

# Coney Island/Gravesend Sustainable Development Transportation Study

DRAFT

## Technical Memorandum No. 2 Future Conditions 2015 & Recommendations



**June 2010**



Michael R. Bloomberg  
Mayor



Janette Sadik-Khan  
Commissioner



*A Member of  
the New York Metropolitan  
Transportation Council*



# **Coney Island/Gravesend Sustainable Development Transportation Study**

**PIN – PTDT09D00.F05**

**Contract No. D000642**

**CDOT-81-00**

The preparation of this report has been financed in part through funds from the U.S. Department of Transportation, Federal Highway Administration under the Federal Highway Act of 1965, as amended, and the Urban Mass Transportation Act of 1964, as amended. The New York City Department of Transportation disseminates this document in the interest of information exchange. It reflects the views of the New York City Department of Transportation (NYCDOT) which is responsible for the facts and the accuracy of the data presented. The report does not necessarily reflect any official views or policies of the Federal Transit Administration, the Federal Highway Administration, or the State of New York. This report does not constitute a standard, specification, or regulation.

Prepared by:

New York City Department of Transportation

Janette Sadik-Khan, Commissioner

Lori A. Ardito, First Deputy Commissioner

Gerard Soffian, P.E., Deputy Commissioner

Joseph Palmieri, Brooklyn Borough Commissioner

Ryan Russo, Assistant Commissioner

Naim Rasheed, Project Director

Michael Griffith, Deputy Project Director

Carren Simpson, Project Manager

Milorad Ubiparip, Highway Transportation Specialist

Hau Cho Li, City Planner

Eva Marin, Highway Transportation Specialist

Ali Jafri, Highway Transportation Specialist

Hilary Gietz, PAA

Sowmya Bangalore, Graduate Intern



# TABLE OF CONTENTS

<b>ES EXECUTIVE SUMMARY .....</b>	<b>i-v</b>
<b>1.0 INTRODUCTION &amp; PROJECT DESCRIPTION.....</b>	<b>1-1</b>
<b>2.0 FUTURE CONDITIONS (2015/2025) .....</b>	<b>2-1</b>
2-1 Demographics.....	2-1
2-2 Land Use and Zoning .....	2-8
2-3 Traffic and Transportation.....	2-11
2-4 Pedestrians/Bikes .....	2-50
2-5 Parking.....	2-57
2-6 Public Transportation .....	2-60
<b>3.0 BEST PRACTICE MODEL .....</b>	<b>3-1</b>
3-1 Scenarios Modeled .....	3-3
3-2 Land Use Scenarios .....	3-4
3-3 Transportation Scenarios .....	3-8
3-4 Modeling Results.....	3-12
<b>4.0 RECOMMENDATIONS .....</b>	<b>4-1</b>
<b>Appendix A Complete 2015 and 2025 Traffic Volume Maps</b>	
<b>Appendix B Pedestrian Crosswalk/Corner Analyses</b>	
<b>Appendix C Projected Parking Utilization</b>	

## LIST OF TABLES

<b>Table</b> .....	<b>Page</b>
2.1-1 Population of New York City, Brooklyn and the Study Area (1980-2025)	2-1
2.1-2 Population by Census Tracts (1980-2025) .....	2-4
2.1-3 Household Characteristics for New York City, Brooklyn, and the Study Area (1980-2025).....	2-5
2.1-4 Number of Vehicles per Household (Brooklyn vs. Study Area) .....	2-6
2.1-5 Journey to Work by Mode - New York City, Brooklyn, and the Study Area (1980-2025).....	2-7
2.2-1 Vacant Lots by Community Boards .....	2-10
2.3-1 Signalized Intersection Level of Service .....	2-20
2.3-2 Future 2015 Traffic Capacity Analysis for Signalized Intersections.....	2-23
2.3-3 Future 2025 Traffic Capacity Analysis for Signalized Intersections.....	2-36
2.3-4 Future Corridor Travel Speed.....	2-48
2.4-1 Future 2015 Pedestrian Volumes (Crosswalk).....	2-51
2-5.1 Future 2015 Parking Utilization (%) .....	2-58
3-1 Future Proposed Transportation and Land Use Scenarios.....	3-4
3-2 Vacant Lots by Community Board.....	3-4
3-3 Moderate Development Scenario for 2015 and 2025 .....	3-7
3-4 Aggressive Development Scenario for 2015 and 2025 .....	3-7
3-5 Model Inputs for LUS1 and LUS2 .....	3-8
3-6 BPM Generated Vehicular Volumes along Major Corridors - AM, Midday, and PM Peak Periods .....	3-16
3-7 2002 DOT/BPM Peak Hour Volumes .....	3-18
3-8 2015 DOT/BPM Peak Hour Volumes .....	3-19
3-9 DOT/BPM Vehicular Travel Speed (2002).....	3-20
3-10 DOT/BPM Vehicular Travel Speed (2015).....	3-20
3-11. Comparison of Volume and Speed Resulting From Highway Network Changes on West 15th, West 16th, West 17th, and West 19th Streets.....	3-22
3-12. Summary of Traffic Volume and Speeds along Ocean Parkway Mainline and Service Road .....	3-23
4-1... Locations with Mid LOS D or worse (Existing and Future Conditions).....	4-3
4-2 Proposed Improvement Measures for Critical Intersection Approaches .....	4-4

