City Environmental Quality Review
ENVIRONMENTAL ASSESSMENT STATEMENT SHORT FORM • FOR UNLISTED ACTIONS ONLY

Please fill out, print and submit to the appropriate agency (see instructions)

PART I: GENERAL INFORMATION

1. ***Does Action Exceed Any Type I Threshold In 6 NYCRR Part 617.4 or 43 RCNY §6-15(A) (Executive Order 91 of 1977, as amended)?***

☐ Yes ☑ No

If yes, **STOP**, and **complete the FULL EAS**

2. ***Project Name*** Taxi of Tomorrow

3. ***Reference Numbers***

CEQR REFERENCE NUMBER (To Be Assigned by Lead Agency)	BSA REFERENCE NUMBER (If Applicable)
11TLC056Y	N/A
ULURP REFERENCE NUMBER (If Applicable))	OTHER REFERENCE NUMBER(S) (If Applicable) (e.g. Legislative Intro, CAPA, etc)
N/A	N/A

4a. ***Lead Agency Information***			4b. ***Applicant Information***		
NAME OF LEAD AGENCY: New York City Taxi and Limousine Commission			NAME OF APPLICANT		
NAME OF LEAD AGENCY CONTACT PERSON: Conan Freud, Deputy Commissioner for Finance and Administration			NAME OF APPLICANT'S REPRESENTATIVE OR CONTACT PERSON		
ADDRESS: 33 Beaver Street, 22nd Floor			ADDRESS		
CITY: New York	STATE: NY	ZIP: 10004	CITY	STATE	ZIP
TELEPHONE: (212) 676-1033	FAX		TELEPHONE	FAX	
EMAIL ADDRESS: freudc@tlc.nyc.gov			EMAIL ADDRESS		

5. ***Project Description:***

The TLC proposes to enter into an agreement with Nissan North America, Inc. (Nissan), to develop and provide the Nissan NV200 as the vehicle for purchase for use as a taxi over the period 2013 thru 2023. The TLC would not purchase vehicles; rather, TLC would adopt rules--primarily through changes to Chapter 67 of the TLC rules--that mandate the Taxi of Tomorrow vendor as the only authorized provider of non-accessible taxi vehicles. Owners of medallions that are required to use alternative fuel vehicles would not be required to purchase the ToT. This action would not increase or decrease the number of medallions currently in service.

6a. ***Project Location: Single Site*** *(for a project at a single site, complete all the information below)*

ADDRESS: N/A	NEIGHBORHOOD NAME: N/A	
TAX BLOCK AND LOT: N/A	BOROUGH: N/A	COMMUNITY DISTRICT: N/A

DESCRIPTION OF PROPERTY BY BOUNDING OR CROSS STREETS

N/A - The proposed action is not site specific and involves TLC entering into an agreement with Nissan, to develop and provide the Nissan NV200.

EXISTING ZONING DISTRICT, INCLUDING SPECIAL ZONING DISTRICT DESIGNATION IF ANY: N/A	ZONING SECTIONAL MAP NO: N/A

6b. ***Project Location: Multiple Sites*** *(Provide a description of the size of the project area in both City Blocks and Lots. If the project would apply to the entire city or to areas that are so extensive that a site-specific description is not appropriate or practicable, describe the area of the project, including bounding streets, etc.)*

N/A - The proposed action is not site specific and involves TLC entering into an agreement with Nissan for use city-wide, to develop and provide the Nissan NV200.

7. ***REQUIRED ACTIONS OR APPROVALS*** *(check all that apply)*

City Planning Commission: YES ☐ NO ☑

- ☐ CITY MAP AMENDMENT
- ☐ ZONING MAP AMENDMENT
- ☐ ZONING TEXT AMENDMENT
- ☐ UNIFORM LAND USE REVIEW PROCEDURE (ULURP)
- ☐ CONCESSION
- ☐ UDAAP
- ☐ REVOCABLE CONSENT
- ☐ ZONING CERTIFICATION
- ☐ ZONING AUTHORIZATION
- ☐ HOUSING PLAN & PROJECT
- ☐ SITE SELECTION — PUBLIC FACILITY
- ☐ FRANCHISE
- ☐ DISPOSITION — REAL PROPERTY

ZONING SPECIAL PERMIT, SPECIFY TYPE:

- ☐ MODIFICATION OF
- ☐ RENEWAL OF
- ☐ OTHER

Board of Standards and Appeals: YES ☐ NO ☑

- ☐ SPECIAL PERMIT

EXPIRATION DATE MONTH DAY YEAR

- ☐ VARIANCE (USE)
- ☐ VARIANCE (BULK)

SPECIFY AFFECTED SECTION(S) OF THE ZONING RESOLUTION

Department of Environmental Protection: YES ☐ NO ☑ IF YES, IDENTIFY:

