service visitors and local businesses, the City needs to create a more comprehensive and decorative wayfinding signage system, not only to better orient and direct pedestrians, bicyclists and drivers to key destinations and parking facilities, but to enhance and compliment the established Downtown District through branding efforts to create a memorable experience and establish a unique sense of place.

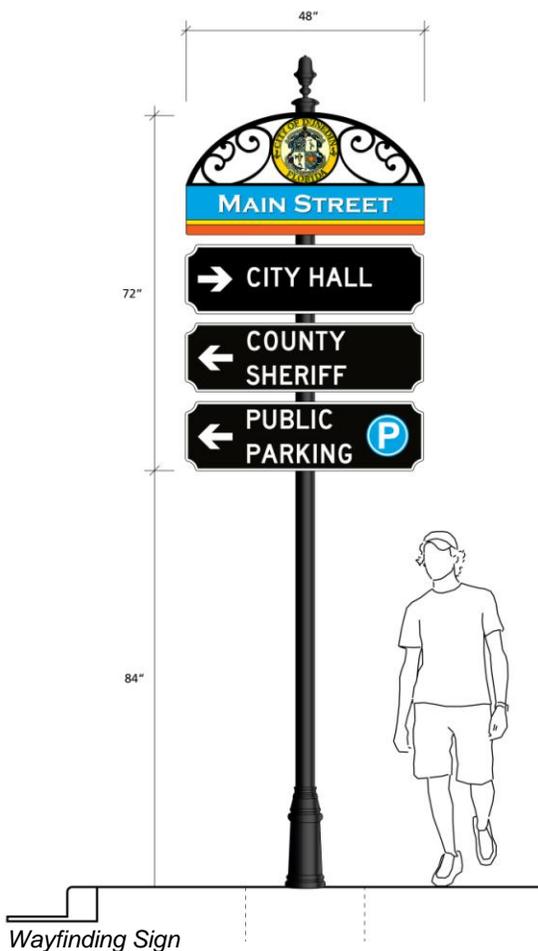
Development of a successful wayfinding signage system could include the following tasks:

1. Branding

- a. Develop a Downtown logo and branding statement
  - What differentiates this community from the rest of the pack?
  - What do we want people to think and feel about this place?
  - In the end, what's the single point you want your audience to walk away with?
- b. Develop standard colors, typeface and graphics.

2. Wayfinding

- a. Incorporate the branding into the wayfinding signage system.
- b. Provide more informative vehicular directional signs to public facilities at key decision points along Main Street, Skinner Boulevard, Broadway and the Pinellas Trail. Some of these public facilities may include civic, cultural, visitor and recreational destinations, such as the following (see Figure 7):
  - City Hall
  - Sheriff
  - Pioneer Park
  - Purple Heart Park
  - Dunedin Historical Museum
  - Pinellas Trail
  - Edgewater Park and Municipal Marina
  - Blue Jays Stadium
- c. Develop parking directional signs to lead visitors to the free public parking lots at approaching intersections (see Figure 8).
- d. Develop a consistent/uniform on-premise sign consisting of monument and pole signs to identify public parking facilities.
- e. Enhance the pedestrian directional signs along the Pinellas Trail and by coordinating the color scheme of the merchant directory sign with the pedestrian street signs to provide information along the way to key destinations.



- f. Consolidate several directional signs to one pole at key decision points along the way to guide people to their destination, therefore reducing visual clutter along the roadway.

Having a properly designed wayfinding system not only leads people to their destinations, but it expresses community spirit, bolsters community pride, and makes visitors and residents feel welcome.

Figure 7: Public Facilities & Key Decision Points

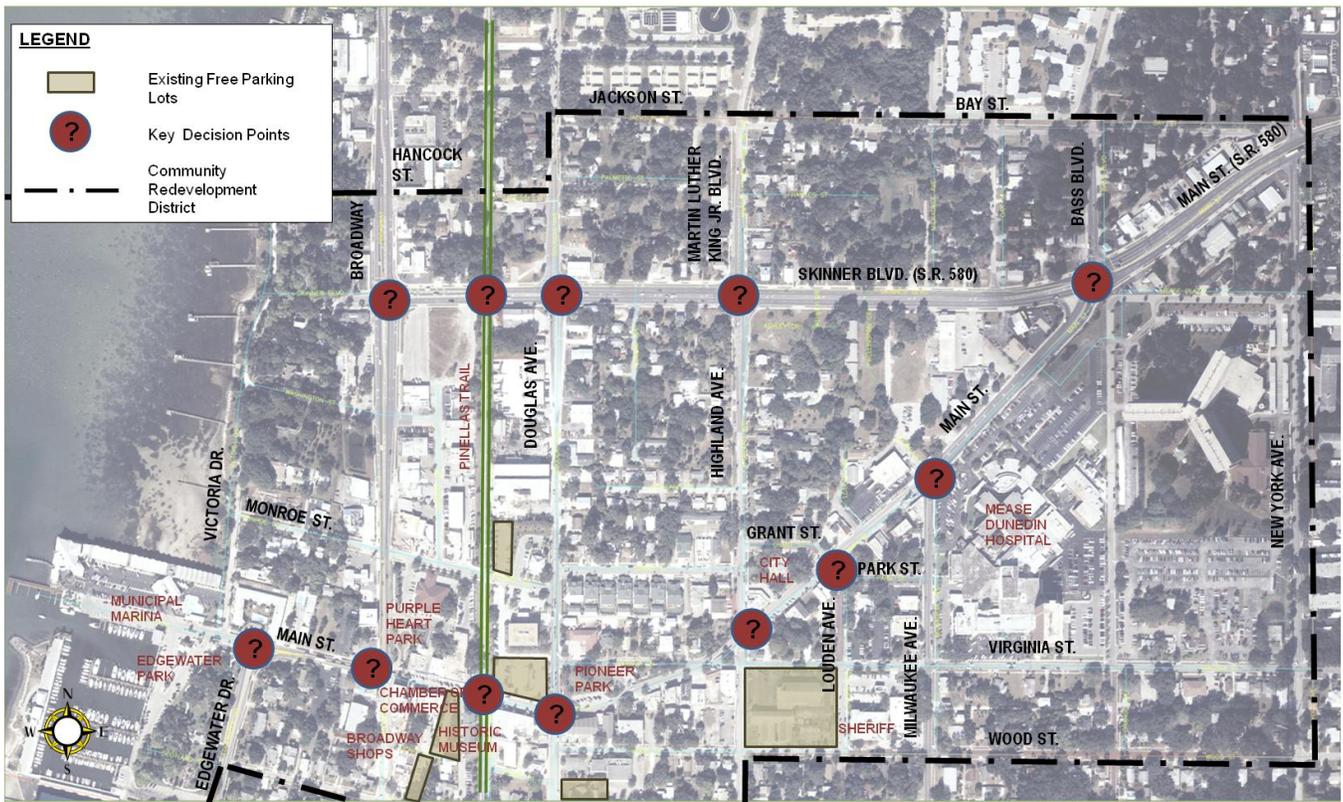


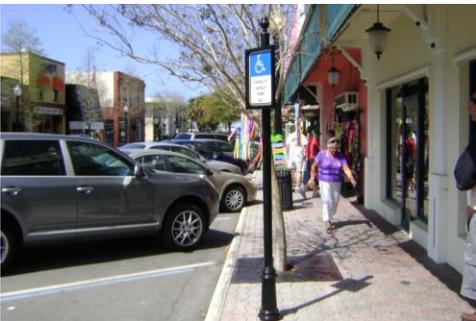
Figure 8: Parking Directional Signage



## 4.0 Alternative Transportation Assessment



Pinellas Trail



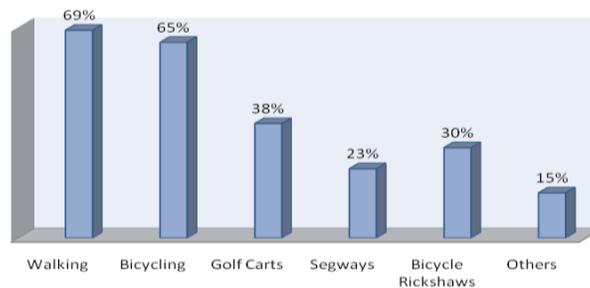
Main Street

The renowned Pinellas Trail, a 15-foot-wide, 34-mile haven for walkers, skaters and bikers, runs through Downtown Dunedin. It is served by bicycle and skate rental shops, quaint boutiques and galleries, and delightful restaurants along Main Street between Milwaukee Avenue to Edgewater Drive, a half mile commercial corridor. The Pinellas Trail and the pedestrian-friendly Downtown helped Dunedin earn The Walking Magazine's ranking of "Best Walking Town in America."

As part of this parking study, the City of Dunedin wanted to explore other alternative modes of transportation to manage parking within the Downtown District. The City has already explored some public transportation options to better serve the Downtown, such as modifying the current bus routes and providing a trolley system. Another option may be to permit alternative energy efficient vehicles that may require less parking demand and promote a greener environment. However, there are inherent problems to sharing the roadway or sidewalk with these energy-efficient vehicles, which is primarily SAFETY. In addition, Main Street is a short and very walkable commercial corridor. Permitting more vehicles within the Downtown District may diminish the pedestrian-friendliness and cause more traffic congestion. Regulating these alternative vehicles is necessary not only for safety, but to maintain the ambience of Downtown Dunedin as the "Best Walking Town in America."

A public survey was conducted to ascertain not only parking information, but the community's preferences to alternative methods of transportation, such as cycling, walking, golf carts, electric personal assistive mobility devices (EPAMD), also known as Segways, and bicycle rickshaws. Notices were sent out as part of the City's water bill informing local residents of the on-line survey at the City's website. The survey results revealed the following opportunities for reducing single-occupant vehicle trips to the Downtown (see Figure 9).

Figure 9: Survey Results.



The majority of the other alternative modes of transportation included a trolley/shuttle system that circulates around Downtown Dunedin.

The City Commission also requested a review of horse-drawn carriages within Downtown Dunedin from a tourism perspective.

This section provides a summary of the public transit system and recommendations to enhance transit facilities; and an assessment of alternative modes of transportation with associated recommendations and implications, such as:

1. Improve bicycle and pedestrian connectivity to provide safe and aesthetically pleasing street networks; and
2. Potential regulations and associated implications to permit golf carts, EPAMD's, bicycle rickshaws and horse drawn carriages within Downtown Dunedin or even Citywide.

This assessment is also summarized in **Appendix F** with pros and cons about each alternative mode of transportation.

## 4.1 PUBLIC TRANSIT SYSTEM

### 4.1.1 Background



PSTA Bus with Bicycle Racks

There are currently three bus routes operated by the Pinellas Suncoast Transit Authority (PSTA) that service Downtown Dunedin: 1) Route 61 – stops at Main Street and Douglas Avenue; 2) Route 66 - stops at Highland Avenue and Skinner Boulevard; and 3) Route 78 stops at Main Street and Milwaukee Avenue (see *Figure 10*). The majority of the local buses have bicycle racks to provide multimodal opportunities to enhance the Pinellas Trail.

The City requested PSTA to change the current three bus routes to better serve Downtown Dunedin by providing bus service through Main Street or having a bus stop at Edgewater Park. PSTA responded by indicating that it would be difficult for a bus to navigate through Main Street, there would be a loss of on-street parking and it would affect the existing ridership. The recommendation is to enhance and market the current three bus stops, and to advertise Downtown Dunedin on the buses along these routes.

The City of Dunedin has also been exploring a trolley system as an alternative public mode of transportation by working with the Pinellas County Metropolitan Planning Organization (MPO). The County conducted a study to look at regional long term goals of transportation, including the prospect of a



Jolly Trolley

premium trolley service from Clearwater Beach to Tarpon Springs by 2010-2011 (see *Figure 11*). Due to current funding constraints, the project is on hold. However, having this type of North Beach Trolley included in the long-range plan means that the City could begin to look at funding opportunities to work towards this type of project.