## LIST OF FIGURES & CHARTS

<b>Figure .....</b>	<b>Page</b>
1.1-1 Study Area and Community Boards.....	1-1
2.1-1 Study Area Census Tracts .....	2-2
2.2-1 Vacant Land in Study Area .....	2-9
2.3-1 Future 2015 AM Peak Hour Volume (Abbreviated).....	2-12
2.3-2 Future 2015 Midday Peak Hour Volume (Abbreviated).....	2-13
2.3-3 Future 2015 PM Peak Hour Volume (Abbreviated).....	2-14
2.3-4 Future 2015 Saturday Midday Peak Hour Volume (Abbreviated).....	2-15
2.3-5 Future 2025 AM Peak Hour Volume (Abbreviated).....	2-16
2.3-6 Future 2025 Midday Peak Hour Volume (Abbreviated).....	2-17
2.3-7 Future 2025 PM Peak Hour Volume (Abbreviated).....	2-18
2.3-8 Future 2025 Saturday Midday Peak Hour Volume (Abbreviated) .....	2-19
2.3-9 Intersections with LOS D, E, and F (AM Peak Hour 2015).....	2-30
2.3-10 Intersections with LOS D, E, and F (Midday Peak Hour 2015).....	2-31
2.3-11 Intersections with LOS D, E, and F (PM Peak Hour 2015).....	2-32
2.3-12 Intersections with LOS D, E, and F (Saturday Midday Peak Hour 2015).....	2-33
2.3-13 Intersections with LOS D, E, and F (AM Peak Hour 2025).....	2-43
2.3-14 Intersections with LOS D, E, and F (Midday Peak Hour 2025).....	2-44
2.3-15 Intersections with LOS D, E, and F (PM Peak Hour 2025).....	2-45
2.3-16 Intersections with LOS D, E, and F (Saturday Midday Peak Hour 2025).....	2-46
2.4-1 Future 2015 Pedestrian Volumes – AM Peak Hour .....	2-52
2.4-2 Future 2015 Pedestrian Volumes - Midday Peak Hour .....	2-53
2.4-3 Future 2015 Pedestrian Volumes – PM Peak Hour .....	2-54
2.4-4 Bicycle Facilities .....	2-56
2.6-1 Subway Routes and Stations in the Study Area .....	2-61
2.6-2 Bus Routes in the Study Area.....	2-62
3-1 Transportation Analysis Zones (TAZs) in the Study Area.....	3-2
3-2 Highway Network Changes for the Future Build 2015P and 2025P Scenarios.....	3-10
3-3 Transit Network Changes for the Future Build 2015P and 2025P Scenarios .....	3-11
4-1 Bay Parkway/Cropsey Avenue and Bay Parkway/Shore Parkway WB – Existing Condition .....	4-12
4-2 Bay Parkway/Cropsey Avenue and Bay Parkway/Shore Parkway WB – Proposed Condition .....	4-13
4-3 Neptune Avenue & Cropsey Avenue/West 17 <sup>th</sup> Street - Existing Condition .....	4-15
4-4 Neptune Avenue & Cropsey Avenue/West 17 <sup>th</sup> Street - Proposed Condition.....	4-15
4-5 Existing/Proposed Street Direction Changes.....	4-16
4-6 Coney Island Avenue & Guider Avenue/Belt Pkwy Entrance – Existing Condition.....	4-18