Other City Approvals: YES ☑ NO ☐

- ☐ LEGISLATION
- ☐ FUNDING OF CONSTRUCTION; SPECIFY:
- ☐ POLICY OR PLAN; SPECIFY:
- ☐ LANDMARKS PRESERVATION COMMISSION APPROVAL *(not subject to CEQR)*
- ☐ 384(b)(4) APPROVAL
- ☐ PERMITS FROM DOT'S OFFICE OF CONSTRUCTION MITIGATION AND COORDINATION (OCMC) *(not subject to CEQR)*
- ☑ RULEMAKING
- ☐ CONSTRUCTION OF PUBLIC FACILITIES
- ☐ FUNDING OF PROGRAMS; SPECIFY:
- ☐ PERMITS; SPECIFY:
- ☑ OTHER; EXPLAIN Discretionary action by TLC to enter into an agreement.

State or Federal Actions/Approvals/Funding: YES ☐ NO ☑ IF "YES," IDENTIFY:

8. ***Site Description:*** *Except where otherwise indicated, provide the following information with regard to the directly affected area. The directly affected area consists of the project site and the area subject to any change in regulatory controls.*

GRAPHICS *The following graphics must be attached and each box must be checked off before the EAS is complete.* ***Each map must clearly depict*** *the boundaries of the directly affected area or areas and indicate a 400-foot radius drawn from the outer boundaries of the project site. Maps may not exceed 11×17 inches in size and must be folded to 8.5 ×11 inches for submission* N/A - Project is City-wide

☐ Site location map ☐ Zoning map ☐ Photographs of the project site taken within 6 months of EAS submission and keyed to the site location map

☐ Sanborn or other land use map ☐ Tax map ☐ For large areas or multiple sites, a GIS shape file that defines the project sites

PHYSICAL SETTING *(both developed and undeveloped areas)*

Total directly affected area (sq. ft.):	Type of Waterbody and surface area (sq. ft.):	Roads, building and other paved surfaces (sq. ft.)

Other, describe (sq. ft.): N/A - The proposed action is not site specific and involves TLC entering into an agreement with Nissan, to develop and provide the NV200.

9. ***Physical Dimensions and Scale of Project*** *(if the project affects multiple sites, provide the total development below facilitated by the action)*

Size of project to be developed: N/A (gross sq. ft.)

Does the proposed project involve changes in zoning on one or more sites? YES ☐ NO ☑

If 'Yes,' identify the total square feet owned or controlled by the applicant: Total square feet of non-applicant owned development:

Does the proposed project involve in-ground excavation or subsurface disturbance, including but not limited to foundation work, pilings, utility lines, or grading? YES ☐ NO ☑

If 'Yes,' indicate the estimated area and volume dimensions of subsurface disturbance (if known):

Area: sq. ft. (width × length) Volume: cubic feet (width × length × depth)

DESCRIPTION OF PROPOSED USES *(please complete the following information as appropriate)*

	Residential	***Commercial***	***Community Facility***	***Industrial/Manufacturing***
Size (in gross sq. ft.)				
Type (e.g. retail, office, school)	units			

Does the proposed project increase the population of residents and/or on-site workers? YES ☐ NO ☑ Number of additional residents? Number of additional workers?

Provide a brief explanation of how these numbers were determined:

Does the project create new open space? YES ☐ NO ☑ If Yes (sq. ft)

Using Table 14-1, estimate the project's projected operational solid waste generation, if applicable: N/A (pounds per week)

Using energy modeling or Table 15-1, estimate the project's projected energy use: N/A (annual BTUs)

Has a No-Action scenario been defined for this project that differs from the existing condition? YES ☑ NO ☐ If 'Yes,' see Chapter 2, "Establishing the Analysis Framework" and describe briefly:

See Chapter 2 of the EAS Supplementary Document: Future No-Action Fleet. Briefly, instead of comparing the future fleet with the Taxi of Tomorrow to the existing fleet, the future fleet with the Taxi of Tomorrow was compared to a forecasted Future No-Action fleet based on what the fleet would look like in the build year (2020) if the Taxi of Tomorrow project did not exist. The Future No-Action fleet was forecasted based on historical trends in taxicab fleet composition (vehicle makes and models), patterns of voluntary hybrid vehicle adoption by the taxi industry, taxi retirement schedules as regulated by TLC, and fuel price projections (which, in part, drive vehicle purchase decisions).