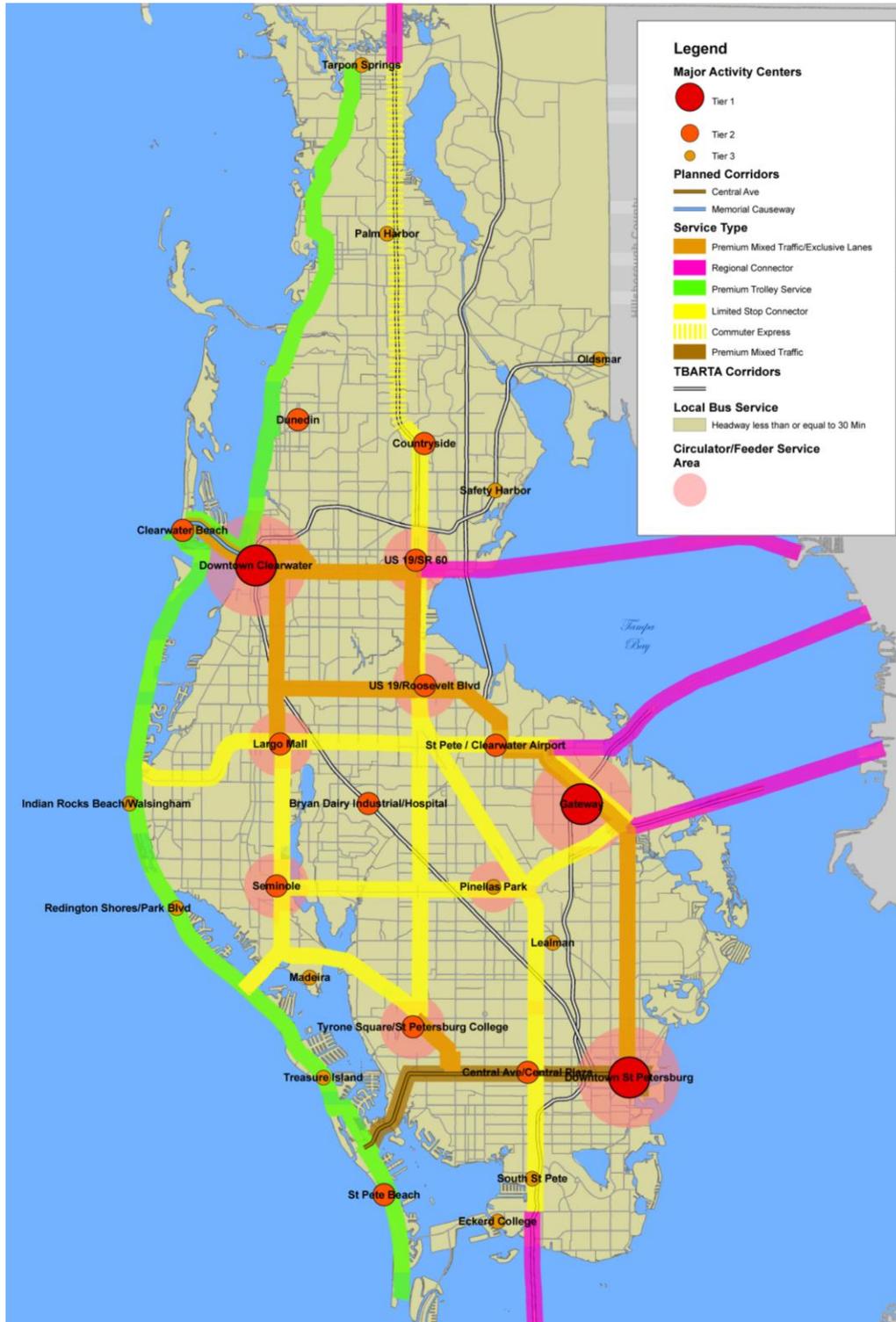
In the meantime, other public transit options have been explored by the Downtown Dunedin Merchants Association, including chartering the Jolly Trolley for evening events. Currently, a new event called the "Progressive Dinner" has been initiated to bring patrons to various restaurants to taste different courses of the meal. There are also plans in the future to use the trolley at the Downtown wine and art walk event during the second Fridays of each month. These special events would provide some indication of the viability of a trolley system. In addition, the business community on Douglas Avenue expressed the desire for more programmed use at the stadium by providing a trolley to connect major civic uses during events or periods during the year where high use occurs (i.e., senior center, library and stadium to Main Street and the waterfront).

Figure 10: PSTA Route Map



Source: PSTA

Figure 11: Pinellas County Bus Network Concept



Source: Pinellas County



Existing Bus Stop – Douglas Avenue

### 4.1.2 Implications

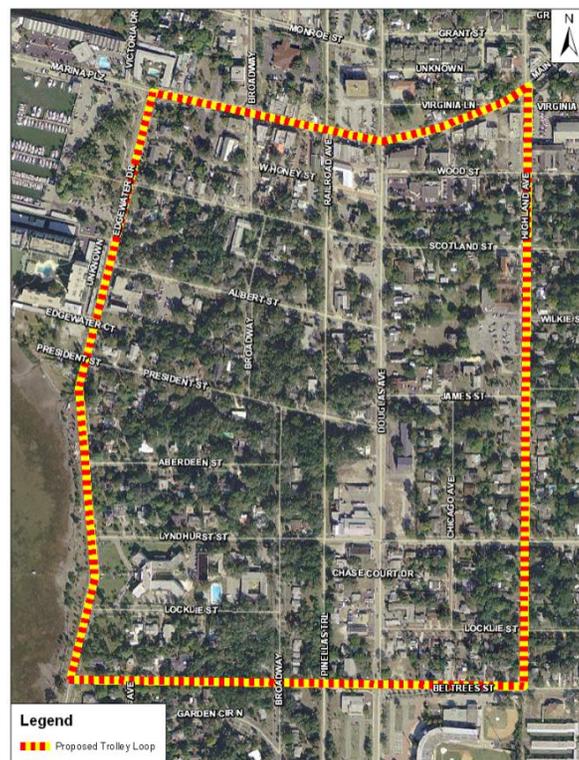
Since it is not currently feasible to change the PSTA bus routes to service Main Street, the City should instead focus on enhancing the existing bus stops along the three Downtown bus routes: 1) Route 61 – Main Street and Douglas Avenue; 2) Route 66 - Highland Avenue and Skinner Boulevard; and 3) Route 78 -Main Street and Milwaukee Avenue. These enhancements may include decorative benches, trash receptacles and/or shelter to relate to the Downtown theme. There are limited spaces at these bus stops; the City may need to acquire easements to accommodate the site furnishings.



Decorative Bus Stop Furnishings

Integrating a trolley system may be a viable alternative form of public transportation. The City should continue to coordinate with the Pinellas County MPO, the City of Clearwater Beach and City of Tarpon Springs for the North Beach Trolley system, as well as any potential route deviations to service Downtown Dunedin. The City may also consider a trolley loop to connect public parking lots and major civic uses during special events (i.e., senior center, library and stadium to Main Street and the waterfront). A potential trolley route may be a loop from Highland Avenue to Main Street to Edgewater Drive to Belltrees Street (see Figure 12).

Figure 12: Proposed Trolley Loop





Pinellas Trail



Main Street

## 4.2 BICYCLEWAYS

### 4.2.1 Background

The Pinellas Trail bisects Downtown Dunedin, which helped spur the local businesses and create a bicycle-friendly Downtown. In addition, the narrow streets (approximately 60-foot right-of-ways) and the low speeds (15 mph to 25 mph) slow down vehicular traffic to make for a safer and pleasant cycling experience (see Figure 13). However, the City does permit sidewalk riding, which may pose safety concerns with pedestrians along the narrow sidewalks.

Other than the Pinellas Trail, the City of Dunedin does not have any designated bike lanes along the roadways within the Dunedin Community Redevelopment District. However, the City's Comprehensive Plan identifies future bicycleways (see Figure 14).

### 4.2.2 Regulations/Policies

The State of Florida has adopted regulations pertaining to the safe operation of bicycles (Section 316.2065, F.S.), as well as full consideration in the planning and development of bicycleways, including the incorporation of these into state, regional and local transportation plans and programs (Section 335.065, F.S.).

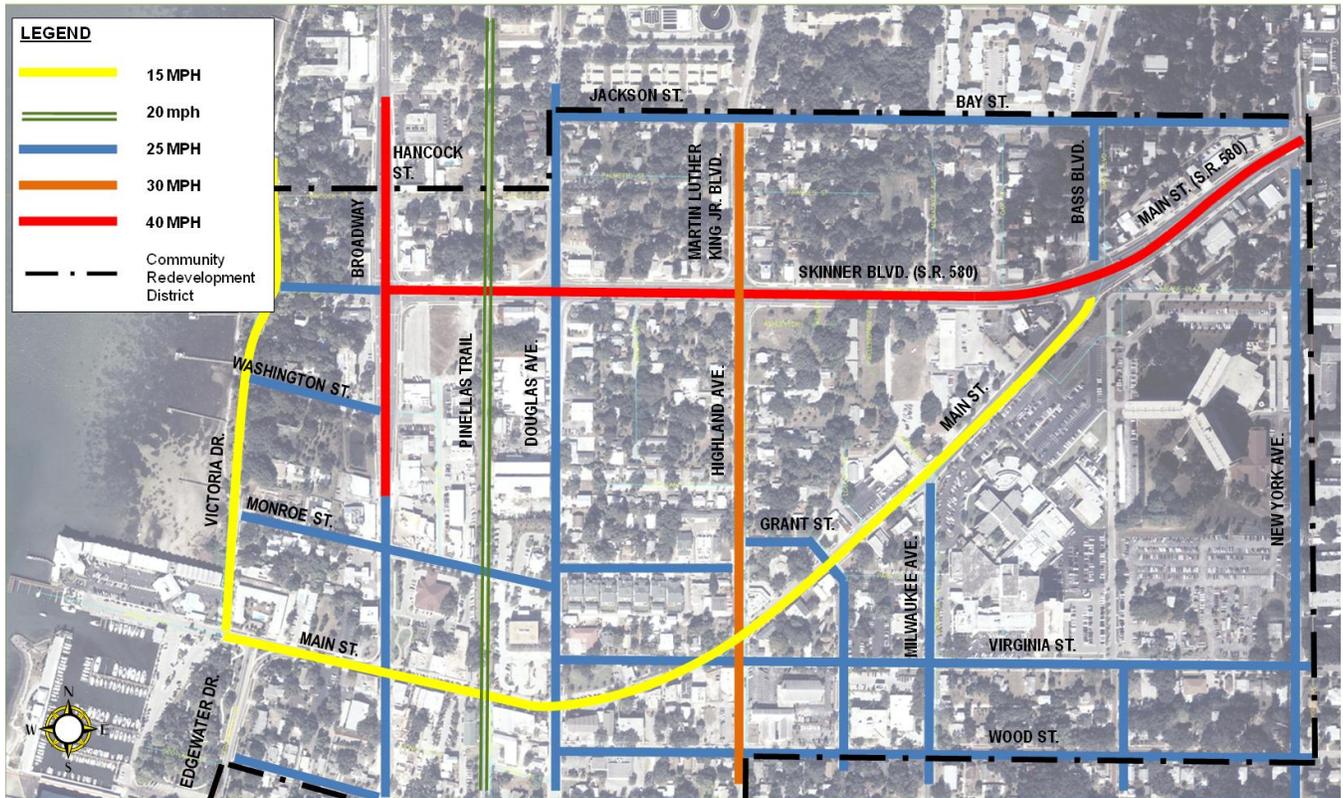
There are proposed bicycleways identified in several City policies to provide safe bicycle connections, such as:

- *City Comprehensive Plan–Dunedin 2015 (Transportation Element)* – to provide a citywide bicycle system (see Figure 5);
- *City Strategic Plan Fiscal Years 2008-2009* - to encourage community bike-ability;
- *Guideways To Downtown's Future, 1988 (currently being updated)* – promote bicycle movement through the development of the Pinellas Trail; and
- *City Transportation Management Plan Strategies* – constructing new bikeway/bike lane network along deficient roadways or to connect an existing bikeway network to the Pinellas Trail.