**Figure Cont'd ..... Page**

4-7	Coney Island Avenue & Guider Avenue/Belt Pkwy Entrance – Proposed Condition .....	4-19
4-8	Coney Island Avenue & Neptune Avenue – Existing Condition .....	4-20
4-9	Coney Island Avenue & Neptune Avenue – Proposed Condition.....	4-21
4-10	Surf Avenue at West 8 <sup>th</sup> Street and West 10 <sup>th</sup> Street – Existing Condition .....	4-23
4-11	Surf Avenue at West 8 <sup>th</sup> Street and West 10 <sup>th</sup> Street – Proposed Condition.....	4-24
4-12	Surf Avenue & Stillwell Avenue – Existing Condition.....	4-26
4-13	Surf Avenue & Stillwell Avenue – Proposed Condition .....	4-27
4-14	Surf Avenue & West 19 <sup>th</sup> Street - Proposed Condition .....	4-28
4-15	Neptune Avenue & Shell Road/West 8 <sup>th</sup> Street – Existing Condition.....	4-29
4-16	Neptune Avenue & Shell Road/West 8 <sup>th</sup> Street – Proposed Condition .....	4-30
4-17	Cropsey Avenue/Avenue Z/Shore Parkway Exit – Aerial View of Existing Condition.....	4-31
4-18	Cropsey Avenue/Avenue Z/Shore Parkway Exit – Proposed Condition.....	4-31
4-19a	Proposed Truck Loading/Unloading Zones – Brighton Beach Avenue .....	4-34
4-19b	Proposed Truck Loading/Unloading Zones – 86 <sup>th</sup> Street .....	4-35
4-19c	Proposed Truck Loading/Unloading Zones – Kings Highway.....	4-35
4-20	McDonald Avenue/Shell Road & Avenue X/86 <sup>th</sup> Street – Existing Condition .....	4-37
4-21	McDonald Avenue/Shell Road & Avenue X/86 <sup>th</sup> Street – Proposed Condition.....	4-38

**Chart ..... Page**

3-1	Comparison of Vehicle Volume for 2002 Base Year & Future Baseline (N) Scenarios.....	3-13
3-2	Comparison of Vehicular Volume for 2002 Base Year and Future Build (P) Scenarios .....	3-14
3-3	Comparison of No Build (N) and Build (P) Scenario Vehicular Volumes.....	3-15



# **EXECUTIVE SUMMARY**

## **S1. Introduction**

The Coney Island/Gravesend Sustainable Development Transportation Study aims at identifying the development potentials and the transportation needs of three communities in southern Brooklyn (Coney Island, Gravesend, and Brighton Beach) that comprise the study area. The study area is bounded by Kings Highway on the north, Coney Island Avenue (northeast) and West End Avenue (southeast), the Riegelmann Boardwalk, and West 37<sup>th</sup> Street (southwest) and Bay Parkway (northwest). Coney Island is one of New York City's premier summer beach recreation and entertainment destinations. Brighton Beach is primarily a residential community, but it also has year-round attractions (restaurants and specialty stores) for various immigrant groups. Unlike Coney Island and Brighton Beach, Gravesend is primarily a residential neighborhood that is not a tourist attraction. Of the three communities, Coney Island has the greatest potential for growth due to the concentration of prime vacant land parcels compared to either Gravesend or Brighton Beach.

This report is an analysis mainly of the projected future 2015 conditions; it also presents a limited examination of the projected future 2025 conditions. A package of improvement measures to alleviate traffic congestion, improve parking provision, transit, and safety for all street users (vehicular, bicycles, and pedestrian) in the study area is also presented. The report builds on information presented in Technical Memorandum No. 1 which analyzed the existing conditions in the study area.

## **S2. Future Conditions**

The future traffic conditions are influenced primarily by three factors: demographics, land use and zoning, and major planned development projects.

An increase in the study area's population, especially the economically active segment, contributes to increased travel demand that manifests itself in increased work, shopping, and other trips.