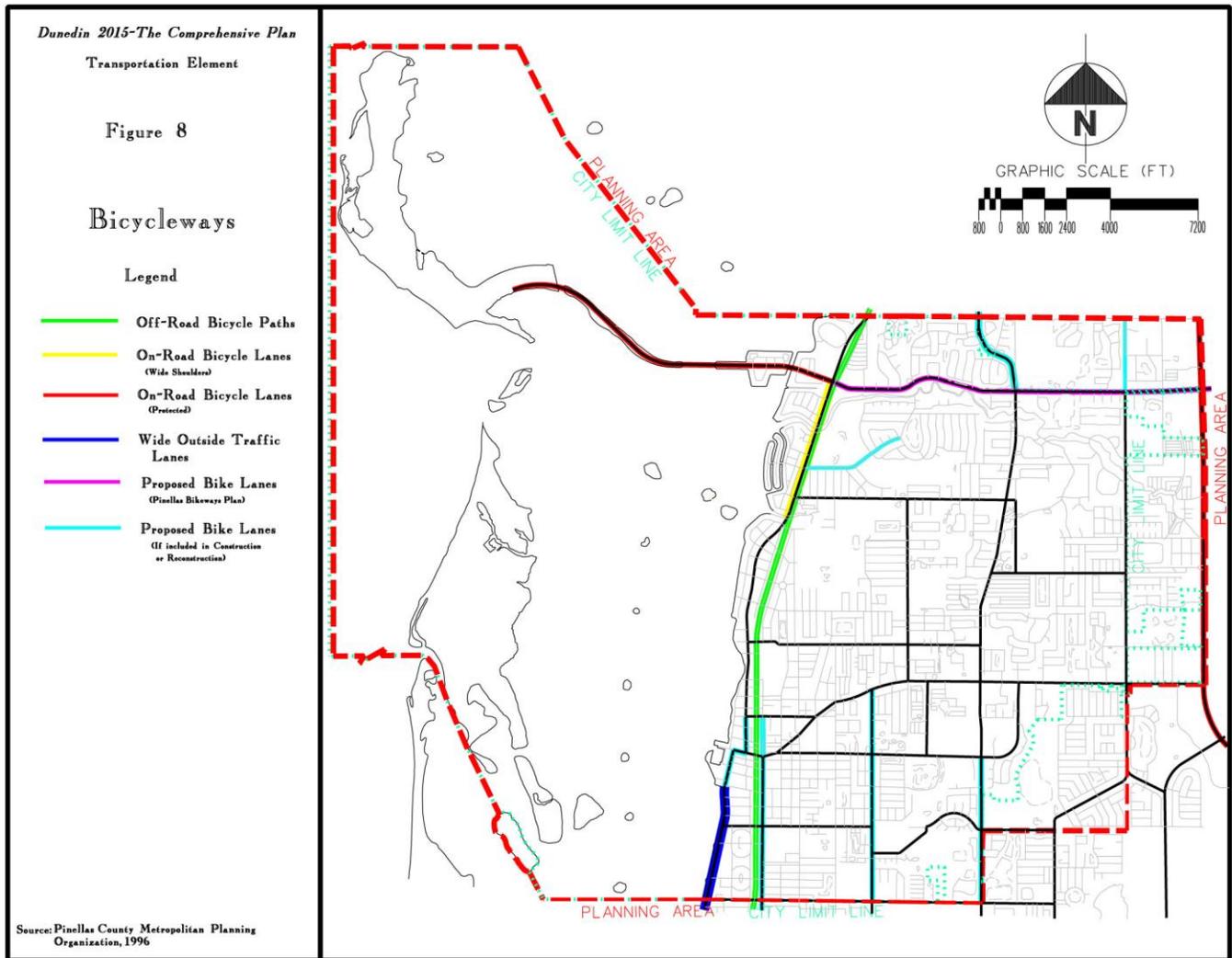
In addition, local governments of counties, cities, towns and other municipalities can adopt ordinances regulating bicycle riding. Some towns may also have registration and licensing ordinances. Sidewalk riding may be prohibited entirely or only in certain areas such as business districts.

The City of Dunedin has no bicycle ordinance. Other cities like Orlando, New Smyrna Beach, Tampa and St. Petersburg have regulations prohibiting riding a bicycle on a sidewalk within a business/commercial district.

Figure 13: Speed Limits within the Community Redevelopment District



**Figure 14: City's Bicycleways**  
 (Source: Dunedin 2015 – The Comprehensive Plan)





Main Street

### 4.2.3 Safety

Bicycle riders are subject to the same traffic laws as motorists and must obey all the same road signs. On the other hand, motor vehicle operators must be extra attentive to bicycle riders, as a bicycle is so much less noticeable than an auto or truck. Drivers must equate a bicycle with a motor vehicle and observe the same laws to protect the riders. The narrow 60-foot right-of-way and low speed limit of 15 mph along Main Street make for a safer and pleasant cycling experience. Between 2006 and 2008, there was only one bicycle accident within Downtown Dunedin.

Accidents may also occur on busy sidewalks, colliding with pedestrians. Bicyclists must yield the right-of-way to any pedestrian and give an audible signal before overtaking and passing a pedestrian. Within Downtown Dunedin, the sidewalks are narrow with high pedestrian activity and the City does not have any regulations prohibiting bicycles on the sidewalks.

### 4.2.4 Implications

The City is undertaking projects and studies to provide more bicycle facilities, such as:

- Providing *Safe Routes to Schools* by reconstructing Pinehurst Road as a three lane road to include bicycle lanes adjacent to the Dunedin High School between San Christopher Drive and Michigan Boulevard;
- Suggesting addition of bicycle lanes on Beltrees Street, Virginia Street, Michigan Avenue and San Christopher Drive, as part of the Douglas/Patricia Avenue corridor studies currently underway; and
- Exploring the option to provide grade separated bicycle lanes rather than the traditional FDOT specific bike lanes, as part of the resurfacing project of Skinner Boulevard (S.R. 580) to direct users westward towards the Pinellas Trail.



Skinner Boulevard

The City may also need to consider an ordinance prohibiting riding a bicycle on a sidewalk within Downtown Dunedin.



Pinellas Trail



Main Street

## 4.3 PEDESTRIANWAYS

### 4.3.1 Background

The Pinellas Trail bisects Downtown Dunedin, which helped spur the local businesses by having quaint boutiques and galleries, and delightful restaurants with decorative and inviting streets to create a pedestrian-friendly Downtown. This earned the City recognition as the “Best Walking Town in America” by The Walking Magazine.

The majority of the streets within the Downtown District have sidewalks ranging from 5 to 6 feet wide in good condition, either on one or both sides of the street. The decorative gateways, mast traffic arms, streetlights, street trees, sidewalk pavers, crosswalk treatments and street furnishings are concentrated along Main Street. The urban form within Downtown Dunedin consists of buildings close to the street with on-street parking providing a barrier between the sidewalk and the roadways. All these factors contribute to a pleasant pedestrian walking environment. The City’s Comprehensive Plan identifies future pedestrianways to complete the sidewalk connections (see Figure 15).

### 4.3.2 Regulations/Policies

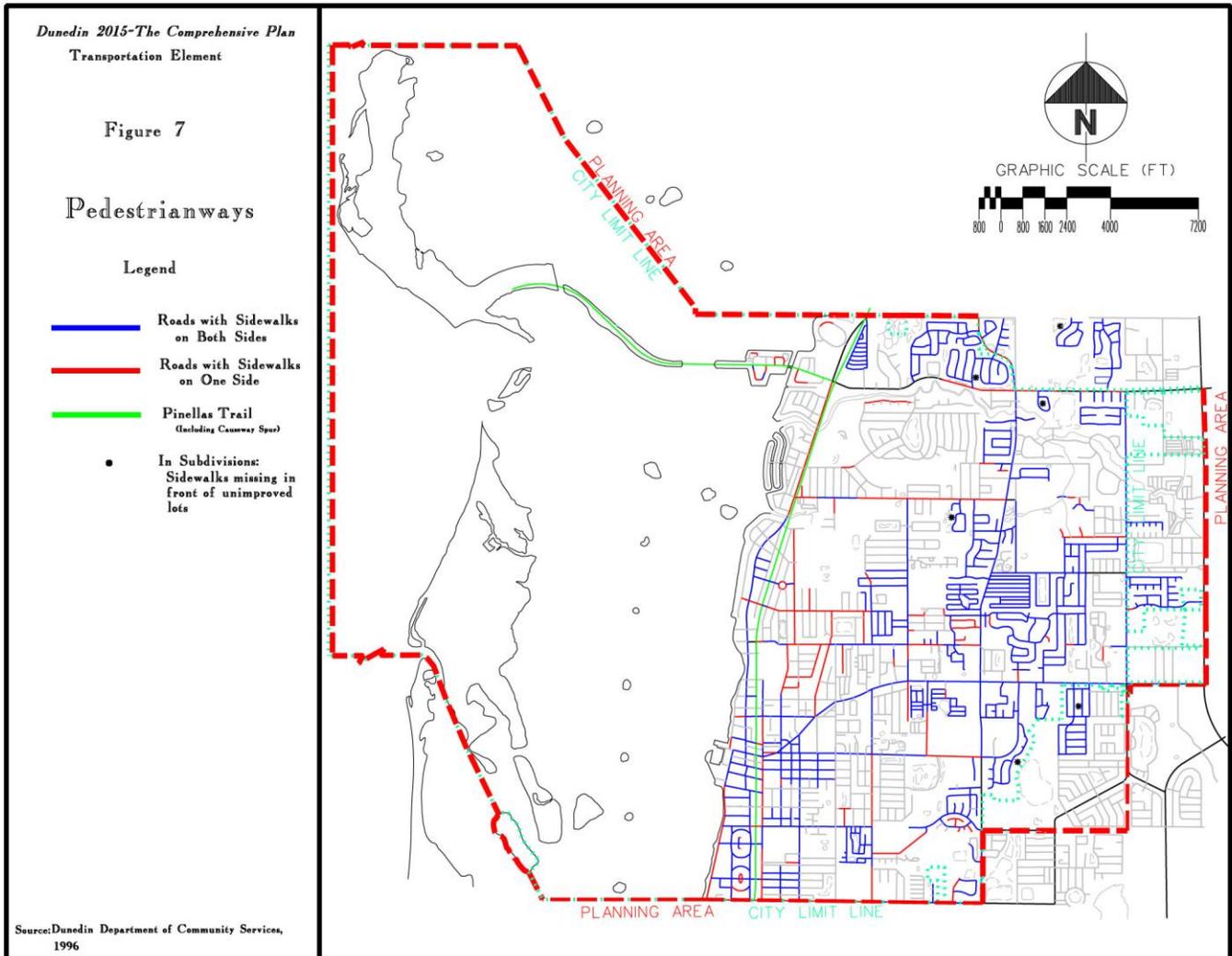
The State of Florida has adopted regulations pertaining to pedestrian safety (*Section 316.130, F.S.*), as well as full consideration in the planning and development of pedestrianways, including their incorporation into state, regional and local transportation plans and programs (*Section 335.065, F.S.*).

The City of Dunedin is committed to improving pedestrianways to provide safe and aesthetically pleasing street connections, such as:

- *City Comprehensive Plan–Dunedin 2015 (Transportation Element)* – to provide a citywide pedestrian system (see Figure 15);
- *City Strategic Plan Fiscal Years 2008-2009* - to encourage community walkability; and
- *Guideways To Downtown’s Future, 1988 (currently being updated)* – promote pedestrian movement through the development of streetscape amenities.

The City has other specific development standards pertaining to sidewalk widths, construction and crossings (*Chapter 110, Development Standards, City of Dunedin*).

**Figure 15: City's Pedestrianways**  
 (Source: Dunedin 2015 – The Comprehensive Plan)



### 4.3.3 Safety



Main Street & New York Avenue – Standard Crosswalk

Pedestrians are in a very vulnerable position. Their safety depends on the drivers of cars, trucks and other motor vehicles obeying the rules of the road. When a negligent driver fails to follow proper safety precautions, it can lead to a serious pedestrian accident. This does not preclude a pedestrian from putting themselves at risk for not obeying the road rules. Between 2006 and 2008, there were two pedestrian accidents at intersections within Downtown Dunedin.

Florida's enhanced pedestrian safety laws, which went into effect last year, carry hefty fines, court costs and points on the license of motorists who fail to stop and yield when a pedestrian has entered a specially marked crosswalk, where signs clearly warn that pedestrians have the right of way. Drivers must remain stopped until all foot traffic has cleared the road.

Local governments may improve the pedestrian realm by hosting walkable community workshops and “walkability audits”; establishing Safe Routes to Schools programs; and adopting “fix-it-first” policies on targeting significant resources for traffic calming, sidewalk and intersection improvements.



Main Street & Douglas Avenue – Decorative Intersection

### 4.3.4 Implications

The City of Dunedin has an aggressive sidewalk program for new and replacement sidewalks to enhance the pedestrian connectivity throughout the City. There are plans to improve the pedestrianway with sidewalks, crosswalks and aesthetic amenities, such as:

- Constructing additional sidewalks and crosswalks on Causeway Boulevard and sidewalks on New York Avenue and Roanoke Street.
- Providing pedestrian activated warning signals along Edgewater Drive.
- Installing decorative imprinting on the west side of US Alt. 19.
- Enhancing Skinner Boulevard with decorative paving and mast arms at the intersections, and landscaping along the roadway.



Main Street & Broadway – Decorative Intersection

The City also needs to further enhance the streetscape along the periphery of the Downtown District to provide continuity and a sense of arrival to the main commercial area. A secondary streetscape treatment consisting of pedestrian acorn lights, street trees (where possible) and sidewalk paving

pattern at every 30 to 40 feet could be considered along the following streets (see Figure 16):

Figure 16: Secondary Streetscape Treatment within the Community Redevelopment District



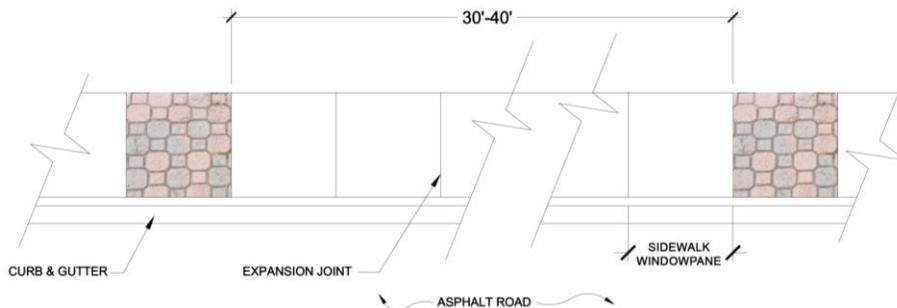
Pedestrian Scale Acorn Lights



Street Trees/Palms (where possible)



Intersection Treatment – Decorative Mast Arms and Crosswalks (brick running bond pattern)



Sidewalk Paving Pattern



Skinner Boulevard & Main Street



Edgewater Drive



Broadway



Douglas Avenue



Highland Avenue

1. Skinner Boulevard/Main Street (S.R. 580)
2. Edgewater Drive (Scotland Street to Main Street)
3. Broadway (Washington Street to Hancock Street)
4. Douglas Avenue (Virginia Lane to Jackson Street)
5. Highland Avenue (Grant Street to Skinner Boulevard and Main Street to Wood Street)
6. Martin Luther King Jr. Boulevard (Skinner Boulevard to Bay Street)
7. Milwaukee Avenue (Main Street to Wood Street)
8. New York Street (Main Street to Wood Street)
9. Main Street (Milwaukee Avenue to Skinner Boulevard)
10. Wood Street (New York Avenue to Douglas Avenue)
11. Virginia Street (New York Avenue to Highland Avenue)
12. Monroe Street (Broadway to Douglas Avenue)
13. Jackson Street (Douglas Avenue to Martin Luther King Jr. Boulevard)
14. Bay Street (Martin Luther King Jr. Boulevard to New York Avenue)
15. Bass Boulevard (Main Street to Bay Street)

In addition, pedestrian crossings should be better delineated for safety, visual connectivity and streetscape continuity along the connector roads leading into Main Streets. Traffic mast arms should be installed at the intersection of Main Street and Skinner Boulevard to visually enhance the gateway entry into the Downtown District.



*Martin Luther King Jr. Boulevard*



*Milwaukee Avenue*



*New York Avenue*



*Main Street*



*Wood Street*



*Virginia Street*



*Monroe Street*



*Bay Street/Jackson Street*



*Bass Boulevard*

## 4.4 GOLF CARTS

### 4.4.1 Background



The idea of allowing golf carts as a citywide alternative to cars, trucks and SUV's have been growing over the years to save gas and reduce pollution. Most communities near golf courses allow them on the streets but usually restrict their traffic to commuting to and from the golf course. The City of Dunedin passed an ordinance in 1983 (*Ordinance 83-61*) to permit golf carts to travel on City streets within a specific radius of the Dunedin Golf and Country Club (see *Figure 17*). The City is currently considering expanding their golf cart ordinance to the Downtown District. This national trend appears in communities from California to Texas to Indiana having recently permitted golf carts access to local roads.



### 4.4.2 Regulations/Policies

The State of Florida has adopted regulations allowing local governments the option to permit golf carts on local roads (*Section 316.212, F.S.*). The State rules set forth some minimum standards for the equipment required on golf carts, hours of operation and minimum qualifications for golf cart drivers. The statute allows the local government to impose some more restrictive guidelines for golf carts and drivers as well as determining the hours of use and those roads eligible for use.



The City's ordinance includes regulations relating to limited golf cart use to one mile radius of the Dunedin Golf Course; hours of operation from sunrise to sunset; safety equipment such as reliable brakes and steering, safe tires, rear view mirrors, red reflectors and international slow moving vehicle symbol; and licensure with a valid motor vehicle operator's or chauffeur's license.

These regulations are similar to other golf cart ordinances in Florida. In Central West Florida, Pinellas County adopted ordinances for Ozone, Crystal Beach and Highland Lakes to permit golf carts to travel on or cross the public roads or streets within specific geographic boundaries. The ordinances also include the following:

- a. Licensure (valid driver's license).
- b. Required equipment:
  - i. Ozone and Crystal Beach - headlamps, stop lamps, turn signal lamps, tail lamps, reflex reflectors, parking brakes, a rearview mirror, a windshield and a standard hip restraint or hand hold.

Regulatory Sign  
(Neighborhood Electric Vehicle –NEV)





Golf Carts Intermingling with Traffic



Golf Carts crossing State Roads



Golf Cart Collision

- ii. Highland Lakes – efficient brakes, reliable steering apparatus, safe tires, a rearview mirror, red reflectorized warning devices in the front and rear, an orange warning flag, and a "SLOW MOVING VEHICLE" sign in the rear.
- c. Maximum vehicle speed (incapable to exceed 20 miles per hour).
- d. Hours of operations (sunrise to sunset).

Other Florida towns and cities have enacted or are planning to enact similar golf cart ordinances - St. Mary's, Lake Helen, Flagler Beach, Shalimar, Palmetto Bay, Tallahassee, Oakland and South Daytona.

#### 4.4.3 Safety

There are problems inherent in towns and cities making the change to simply allowing golf carts to share the roads with today's typical traffic. Safety is the primary consideration. Typically, golf carts have a smaller profile which is an inherent part of their efficiency; but also makes them more difficult to see. The top speed of a golf cart is rarely more than 25 mph, which means automobiles coming from behind at higher speeds have less time to see and react to the slower, smaller vehicles. They are not designed to withstand collisions and offer relatively little protection for occupants.

One of the studies, by the University of Alabama at Birmingham, said about 1,000 Americans are hurt on golf carts every month. Males aged 10 to 19 and people over 80 had the highest injury rates. A separate study by the Center for Injury Research and Policy at Nationwide Children's Hospital in Columbus, Ohio, said annual injury rates for golf carts increased 130 percent over 16 years ending in 2006. The report said falling or jumping out of carts accounted for the largest number of injuries, 38 percent. About half of the injuries occurred on golf courses or in other sports venues, such as football stadiums. The rest were on streets or residential property (Associated Press, 2008).

#### 4.4.4 Implications

The City of Dunedin roadway network may permit a connection from the golf course community to the Downtown District since the majority of the local streets are 25 mph to support low speed travel (see *Figure 13 on page 42*). Permission is required from the Florida Department of Transportation (FDOT) to cross Skinner Boulevard (S.R. 580), since it is a State highway. Proposed designated street connections should be directed to the signalized intersection at



S.R. 580 and Bass Boulevard to access Main Street, such as (see Figure 18):

1. Bass Boulevard, south to Main Street; and
2. Pinehurst Road and Patricia Avenue, south to San Christopher Drive, west to Bass Boulevard, south to Main Street.

This would allow more flexibility and convenience for the residents of the golf community to make daily errands to the Downtown, at the same time, saving energy and eliminating noxious fumes from gasoline cars. Designated parking spaces with electric recharging stations may be necessary to provide convenience for the golf cart users.



Golf Carts on Local Streets

If the golf carts are just limited to the Downtown District with no connection to the golf course community, this would be impractical and inconvenient for commuting, since the golf carts would have to be transported to a parking lot to be unloaded to travel a short distance within the Downtown District. The most likely application would be limited to tourism rentals, which may be impractical, since Main Street is a short and very walkable commercial corridor.



Off-Street Parking

Based on the parking survey, 38% of the respondents think using a golf cart is an alternative for reducing single-occupant vehicle trips to the Downtown. There are a number of factors that will impact the level of demand for residents to use golf carts as a transportation alternative. Among these factors are:

1. The cost to acquire and operate a cart including the base cost for a cart, additional required equipment upgrades and any registration fees and other costs to qualify the cart and driver;
2. The perceived safety of the golf carts;
3. The convenience of the types of trips people want to make;
4. Any limitations on who can operate a golf cart including age limitations and hours of operation; and
5. The overall community culture supporting golf cart use – Will Dunedin still be considered the “Best Walking Town in America”?



On-Street Parking

Another consideration is the potential for additional traffic congestion on local streets. Currently Main Street from Bayshore Drive to Milwaukee Avenue is at a Level of Service (LOS) F peak hour and City collector roads at a LOS D peak





hour. The intermingling of golf carts and automobiles may further cause more congestion on the roadways.

The City may consider a pilot program on designated routes to permit golf carts from the Dunedin golf course to Downtown Dunedin to determine the feasibility of their usage. If the pilot program is successful, the City may expand their golf cart ordinance to include other City streets and designate specific parking areas with electric recharge capabilities.