The increase in urban development density and associated land use changes also adds to increased vehicular trips. This study assesses the development potential and the associated travel demand for its effect on the transportation network. It also contains strategies and improvement measures to satisfy travel demand and improve safety and traffic operation in the study area.

#### S2.1. Demographic Analysis

Projections of future population and other demographics in New York City, Brooklyn, and the study area relied on a trend analysis of three decades of Census data as well as population projections made by the New York Metropolitan Transportation Council (NYMTC). Population projection for 2015 and 2025 for the study area assumes a steady growth rate of between 6.0-7.0% each decade. For the purpose of comparison, population projection were also done for NYC and Brooklyn as a whole.

#### S2.2. Land Use and Zoning

Future land use in the study area is expected to change according to the distribution of vacant lots and development opportunities. As such, land use changes in the northern portion of the study area will primarily be in-fill residential developments on the vacant lots scattered throughout the area. On the other hand, in the southern portion of the study area, particularly in Coney Island, numerous and significant land use changes are expected for both residential and commercial developments.

An inventory of vacant lots in the study area showed that there is close to two million square feet (1,803,475) of vacant land zoned for residential development, over 700,000 square feet (720,166) zoned for commercial development, and close to 200,000 square feet (191,867) are zoned for manufacturing. If these vacant lots are developed under existing zoning

conditions, approximately 986 residential units could be added to the study area. Additionally, over one million square feet of space could be developed for commercial use.

### S2.3. Traffic and Transportation

The intersections capacity and LOS analysis for both future condition scenarios (2015 and 2025) show that approximately half of the intersections will have unacceptable levels of service. In 2015, 22 of the 41 intersections analyzed are projected to have unacceptable LOS during at least one peak hour and 13 intersections with an unacceptable LOS during all weekday peak hours. Eleven of the 14 intersections analyzed for the weekend peak hour operations had unacceptable LOS E or F. The three intersections with acceptable LOS during the weekend peak hour are Kings Highway/Ocean Parkway, Kings Highway/Coney Island Avenue, and Surf Avenue/Stillwell Avenue (during the off-peak period). In 2025, 25 of the 41 intersections are projected to operate at unacceptable LOS during at least one peak hour and 17 intersections with an unacceptable LOS during all weekday peak hours. However, as a result of the improvement measures, all of these locations are expected to perform well above their future conditions.

### S2-4 Pedestrians and Bicycles

The future 2015 conditions for pedestrians will not be significantly different from the existing conditions except in those areas where commercial and recreational facilities are concentrated as well as those areas being revitalized. The expansion and upgrade of bicycle facilities in the study area is expected to continue as per the Bicycle Master Plan.

### S2.4. Parking

Under future conditions, the parking supply meets demand in the overall study area; however, in areas where entertainment, recreation, and commercial activities are concentrated, both on-street and off-street parking provision will be below demand. However, it is anticipated that increased parking will be provided as additional off-street facilities are developed as part of the Coney Island Rezoning and Revitalization Plan and as the NYCDOT muni-meter parking system is expanded.

### S2.5. Public Transportation

An increased demand is expected in the future 2015 and 2025 conditions based on background growth and future developments. With the projected system-wide service changes due to take effect end of June 2010 because of budgetary constraints at the MTA, the exact impact on the study area is not clear. A review of the proposed changes indicates that commuting time might be lengthened as routes are eliminated, curtailed, or consolidated. The revitalization of Coney Island as envisioned in the Coney Island Rezoning plan will add pressures to the public transportation system, particularly buses. The Environmental Impact Statement for the project estimates that in the 2019 build year several bus routes (B36, B68, B74, B82, and X38) will be adversely affected by the new development.