The pilot program may involve the following to be evaluated in a specific time period – six months or one year:

1. Licensure
  - a. The driver should be licensed in the State or be of sufficient age that they could obtain a driver's license.
  - b. The driver should be required to view a safety and usage video.
  - c. Require insurance for carts to be used on public roads.
  
2. Registration and Inspection
  - a. Basic information about the type of cart and the owner's address and telephone number so the owner can be notified if the need arises.
  - b. Regular inspection of the cart (annually) should be done and certified to the City to verify that the golf cart has the required equipment and the equipment is in working order.
  - c. Verification of insurance.
  
3. Minimum Equipment
  - a. Required Minimum Equipment:
    - Efficient brakes
    - Reliable steering
    - Safe tires
    - Rearview mirror
    - Front and rear red reflectorized warning devices



Street Legal Golf Carts



Regulatory Signs

b. Suggested Additional Equipment:

- Headlights
- Tail lights
- Turn signals
- Windshield

4. Hours of Operation

- a. Sunrise to sunset period.
- b. Night hours permitted if equipped with headlights and taillights.

5. Designated Routes

- a. Limit golf carts to designated routes on City streets that are 25 mph or lower
- b. Monitor and evaluate accidents, violations and traffic conditions on the designated routes.

(TMH Consulting, Inc. and Lassiter Transportation Group, Inc., 2009)

Permitting golf carts on local streets has some associated operating costs for the City of Dunedin, such as:

1. Post signage alerting drivers to presence of golf carts on the public road network and other regulatory signs.
2. Provide traffic control devices at crossings of State Roads.
3. Produce literature of all related procedures and regulations.
4. Provide electric recharging stations at designated parking areas.
5. Personnel costs to administer the registration/inspections program; monitor the pilot program (accident reports, traffic congestion, violations, etc.); and law enforcement.

## 4.5 ELECTRIC PERSONAL ASSISTIVE MOBILITY DEVICES (SEGWAYS)

### 4.5.1 Background

Electric Personal Assistive Mobility Devices (EPAMD) were first introduced in 2001. They are electronically propelled two-wheeled devices designed to transport one person with a top speed of 12.5 mph and a range of about 24 miles. This could be another energy-efficient and pollution-free form of transportation to make daily errands around town.

Due the high price, approximately \$5,500 to \$6,500 and not practical for bad weather, the EPAMD's have been limited to tour groups and rentals. In Central West Florida, Tarpon Springs, Bradenton, St. Petersburg and Tampa provide Segway tours on designated routes of their historic districts, downtowns, waterfronts and parks.

### 4.5.2 Regulations/Policies

Legislation has been enacted in 43 States, including Florida, allowing the use of Segways. The State rules define Segways as “electric personal assistive mobility devices” and permits them on sidewalks, bike paths and streets with speed limits up to 25 mph; operators under 16 must wear helmets; and may be restricted by local ordinance, if it is in the interest of public safety (*Section 316.003(83) and 316.2068, F.S.*)

In Florida, some local governments have regulations on the use of EPAMD's for safety reasons. Key West was the first local government to prohibit EPAMD's on all streets, and further bans them from sidewalks in the historic district. Sanibel permits EPAMD's on sidewalks, shared use paths/trails, marked bicycle lanes and at an intersection to cross a road or street, if operated by a tour business with a conditional use approval. Additional requirements include proper education and instruction, maximum number of users per leader, safety equipment (helmets, sounding devices, reflectors, etc.) time restriction to dusk and prohibited areas.

### 4.5.3 Safety

The major safety concern is intermingling EPAMD's with pedestrians on the sidewalks. The National Safety Council has determined that the reaction time for an emergency braking situation is too slow and the potential impact to pedestrians is too great. In addition, mechanical and electrical failures may prevent them from being operated in a safe manner (Walk San Francisco).



EPAMD (Segways)



EPAMD's Permitted on Sidewalks



Potential Accidents



Main Street – 15 mph



Broadway – 25 mph



EPAMD's Intermingling with Pedestrians

#### 4.5.4 Implications

EPAMD's are permitted on sidewalks, but the City of Dunedin may prohibit them on any roads, street or bicycle path if the City determines that such prohibition is necessary in the interest of public safety.

The majority of the streets within the Community Redevelopment District are 15 and 25 mph, except for Bayshore Drive (40 mph), Highland Avenue (30 mph) and Skinner Boulevard (40 mph) (see Figure 13 on page 42). The majority of the adjacent local streets are also 25 mph, which may allow local residents to ride their EPAMD's on the streets, as well as the Pinellas Trail. Out of town users would have to transport their EPAMD's due to the short range of 25 miles. Designated parking areas with electric recharging stations may be necessary. Another option may be to limit EPAMD's to tour businesses on designated routes to points of interests, such as the Marina, Downtown District and historic buildings.

Based on the survey, 23% of respondents think using a Segway is an alternative for reducing single-occupant vehicle trips to the Downtown. There are a number of factors that will impact the level of demand for residents to use Segways as a transportation alternative. Among these factors are:

1. The cost to acquire an EPAMD;
2. The perceived safety of the EPAMD's;
3. The convenience of the types of trips people want to make;
4. Any limitations on who can operate an EPAMD, including hours of operation and prohibited areas; and
5. The overall community culture supporting EPAMD use – Will Dunedin still be considered the "Best Walking Town in America"?

Due to safety concerns to permit EPAMD's throughout the local streets under 25 mph and along bicycle pathways, the City of Dunedin may develop regulations, such as:

1. Helmets for all riders regardless of age.
2. Operation from sunrise to sunset.
3. Equipped with sounding device and reflectors.



Regulatory Signs



Segway Tour Group on Walkways



Segway Tour Group on Roadways

4. Designated Areas (options)

- a. Prohibit EPAMD's from all roads, streets and bicycle paths.
- b. Prohibit EPAMD's on certain roads, streets and bicycle paths.
- c. Limit EPAMD's to tour businesses on designated routes to points of interests, such as the Marina, Downtown District and historic buildings.

5. Tour Business Operation

- a. Provide instruction and training to all tour patrons and users.
- b. Maximum of 10 users for any single tour, plus tour leaders.
- c. Minimum of one tour leader for every five users and two tour leaders for more than five users.
- d. Maximum speed shall be 8 mph.

Permitting EPAMD's on local streets have some associated operating costs for the City of Dunedin, such as:

- 1. Post regulatory sign prohibiting EPAMD's.
- 2. Provide traffic control devices at crossings of State Roads.
- 3. Provide electric recharging stations at designated parking areas.



*Bicycle Rickshaws*

## 4.6 BICYCLE RICKSHAWS

### 4.6.1 Background

Bicycle rickshaws are also known as pedicabs, which are human-powered by a bicycle, equipped with one or more seats for carrying passengers. This form of transit alleviates air and noise pollution while providing a reliable form of transportation since the carts are not limited by traffic jams. This does not preclude personal use, however most bicycle rickshaws are vehicles for hire.

Some people find the experience of traveling by bicycle rickshaw quite delightful. The slow pace allows for sightseeing opportunities, and rickshaw drivers often point out interesting sights or talk about the history of the region for passengers who are interested. In order to be successful, bicycle rickshaws need to be regulated to protect the operator and the passengers, and to prevent overuse that may reduce on-street parking and cause traffic congestion.

### 4.6.2 Regulations/Policies

Bicycle rickshaws are permitted in any place that allows bicycles except on sidewalks due to the commercial/multi-occupant use of such a vehicle. They must ride as close as practicable to the right-hand curb or edge of the roadway, except when overtaking and passing another bicycle or vehicle proceeding in the same direction, or preparing for a left turn at an intersection or into a private road or driveway (*Section 316.2065, F.S.*).

In Florida, some local governments, such as Orlando, Sarasota, Gainesville and Miami Beach have some form of regulations on the use of bicycle rickshaws to address safety requirements, regulations and enforcement, such as:

- Registration
- Inspection
- Insurance
- Safety equipment
- Appearance
- Designated pick-up/drop-off areas
- Limiting the number of rickshaws in specific areas
- Establishing a list of permitted or prohibited streets to travel



Potential Accidents



Bicycle Rickshaws Dominating a Traffic Lane causing Traffic Congestion



Bicycle Rickshaws on Designated Bike Lanes



Provide Designated Parking for Rickshaws

In Central West Florida, Clearwater, Tampa, St. Pete Beach and St. Petersburg have bicycle rickshaw services, but not regulated, except through some sort of vehicle for hire permits.

#### 4.6.3 Safety

Bicycle rickshaws are also very vulnerable in automobile accidents, since they provide little to no protection for their passengers. Many local governments report rare occurrences. However, accidents usually happened due to impatient or careless drivers, passengers falling off the rickshaw and rickshaw drivers weaving in and out of traffic. In addition to safety, there are concerns with traffic congestion if too many bicycle rickshaws operate in the same location (Howlett, 2004).

#### 4.6.4 Implications

Bicycle rickshaws are permitted on any streets within the City of Dunedin and the Pinellas Trail, if they abide by the road rules pertaining to bicycles. The City may regulate the use of bicycles, particularly as vehicles for hire, if it is in the interest of public safety.

Based on the survey, 30% of respondents think riding on a bicycle rickshaw is an alternative for reducing single-occupant vehicle trips to the Downtown. There are a number of factors that will impact the level of demand for patrons riding on bicycle rickshaws as a transportation alternative. Among these factors are:

1. The perceived safety of the bicycle rickshaws;
2. The level of service and affordability;
3. The convenience of the types of trips people want to make;
4. Any limitations on hours of operation and prohibited areas; and
5. The overall community culture supporting bicycle rickshaw use – Will Dunedin still be considered the “Best Walking Town in America”?

Another consideration is the potential for loss of on-street or off-street parking while the bicycle rickshaws wait for a fare. The City may designate rickshaw parking areas, which would limit the number of bicycle rickshaws within the Community Redevelopment District, which in turn may reduce traffic congestion. The intermingling of bicycle rickshaws and automobiles may cause more congestion on the roadways.



*Provide Uniform Appearances for the Bicycle Rickshaws and Drivers*



*Safety Features – Headlights and Reflectors*

The City of Dunedin may consider an ordinance to permit bicycle rickshaws for hire to ensure safety for the rider and the passengers and to prevent additional traffic congestion. This ordinance may include the following:

1. A state-issued driver's license.
2. Working lights, brakes and mirrors on the vehicles.
3. An inspection to ensure safety and appearance standards.
4. Restrict operation to one trailer instead of a train of two or three.
5. Liability insurance.
6. An enforceable, verbal contract on fares between the operator and passenger.
7. Prohibit during evening rush hours between 4:30 pm to 6:00 pm during the week.
8. Limit the number of bicycle rickshaws to the Community Redevelopment District.

Permitting bicycle rickshaws on local streets would have some associated operating costs for the City of Dunedin, such as personnel costs to administer the registration/inspections program and law enforcement.



*Horse-Drawn Carriage*



*Potential Accidents*



*Provide Neat and Clean Appearances for the Carriages and Drivers*

## 4.7 HORSE-DRAWN CARRIAGES

### 4.7.1 Background

A horse-drawn carriage is defined as a carriage which is operated by being drawn by a horse or mule or other beast of burden, for the transportation of passengers for hire or compensation (City of St. Augustine, 2009). The slow pace allows for sightseeing opportunities, and drivers often point out interesting sights or talk about the history of the region. This form of transportation is limited to tourism for sightseeing and not considered an alternative mode of transportation to make daily errands around town. However, there are some controversies about cruelty and abuse of using horses to pull carriages in all weather extremes, dodge traffic, and pound the pavement all day long. These horses may suffer from respiratory ailments because they breathe in exhaust fumes; they can develop debilitating leg problems from walking on hard surfaces; or have heatstroke after working in scorching summer heat and humidity. In addition, there have also been countless incidents in which carriages have been hit by impatient or careless drivers (People for the Ethical Treatment of Animals). Many cities including Biloxi, Palm Beach, Key West and Treasure Island have already banned horse-drawn carriages.

In order to be successful, horse-drawn carriages need to be regulated to protect the horses, operator and the passengers.

### 4.7.2 Regulations/Policies

The commercial horse-drawn carriages are subject to the *State Uniform Traffic Control Law, Section 316, F.S.* Local governments have the authority to exercise its police power to regulate or prohibit the use of horse-drawn carriages on certain streets, such as where the use of horse-drawn carriages may be incompatible with the normal and safe movement of traffic (*Section 316.008, F.S.*).

Local governments have included additional regulations for commercial horse-drawn carriages to protect the health and safety of the horses. Other cities in Florida including St. Augustine, Mount Dora, Ocala, St. Petersburg and Tampa permit commercial horse-drawn carriages with specific regulations pertaining to welfare of the horses, such as health certification, watering schedules, proper equipment (i.e., harness, horseshoes, etc.), restrictive periods during hot and cold weather, carriage size, limited passenger occupancy and animal abuse. Other regulations, limit the number of vehicles within a specific area or during special events/parades when the road is closed; appearance and safety equipment of the

carriages; advertising; driver's appearance; liability insurance; and rates and charges.

#### 4.7.3 Safety

Mixing horse-drawn carriages with pedestrians and motor vehicle traffic is inherently dangerous. Contrary to operator's claims, most horses are not at all comfortable working among cars and trucks. Horses can easily be "spooked" — no matter how well trained they may be. Horses may become startled by sudden noises like sirens, horns, motorcycles and thunder, and cause accidents by running into traffic or onto sidewalks (Animal Rights Foundation of Florida).

In addition, there are concerns with traffic congestion which may result in careless and impatient drivers trying to pass the horse-drawn carriages, causing accidents and injuries to the horse, driver and passengers. Horse-drawn carriages shall comply with all traffic ordinances, rules and regulations of the City and state to ensure roadway safety.

#### 4.7.4 Implications

This form of transportation is limited to tourism for sightseeing and not considered an alternative mode of transportation to make daily errands around town. Horse-drawn carriages may be limited to special events/parades when the road is closed.

The high pedestrian and bicycle activities in conjunction with the traffic congestion during peak hours along Main Street may not be suitable for horse-drawn carriages. This operation may be more appropriate during evening hours, when the temperature and humidity are lower, and less pedestrian, bicycle and vehicular activities, and there is less chance to spook the horses or cause traffic congestion.

The City of Dunedin may consider an ordinance to permit horse-drawn carriages to ensure safety for the horse, driver and passengers, and prevent additional traffic congestion. This ordinance may include the following:

1. Health of horse
2. Hours of operation
3. Equipment, safety and appearance requirements
4. Compliance with traffic regulations
5. Limitation on number of carriages and specific locations
6. Carriage stands/parking



Potential Accidents



Cause Traffic Congestion



Provide Carriage Stands

7. Rates and charges
8. Licensing
9. Periodic inspection
10. Manure on street; driver's responsibility
11. Liability insurance

Permitting horse-drawn carriages on local streets would have some associated operating costs for the City of Dunedin, such as personnel costs to administer the licensing, horse and carriage inspections, and law enforcement. Some on-street parking may be lost to accommodate carriage stands.

## 5.0 Conclusions

After analyzing the current parking supply and demand for the City's CRA, BASE has discovered that the parking supply is minimally adequate during the workday, the Green Market, and on weekends. In addition, the City has a parking deficit for large special events (Mardi Gras, Wines the Blues) of up to **1,534** spaces.

In addition to the parking demand, the principles of shared parking were used to determine the theoretical peak parking demand that will be experienced by the study area, as well as specifically the Downtown/Main Street corridor. Based on the findings of the theoretical shared parking demand, the maximum demand of 488 spaces will occur at 8:00 PM on a weekend in December. The City's current parking supply is not sufficient to handle the theoretical demand. If and when the 180 "at risk" parking spaces are removed from the supply, the parking adequacy is projected to be a deficit of **154** spaces.

Based on the results of the parking occupancy surveys, BASE recommends that the City consider adding a parking garage in the near future. To take advantage of economies of scale and cost per space efficiencies, the garage should add between 400 and 500 spaces (four to five levels) with ground floor retail. This garage would serve the needs of visitors to the Downtown and the Pinellas Trail, as well as Special Events parkers. In addition to a parking garage, in order to effectively manage the parking situation during special events, we recommend that the City take the following steps:

- Utilize available parking supply at Stadium.
- Create and distribute special events parking map.
- Consider charging \$5.00 per day for parking in the lots closest to Main Street, especially during the busiest events.
- Provide additional temporary signage directing visitors to parking locations during special events.
- Make Downtown merchants aware of special event parking policies and locations.

The parking survey revealed that visitors and local residents have difficulty in locating City parking facilities and recommended that better signage is necessary for the Downtown. The City of Dunedin has some wayfinding signage in place for the Downtown; however, a more comprehensive wayfinding signage system plan needs to be implemented to

provide a cohesive design through branding and a hierarchical approach to direct visitors to the Downtown, places of interest and parking facilities.

Other alternatives to manage parking within the Downtown District are to improve the public transit system, pedestrian-ways and bicycleways. Permitting alternative modes of transportation, such as golf carts, segways, bicycle rickshaws and horse drawn carriages may be viable alternatives to attract more tourists and provide convenience to local residents. However, there are inherent problems to share the roadway or sidewalk with these energy-efficient vehicles, the main one being **SAFETY**. The City may have to conduct traffic management studies to prevent traffic congestion; adopt planning policies to regulate their use; and provide additional staff to register, inspect and regulate the vehicles. There may be some associated operating costs for the CRA, such as regulatory signage, traffic control devices, public information/literature, electric recharging stations and staffing. Because of these reasons, we do not recommend relying on these alternative modes of transportation as a means of reducing parking congestion.

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## APPENDIX A: Definition of Terms

There are several terms used in this report that are unique to the field of parking consulting. Definitions for these terms are presented below:

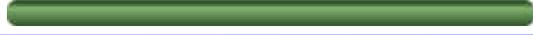
- Adequacy – The difference between the effective parking space supply and the parking space demand.
- Effective Supply – The total supply of parking spaces, adjusted to reflect the cushion needed to provide for vehicles moving in and out of spaces, spaces unavailable due to maintenance, and to reduce the time necessary for parking patrons to find the last few available spaces. The adjustment factor is known as the effective supply factor.
- GLA – Gross Leasable Area.
- Inventory or Supply – The total number of designated parking spaces within the study area.
- Mixed-Use Development – A development that contains more than one type of use in a building or set of buildings. Some of the uses include residential, commercial, industrial, office, and institutional.
- Modal Split – The percentage of travelers to the development using a particular mode of transportation. In the case of this study, a 100% modal split indicates only cars being used to access the development, and a 0% modal split indicates only public transportation and/or walking being used to access the development.
- Occupancy – The number of parking spaces occupied by vehicles.
- Parking Demand – The number of spaces required by various user groups and visitors to the study area.
- Patron or User – Any individual parking in the study area.
- Peak Hour – The busiest hour of the day for parking demand, where the greatest number of parking spaces will be occupied.
- s.f. – Square feet.
- Survey Day – The day that occupancy counts within a study area are recorded.

- Synergy Reduction – The reduction of required parking caused by the combined effects of the mixed-use development and modal split.
- Urban Land Institute (ULI) – Non-profit organization whose stated mission is "to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide".

## Dunedin Parking Results Overview

Date: 6/29/2009 12:18 PM PST  
Responses: Completes  
Filter: No filter applied

1. Are you a resident of the City of Dunedin?			
Yes		211	63%
No		123	37%
Total		334	100%

2. Do you own a business in the City of Dunedin?			
Yes		81	24%
No		253	76%
Total		334	100%

3. How often do you visit the Downtown area?			
One to two times per week		126	38%
Three to four times per week		68	20%
Five to seven times per week		84	25%
Other, please specify		56	17%
Total		334	100%

4. What is your overall impression of the parking situation in the Downtown?			
Adequate parking		86	26%
Need more parking		215	64%
Other, please specify		33	10%
Total		334	100%

5. What problems do you currently experience with respect to parking in the Downtown? (more than one answer, as applicable)			
Difficult to find public parking lots		122	37%
Public parking lots too far from the businesses		70	21%
Lack of parking during special events (Mardi Gras, Wines the Blues, Green Market, Blue		236	71%

Jays games)			
Overflow parking in the adjacent neighborhoods		95	28%
Other, please specify		45	13%

**6.** If you use handicap spaces, have you had difficulty in finding parking and/or accessing onto the sidewalks?

Yes		16	5%
No		16	5%
Not applicable		295	90%
Total		327	100%

**7.** How far are you willing to walk from your parking area to your destination?

Less than 5 minutes		237	71%
10 to 15 minutes		91	27%
More than 15 minutes		6	2%
Total		334	100%

**8.** If you are a business owner, would you like the City to provide designated employee parking lots to allow prime parking spaces for customers and visitors?

Yes		103	70%
No		45	30%
Total		148	100%

32 Responses

**9.** If a well-designed and secure parking garage was constructed, would you likely use it?

Yes		250	76%
No		79	24%
Total		329	100%

**10.** Are there sufficient and effective signs directing you to the public parking lots?

Yes		121	37%
No		208	63%
Total		329	100%

**11.** Would you pay to park closer to your destination during special events? If yes, how much would you be willing to pay?

\$5/day		140	42%
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\$10/day		32	10%
\$15/day		0	0%
No		162	49%
Total		334	100%

**12.** If you are a business owner, would you pay a monthly fee for you or your employees to park (surface lot or garage)?

Yes		41	29%
No		99	71%
Total		140	100%

**13.** Looking forward, where do you see a need for additional parking supply (closest vicinity)? (more than one answer accepted)

Main Street/Milwaukee Avenue		66	21%
Main Street/Douglas Avenue		181	59%
Main Street/Highland Avenue		74	24%
Main Street/Broadway		143	47%
Main Street/Edgewater Avenue		88	29%
Other, please specify		23	7%

**14.** What opportunities do you see for reducing single-occupant vehicle trips to the downtown? (more than one answer accepted)

Walking		207	69%
Bicycling		194	65%
Golf Carts		114	38%
Segways		69	23%
Bicycle Rickshaws		90	30%
Other, please specify		44	15%