### **S3. Best Practice Model**

The New York Metropolitan Transportation Council's (NYMTC) Best Practice Model (BPM) was used to model travel demand of potential future development scenarios in the study area. Two land use scenarios, two transportation (highway) scenarios, and one transit scenario were identified and modeled. The BPM does not use land use variables as direct input for the model; hence, the socio-economic variables (data) in the transportation analysis zones (TAZs) that account for the anticipated land use changes are the inputs that were changed. The two land use scenarios focused on land use changes anticipated by 2015 Land Use Scenario #1 (LUS1) and 2025 Land Use Scenario #2 (LUS2) based on the existing vacant lots in the study area. The two transportation (highway) scenarios sought to increase capacity along critical corridors of the street network. The first transportation (highway) scenario involved the creation of a one-way pair - West 17 Street and West 19<sup>th</sup> Street between Neptune Avenue and Surf Avenue. Although only 30 feet wide, West 17<sup>th</sup> Street functions as a two-way street with two southbound and one northbound lane. During the peak summer season, when traffic volume is high, the existing configuration causes congested conditions. The scenario comprised of West 17 Street operating one-way southbound with West 16<sup>th</sup> and West 19<sup>th</sup> Streets operating one-way northbound. The second transportation (highway) scenario provided for an additional moving lane during the AM and PM peak hours on Ocean Parkway. Finally the transit scenario provided for a bus loop

connecting Coney Island, Brighton Beach, and Manhattan Beach. Evaluation of the various measures of effectiveness, i.e., speeds, v/c ratios, highlighted the implications of the changes reflected in the various scenarios.

#### **S4. Recommendations**

Based on the analysis of existing and future conditions as well as results from the Best Practice Model process, a set of recommendations to improve traffic operations and safety in the study area was developed. The recommendations developed included short-term and long-term improvements at over thirty locations in the study area. The proposed recommendations include geometric and signal timing changes, one-way conversions, parking restrictions, pedestrian and bike friendly treatments, and signage modifications. Improvement measures were recommended, and some implemented, for the following locations:

1. Bay Parkway & Cropsey Avenue/Shore Parkway WB (implemented)
2. Cropsey Avenue/West 17<sup>th</sup> Street and Neptune Avenue (along with West 15<sup>th</sup> Street to West 19<sup>th</sup> Street (between Surf Avenue and Hart Place) – one-way street reversals (implemented)
3. Coney Island Avenue & Guider Avenue/Belt Parkway Entrance
4. Coney Island Avenue & Neptune Avenue
5. McDonald Avenue/Shell Road & 86<sup>th</sup> Street/Avenue X
6. Surf Avenue (West 8<sup>th</sup> Street to West 19<sup>th</sup> Street)
7. Shell Road/West 8<sup>th</sup> Street & Neptune Avenue
8. Truck Loading/Unloading Zones on 86<sup>th</sup> Street, Kings Highway, and Brighton Beach Avenue
9. Ocean Parkway & West Avenue
10. Installation of bicycle lane on West Avenue (Ocean Parkway to West 5<sup>th</sup> Street) and West 5<sup>th</sup> Street (West Avenue to Surf Avenue)
11. Kings Highway & Ocean Parkway
12. Kings Highway & McDonald Avenue
13. Kings Highway & Stillwell Avenue

14. Kings Highway & Coney Island Avenue
15. Coney Island Avenue & Avenue Z
16. Ocean Parkway & Avenue W
17. Ocean Parkway & Avenue X
18. Ocean Parkway & Avenue Z\
19. Avenue T & West 5<sup>th</sup> Street
20. Avenue X & West 3<sup>rd</sup> Street
21. Bay 32<sup>nd</sup> Street & Benson Avenue
22. 23<sup>rd</sup> Avenue & 84<sup>th</sup> Street
23. Bath Avenue & Bay 35<sup>th</sup> Street

#### Recently Implemented Improvement Measures

In addition to the improvements at the intersections of Bay Parkway with Cropsey Avenue and Shore Parkway WB entrance and exit and Neptune Avenue with Cropsey Avenue/West 17<sup>th</sup> Street and West 19<sup>th</sup> Street a few other improvements were made as part of Safe Routes for Seniors Initiative. As part of the Brighton Beach Senior Pedestrian Focus Study several improvements were implemented throughout Brighton Beach. Some of the improvement measures were area-wide while others were location-specific.

Some area-wide improvements included:

1. changing the signal timing for pedestrian crossing time from 4 feet/second to 3 feet/second
2. installing stop bars 10 feet from the crosswalk at signalized intersections, and
3. upgrading or refurbishing signage, ramps, roadbeds, and curbs.

Significant improvements were made at the following locations:

1. Ocean Parkway/Neptune Avenue
2. Brighton Beach Avenue Corridor
3. Brighton Beach Avenue/Coney Island Avenue.
4. Neptune Avenue/West 5<sup>th</sup> Street.