## APPENDIX C: Occupancy Counts

Green Market

Facility Name	Available Spaces		Date	Time	Occupied Spaces		Occupancy		Comments	
	Standard	HC			Standard	HC	Standard	HC		Total
Church	78	4	82	4/17/2009	11:45 AM	41	3	44	54%	33 spaces not marked
Scotland Lot	30	1	31	4/17/2009	12:15 PM	30	1	31	100%	
Historical Society Lot	20	1	21	4/17/2009	12:15 PM	20	1	21	100%	
Green Market Lot	20	1	21	4/17/2009	12:30 PM	16	1	17	80%	
Ocean Optics Lot	29	2	31	4/17/2009	12:30 PM	29	2	31	100%	Total does not include 7 spaces reserved for Ocean Optics
Louden Lot	62	5	67	4/17/2009	1:15 PM	30	2	32	48%	
Marina Lot	53	4	57	4/17/2009	3:10 PM	33	0	33	62%	
<b>Total Off-Street Parking</b>	<b>292</b>	<b>18</b>	<b>310</b>	<b>4/17/2009</b>		<b>199</b>	<b>10</b>	<b>209</b>	<b>68%</b>	<b>56%</b>
Main Street	80	7	87	4/17/2009	11:35 AM	72	4	76	90%	57%
Virginia Lane	14	0	14	4/17/2009	11:45 AM	14	0	14	100%	N/A
Douglas Avenue	18	0	18	4/17/2009	11:50 AM	13	0	13	72%	N/A
Honey Lane	12	1	13	4/17/2009	11:55 AM	11	1	12	92%	100%
Broadway	17	1	18	4/17/2009	12:20 AM	11	0	11	65%	0%
W. Railroad Avenue	15	0	15	4/17/2009	11:55 AM	12	0	12	80%	N/A
Highland Avenue	13	1	14	4/17/2009	11:45 AM	5	0	5	38%	0%
Grant Street	6	1	7	4/17/2009	12:45 AM	2	1	3	33%	100%
Park Street	13	0	13	4/17/2009	12:50 PM	4	0	4	31%	N/A
Milwaukee Avenue	8	0	8	4/17/2009	12:55 PM	8	0	8	100%	N/A
Virginia Street	6	0	6	4/17/2009	1:00 PM	2	0	2	33%	N/A
AlFresco Alley	1	2	3	4/17/2009	2:00 PM	1	0	1	100%	0%
Marina	15	1	16	4/17/2009	3:10 PM	15	0	15	100%	0%
<b>Total On-Street Parking</b>	<b>218</b>	<b>14</b>	<b>232</b>	<b>4/17/2009</b>		<b>170</b>	<b>6</b>	<b>176</b>	<b>78%</b>	<b>43%</b>
<b>Total Public Parking</b>	<b>510</b>	<b>32</b>	<b>542</b>	<b>4/17/2009</b>		<b>369</b>	<b>16</b>	<b>385</b>	<b>72%</b>	<b>50%</b>

Saturday

Facility Name	Available Spaces		Date	Time	Occupied Spaces		Occupancy		Comments	
	Standard	HC			Standard	HC	Standard	HC		Total
Church	78	4	82	4/18/2009	11:45 AM	7	0	7	9%	0%
Scotland Lot	30	1	31	4/18/2009	12:15 PM	30	1	31	100%	100%
Historical Society Lot	20	1	21	4/18/2009	12:15 PM	20	1	21	100%	100%
Green Market Lot	20	1	21	4/18/2009	12:30 PM	12	0	12	60%	0%
Ocean Optics Lot	29	2	31	4/18/2009	12:30 PM	28	0	28	97%	0%
Louden Lot	62	5	67	4/18/2009	1:15 PM	16	0	16	26%	0%
Marina Lot	53	4	57	4/18/2009	3:10 PM	36	0	36	68%	0%
<b>Total Off-Street Parking</b>	<b>292</b>	<b>18</b>	<b>310</b>	<b>4/18/2009</b>		<b>149</b>	<b>2</b>	<b>151</b>	<b>51%</b>	<b>11%</b>
Main Street	80	7	87	4/18/2009	11:35 AM	72	4	76	90%	57%
Virginia Lane	14	0	14	4/18/2009	11:45 AM	8	0	8	57%	N/A
Douglas Avenue	18	0	18	4/18/2009	11:50 AM	4	0	4	22%	N/A
Honey Lane	12	1	13	4/18/2009	11:55 AM	8	1	9	67%	100%
Broadway	17	1	18	4/18/2009	12:20 AM	14	1	15	82%	100%
W. Railroad Avenue	15	0	15	4/18/2009	11:55 AM	12	0	12	80%	N/A
Highland Avenue	13	1	14	4/18/2009	11:45 AM	3	0	3	23%	0%
Grant Street	6	1	7	4/18/2009	12:45 AM	5	0	5	83%	0%
Park Street	13	0	13	4/18/2009	12:50 PM	1	0	1	8%	N/A
Milwaukee Avenue	8	0	8	4/18/2009	12:55 PM	6	0	6	75%	N/A
Virginia Street	6	0	6	4/18/2009	1:00 PM	1	0	1	17%	N/A
AlFresco Alley	1	2	3	4/18/2009	2:00 PM	0	1	1	0%	50%
Marina	15	1	16	4/18/2009	3:10 PM	5	0	5	33%	0%
<b>Total On-Street Parking</b>	<b>218</b>	<b>14</b>	<b>232</b>	<b>4/18/2009</b>		<b>139</b>	<b>7</b>	<b>146</b>	<b>64%</b>	<b>50%</b>
<b>Total Public Parking</b>	<b>510</b>	<b>32</b>	<b>542</b>	<b>4/18/2009</b>		<b>288</b>	<b>9</b>	<b>297</b>	<b>56%</b>	<b>28%</b>

Facility Name	Available Spaces			Date	Time	Occupied Spaces			Occupancy			Comments
	Standard	HC	Total			Standard	HC	Total	Standard	HC	Total	
Church	78	4	82	5/5/2009	11:45 AM	75	4	79	96%	100%	96%	
Scotland Lot	30	1	31	5/5/2009	12:15 PM	30	1	31	100%	100%	100%	
Historical Society Lot	20	1	21	5/5/2009	12:15 PM	20	1	21	100%	100%	100%	
Green Market Lot	20	1	21	5/5/2009	12:30 PM	20	0	20	100%	0%	95%	
Ocean Optics Lot	29	2	31	5/5/2009	12:30 PM	29	2	31	100%	100%	100%	
Louden Lot	62	5	67	5/5/2009	1:15 PM	62	5	67	100%	100%	100%	Cars parked on the grass
Marina Lot	53	4	57	5/5/2009	3:10 PM	38	0	38	72%	0%	67%	
Total Off-Street Parking	292	18	310			274	13	287	94%	72%	93%	
Main Street	80	7	87	5/5/2009	11:35 AM	79	7	86	99%	100%	99%	
Virginia Lane	14	0	14	5/5/2009	11:45 AM	14	0	14	100%	N/A	100%	
Douglas Avenue	18	0	18	5/5/2009	11:50 AM	18	0	18	100%	N/A	100%	
Honey Lane	12	1	13	5/5/2009	11:55 AM	12	1	13	100%	100%	100%	
Broadway	17	1	18	5/5/2009	12:20 AM	17	1	18	100%	100%	100%	
W. Railroad Avenue	15	0	15	5/5/2009	11:55 AM	15	0	15	100%	N/A	100%	
Highland Avenue	13	1	14	5/5/2009	11:45 AM	13	0	13	100%	0%	93%	
Grant Street	6	1	7	5/5/2009	12:45 AM	6	1	7	100%	100%	100%	
Park Street	13	0	13	5/5/2009	12:50 PM	13	0	13	100%	N/A	100%	
Milwaukee Avenue	8	0	8	5/5/2009	12:55 PM	4	0	4	50%	N/A	50%	
Virginia Street	6	0	6	5/5/2009	1:00 PM	6	0	6	100%	N/A	100%	
AlFresco Alley	1	2	3	5/5/2009	2:00 PM	1	2	3	100%	100%	100%	
Marina	15	1	16	5/5/2009	3:10 PM	14	1	15	93%	100%	94%	
Total On-Street Parking	218	14	232			212	13	225	97%	93%	97%	
Total Public Parking	510	32	542			486	26	512	95%	81%	94%	

## APPENDIX D: Shared Parking

These standards are for land uses in a “stand-alone” configuration, not a mixed-use configuration, and are therefore the basis for establishing the maximum baseline parking demand for which discounts for shared parking synergies shall be applied.

**Table D.1. Weekday Visitor Design Parking Demand Ratios**

Land Use	Demand Ratios
Shopping	2.9 spaces per 1,000 s.f. of GLA
Bank	3.0 spaces per 1,000 s.f. of GLA
Restaurant - Fine Dining	14.25 spaces per 1,000 s.f. of GLA
Restaurant - Family	9.0 spaces per 1,000 s.f. of GLA
Restaurant - Convenience	12.75 spaces per 1,000 s.f. of GLA
Residential (Rent)	0.15 space per 1 unit
Residential (Own)	0.15 space per 1 unit
Office	0.23 spaces per 1,000 s.f. of GLA
Hotel	1.0 space per 1 room

**Table D.2. Weekday Employee/Tenant Design Parking Demand Ratios**

<b>Land Use</b>	<b>Demand Ratios</b>
Shopping	0.7 spaces per 1,000 s.f. of GLA
Bank	1.6 spaces per 1,000 s.f. of GLA
Restaurant - Fine Dining	2.75 spaces per 1,000 s.f. of GLA
Restaurant - Family	1.50 spaces per 1,000 s.f. of GLA
Restaurant - Convenience	2.25 spaces per 1,000 s.f. of GLA
Office	2.98 spaces per 1,000 s.f. of GLA
Residential (Rent)	1.5 space per 1 unit
Residential (Own)	1.7 space per 1 unit
Hotel	0.25 space per 1 room

**Table D.3. Weekend Visitor Design Parking Demand Ratios**

<b>Land Use</b>	<b>Demand Ratios</b>
Shopping	3.2 spaces per 1,000 s.f. of GLA
Bank	3.0 spaces per 1,000 s.f. of GLA
Restaurant - Fine Dining	17.0 spaces per 1,000 s.f. of GLA
Restaurant - Family	12.75 spaces per 1,000 s.f. of GLA
Restaurant - Convenience	12.0 spaces per 1,000 s.f. of GLA
Office	0.03 spaces per 1,000 s.f. of GLA
Residential	0.15 spaces per 1 unit
Hotel	1.0 space per 1 room

**Table D.4. Weekend Employee/Tenant Design Parking Demand Ratio**

Land Use	Demand Ratios
Shopping	0.8 spaces per 1,000 s.f. of GLA
Restaurant - Fine Dining	3.0 spaces per 1,000 s.f. of GLA
Restaurant - Family	2.25 spaces per 1,000 s.f. of GLA
Nightclub/Bar	2.0 spaces per 1,000 s.f. of GLA
Office	0.3 spaces per 1,000 s.f. of GLA
Residential (Rent)	1.5 space per 1 unit
Hotel	0.18 space per 1 room

The next step in calculating the theoretical parking demand is including any potential synergy reductions that result from multiple destinations for one vehicle trip (mixed-use synergy), different hours of peak activity for each land use, and the propensity for use of mass transit (modal split synergy). The synergy reductions used in this study are detailed in *Table D.5*.

**Table D.5. Synergy Reductions**

Land Use	Synergy Reduction	
	Mixed Use	Modal Split
Shopping	15% - 25%	0% - 15%
Restaurant - Fine Dining	10% - 20%	0% - 20%
Restaurant - Family	25% - 50%	0% - 20%
Nightclub/Bar	85% - 90%	0% - 20%
Office	0%	0% - 10%
Residential (Rent)	0%	0%
Hotel Amenities	0%	25% - 50%



## APPENDIX E: Level of Service, Parking Garage Standards and Costs

### E.1. Design Standards and Level of Service

To quantify the standards for parking garage design, different levels of service (LOS) have been created. For transient visitors, a LOS B or greater is recommended. Characteristics of LOS B parking garages serving transient visitors include (Dimensions of Parking, Parking Structures):

- Maximum walking distance within the parking facility – 600'-0".
- Minimum floor to ceiling height – 8'-0" (8'-2" for handicap van accessible spaces).
- Maximum ramp slope where parking is allowed – 4.5%.
- Minimum percent of parking spaces on flat floors – 60%.
- Number of 360-degree turns to the top floor of parking – 4.
- Number of angled parking spaces passed on primary search path – 800.
- Number of perpendicular parking spaces passed on primary search path – 500.
- Parking stall dimensions – 8'-9" wide x 18'-0" deep.
- Minimum drive aisle dimensions – 24'-0" for two-way traffic.
- Minimum turn aisle dimensions – 30'-0" for two-way traffic.

BASE Consultant recommends that, if and when the City decides to construct a parking garage, the minimum requirements of LOS B are satisfied.

### E.2. Parking Facility Costs

There are several costs that should go into determining the total cost for a parking facility. Land acquisition costs are usually significant, but are quantified separate from parking facility construction costs. Median construction costs for above-ground parking facilities are determined for major metropolitan areas and are updated yearly. According to Carl Walker Industry Insights, the median construction cost for a parking structure in Miami for the 1<sup>st</sup> quarter of 2009 is \$14,043 per parking space. These costs do not include ancillary costs, such as geotechnical studies, land surveys, and design fees, which normally add between 20% and 30% to the construction costs (Parking Structures). In addition to the costs associated with constructing a parking facility, there are ongoing operating and maintenance costs that the City must take into account before determining the size of the

parking structure. These costs include: labor (wages plus benefits), security, insurance, utilities, supplies, routine maintenance, structural maintenance, and parking equipment maintenance. The basic operating expense for an unattended parking facility with no security costs is approximately \$300 per space per year (Parking Structures).

### E.3. Pre-Cast versus Cast-in-Place



*Pre-Cast Garage*

There are a few differences between precast and cast in place garage construction, primarily in the following areas: construction, going costs, and user (parker) comfort and convenience.

#### E.3.1 Construction

Precast garages have a slightly shorter construction period on the site, and the quality of the concrete can potentially be controlled better at the plant. However, not all construction sites are located within a manageable distance from precast plants, so you may not have a large subcontractor pool to choose from. In addition, the shop drawing review and fabrication process takes longer, and, because of precast construction methods and tolerances, the garage floors tend to be flatter, which affects positive drainage and can result in floors that experience a lot of ponding.



*Cast-in-Place Garage*

We believe the edge in construction goes to a cast-in-place garage. Unlike precast garages, cast-in-place garages have fewer joints, meaning fewer opportunities for water intrusion and leaks. It is also easier to achieve the right positive drainage in the floors of the garage. Another benefit of cast-in-place garages includes the fact that the construction can be performed by many more local subcontractors and material suppliers. When it comes to construction, the only drawback to cast-in-place is a longer on-site construction period.

#### E.3.2 Costs

Precast garages usually have a lower initial construction cost (\$16,000/space) provided that a pre-topped system is used, and that there is repetition of structural and architectural components. Maintenance costs for precast structures are usually higher because the joints need to be placed between 10ft and 12ft and the sealant needs to be replaced every 8 to 10 years. These joints need to be checked periodically and the sealants spot-repaired if necessary. Cast-in-place structures have a higher initial cost (approximately 10% more), but lower ongoing maintenance costs. Also, with the slowdown of the construction industry, many cast-in-place subcontractors are being forced to lower their prices to stay competitive and stay in business. Because of the post-tensioned forces in the slabs,

cracks are minimized, and since the pours are monolithic, there is less need for constant repair of joint sealants.

### E.3.3 User Comfort and Convenience

Typically, users prefer cast-in-place parking garages over precast because of the perception of openness and higher ceilings, better lighting distribution, and greater signage visibility. Because of the depth and spacing of the double tee stems, precast garages tend to be darker, have lower ceilings, and it is harder for drivers to see signage clearly.

## APPENDIX F: Comparison of Alternative Modes of Transportation

Alternative Transportation	Key Characteristics	Safety Concerns	Regulations	Pros	Cons
<b>Public Transit</b>	<ul style="list-style-type: none"> <li>A motorized vehicle for carrying passengers (i.e., buses, trolleys, etc.)</li> <li>Majority of PSTA's buses have bicycle racks</li> </ul>	<ul style="list-style-type: none"> <li>Difficult for buses to navigate through Main Street</li> </ul>	<ul style="list-style-type: none"> <li>State of Florida has adopted regulations pertaining to equipment and operational safety standards for governmentally and privately owned bus transit systems (<i>Section 341.061, F.S.</i>)</li> </ul>	<ul style="list-style-type: none"> <li>Affordable, convenient, and effective public transit system</li> <li>Buses provide bicycle racks for better access to the Pinellas Trail</li> <li>Potential for a premium trolley system from Clearwater to Tarpon Springs, when funding becomes available</li> <li>Potential for a trolley service to major civic uses and the stadium during special events</li> </ul>	<ul style="list-style-type: none"> <li>No bus route to service Main Street</li> <li>Limited shelters at the bus stops</li> <li>Potential for traffic congestion</li> </ul>
<b>Bicycles</b>	<ul style="list-style-type: none"> <li>Vehicle propel by human power</li> </ul>	<ul style="list-style-type: none"> <li>Sidewalk riding may conflict with pedestrians due to the narrow sidewalks</li> <li>Automobiles coming from behind at higher speeds have less time to see and react to the slower, smaller vehicles</li> </ul>	<ul style="list-style-type: none"> <li>State of Florida has adopted regulations pertaining to the safe operations of bicycles (<i>Section 316.2065</i>) and incorporating bicycleways with local governments (<i>Section 335.056, F.S.</i>)</li> <li>Local governments can have policies for improving bicycleways to provide safe bicycle connections and ordinances regulating bicycle riding</li> </ul>	<ul style="list-style-type: none"> <li>Energy-efficient and pollution-free form of transportation</li> <li>Improve personal physical fitness</li> <li>Complements the Pinellas Trail</li> <li>Improve tourism</li> </ul>	<ul style="list-style-type: none"> <li>Sidewalk riding may conflict with pedestrians due to the narrow sidewalks</li> <li>Potential for traffic congestion</li> <li>Limited right-of-ways on some local streets to provide bicycleway connections</li> </ul>

Alternative Transportation	Key Characteristics	Safety Concerns	Regulations	Pros	Cons
<b>Pedestrians</b>	<ul style="list-style-type: none"> <li>Walking and jogging</li> </ul>	<ul style="list-style-type: none"> <li>Driver fails to follow proper safety precautions, it can lead to a serious pedestrian accident</li> <li>Pedestrians putting themselves at risk for not obeying the road rules</li> </ul>	<ul style="list-style-type: none"> <li>State of Florida has adopted regulations pertaining to pedestrian safety (<i>Section 316.130, F.S.</i>) and incorporating pedestrianways with local governments (<i>Section 335.056, F.S.</i>)</li> <li>Local governments can have policies for improving pedestrian-ways and specific development standards pertaining to sidewalk widths, construction and crossings</li> </ul>	<ul style="list-style-type: none"> <li>Energy-efficient and pollution-free form of transportation</li> <li>Improve personal physical fitness</li> <li>Complements the Pinellas Trail</li> <li>Improve tourism "<i>Best Walking Town in America</i>"</li> </ul>	<ul style="list-style-type: none"> <li>Limited right-of-ways to provide wider sidewalks within the Downtown District</li> <li>Need to provide more pedestrian connectivity to the connector roads through streetscaping</li> </ul>
<b>Golf Carts</b>	<ul style="list-style-type: none"> <li>Capable of reaching 25 mph</li> <li>Travel 30-40 miles before recharging</li> <li>No built-in safety features (seat-belts, rearview mirrors, headlights, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Automobiles coming from behind at higher speeds have less time to see and react to the slower, smaller vehicles</li> <li>No lights, turn signals or rear view mirrors make them more prone to accidents</li> </ul>	<ul style="list-style-type: none"> <li>Local governments can regulate golf carts on local roads (<i>Florida Statue 316.212</i>)</li> <li>Local governments may address safety requirements, regulations and enforcement</li> <li>Restrict to roadways that have a speed limit of 35 mph or less</li> <li>Provide signage within designated areas and crossings at State Highways</li> </ul>	<ul style="list-style-type: none"> <li>Energy-efficient and pollution-free form of transportation</li> <li>Connect the Dunedin golf course to the Downtown District to run day to day errands</li> </ul>	<ul style="list-style-type: none"> <li>Not convenient to golf cart use if limited to Downtown Dunedin</li> <li>Potential for traffic congestion</li> <li>Safety for the golf cart users</li> <li>Additional operating cost for the City to register, inspect and regulate</li> <li>Lose parking spaces to accommodate golf cart parking</li> <li>Lose the ambience of the "<i>Best Walking Town in America</i>"</li> </ul>

Alternative Transportation	Key Characteristics	Safety Concerns	Regulations	Pros	Cons
<b>EPAMD's (Segways)</b>	<ul style="list-style-type: none"> <li>• Electronically propelled two-wheeled device</li> <li>• Designed to transport one person with a maximum speed of less than 20 mph</li> <li>• Travel 20 miles before charging</li> </ul>	<ul style="list-style-type: none"> <li>• Devices travelling at such speed on sidewalks are a clear danger to pedestrians</li> </ul>	<ul style="list-style-type: none"> <li>• Local governments can regulate EPAMD's on local roads, bike paths and sidewalks (<i>Florida Statue 316.2068</i>)</li> <li>• Local governments may set regulations for their use</li> <li>• Restrict to roadways that have a speed limit of 25 mph or less</li> <li>• Provide signage within designated areas and crossings at State Highways</li> </ul>	<ul style="list-style-type: none"> <li>• Energy-efficient and pollution-free form of transportation</li> <li>• Improve tourism by having Segway tours to showcase the Downtown District, historical structures and the waterfront</li> </ul>	<ul style="list-style-type: none"> <li>• Safety of the EPAMD users</li> <li>• Sidewalk riding may conflict with pedestrians due to the narrow sidewalks</li> <li>• Allocate special parking areas and potential electrical recharge stations</li> <li>• Lose the ambience of the "Best Walking Town in America"</li> </ul>
<b>Bicycle Rickshaws</b>	<ul style="list-style-type: none"> <li>• Human-powered, equipped with one or more seats for carrying passengers in addition to the driver</li> </ul>	<ul style="list-style-type: none"> <li>• Could pose a life safety hazard on sidewalks and roadways</li> <li>• May cause traffic congestion</li> </ul>	<ul style="list-style-type: none"> <li>• Pedicabs are allowed in any place that permits bicycles, except on sidewalks if used for faring passengers</li> <li>• Local governments may have to address safety requirements, regulations and enforcement</li> <li>• Limit/prohibit advertising on the rickshaws</li> </ul>	<ul style="list-style-type: none"> <li>• Energy-efficient and pollution-free form of transportation</li> <li>• Reliable transportation to fare passengers</li> </ul>	<ul style="list-style-type: none"> <li>• Safety of the driver and passengers</li> <li>• Potential for traffic congestion</li> <li>• Take up parking spaces while waiting for a fare</li> <li>• Additional operating cost for the City to register, inspect and regulate</li> </ul>

Alternative Transportation	Key Characteristics	Safety Concerns	Regulations	Pros	Cons
<p><b>Horse-Drawn Carriages</b></p>	<ul style="list-style-type: none"> <li>• A carriage which is operated by being drawn by a horse or mule or other beast of burden, for the transportation of passengers for hire or compensation</li> </ul>	<ul style="list-style-type: none"> <li>• Horses can easily be "spooked" and cause accidents by running into traffic or onto sidewalks</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to the <i>State Uniform Traffic Control Law, Section 316, F.S.</i></li> <li>• Local governments can regulate or prohibit the use of horse-drawn carriage on certain streets (<i>Section 316.008, F.S.</i>)</li> <li>• Local governments may include additional regulations to protect the health and safety of the horses.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide sightseeing and tourism opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Some controversies about cruelty and abuse of using horses to pull carriages</li> <li>• Conflict with vehicular traffic</li> <li>• Potential for traffic congestion</li> <li>• Safety of the horse, driver, passengers, pedestrians and motorists</li> <li>• Take up parking spaces for carriage stands</li> <li>• Additional operating cost for the City to register, inspect and regulate</li> </ul>



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