10. *Analysis Year* *CEQR Technical Manual Chapter 2*

ANTICIPATED BUILD YEAR (DATE THE PROJECT WOULD BE COMPLETED AND OPERATIONAL): 2020	ANTICIPATED PERIOD OF CONSTRUCTION IN MONTHS: N/A
WOULD THE PROJECT BE IMPLEMENTED IN A SINGLE PHASE? YES ☐ NO ☑	IF MULTIPLE PHASES, HOW MANY PHASES: 3
BRIEFLY DESCRIBE PHASES AND CONSTRUCTION SCHEDULE: 1) NV200 taxi development (max. of 4 years); 2) vehicle selling period of late 2013 to 2023; and 3) 5 years of providing services and parts to previously-sold vehicles.	

11. *What is the Predominant Land Use in Vicinity of Project?* *(Check all that apply)*

☐ RESIDENTIAL ☐ MANUFACTURING ☐ COMMERCIAL ☐ PARK/FOREST/OPEN SPACE ☐ OTHER, Describe: N/A

PART II: TECHNICAL ANALYSES

INSTRUCTIONS: The questions in the following table refer to the thresholds for each analysis area in the respective chapter of the CEQR Technical Manual.

- If the proposed project can be demonstrated not to meet or exceed the threshold, check the '**NO**' box.
- If the proposed project will meet or exceed the threshold, or if this cannot be determined, check the '**YES**' box.
- Often, a 'Yes' answer will result in a preliminary analysis to determine whether further analysis is needed. For each 'Yes' response, consult the relevant chapter of the CEQR Technical Manual for guidance on providing additional analyses (and attach supporting information, if needed) to determine whether detailed analysis is needed. Please note that a 'Yes' answer does not mean that an EIS must be prepared—it often only means that more information is required for the lead agency to make a determination of significance.
- The lead agency, upon reviewing Part II, may require an applicant either to provide additional information to support this Short EAS Form or complete a Full EAS Form. For example, if a question is answered 'No,' an agency may request a short explanation for this response. In addition, if a large number of the questions are marked 'Yes,' the lead agency may determine that it is appropriate to require completion of the Full EAS Form.

	YES	NO
1. *LAND USE, ZONING AND PUBLIC POLICY*: *CEQR Technical Manual Chapter 4*		
(a) Would the proposed project result in a change in land use or zoning that is different from surrounding land uses and/or zoning? Is there the potential to affect an applicable public policy? If "Yes", complete a preliminary assessment and attach.		✓
(b) Is the project a large, publicly sponsored project? If "Yes", complete a PlaNYC assessment and attach.		✓
(c) Is any part of the directly affected area within the City's Waterfront Revitalization Program boundaries? If "Yes", complete the Consistency Assessment Form.		✓
2. *SOCIOECONOMIC CONDITIONS*: *CEQR Technical Manual Chapter 5*		
(a) Would the proposed project:		
• Generate a net increase of 200 or more residential units?		✓
• Generate a net increase of 200,000 or more square feet of commercial space?		✓
• Directly displace more than 500 residents?		✓
• Directly displace more than 100 employees?		✓
• Affect conditions in a specific industry?	✓	
3. *COMMUNITY FACILITIES*: *CEQR Technical Manual Chapter 6*		
(a) Does the proposed project exceed any of the thresholds outlined in Table 6-1 of Chapter 6?		✓
4. *OPEN SPACE*: *CEQR Technical Manual Chapter 7*		
(a) Would the proposed project change or eliminate existing open space?		✓
(b) Is the proposed project within an underserved area in the Bronx, Brooklyn, Manhattan, Queens, or Staten Island? If "Yes," would the proposed project generate 50 or more additional residents?		✓
If "Yes," would the proposed project generate 125 or more additional employees?		
(c) Is the proposed project in a well-served area in the Bronx, Brooklyn, Manhattan, Queens, or Staten Island? If "Yes," would the proposed project generate 300 or more additional residents?		✓
If "Yes," would the proposed project generate 750 or more additional employees?		
(d) If the proposed project is not located in an underserved or well-served area, would the proposed project generate: 200 or more additional residents?		✓
500 additional employees?		✓

	YES	NO
5. *SHADOWS:* *CEQR Technical Manual Chapter 8*		
(a) Would the proposed project result in a net height increase of any structure of 50 feet or more?		✓
(b) Would the proposed project result in any increase in structure height and be located adjacent to or across the street from a sunlight-sensitive resource?		✓
6. *HISTORIC AND CULTURAL RESOURCES:* *CEQR Technical Manual Chapter 9*		
(a) Does the proposed project site or an adjacent site contain any architectural and/or archaeological resource that is eligible for, or has been designated (or is calendared for consideration) as a New York City Landmark, Interior Landmark or Scenic Landmark; is listed or eligible for listing on the New York State or National Register of Historic Places; or is within a designated or eligible New York City, New York State, or National Register Historic District?		✓
If "Yes," list the resources and attach supporting information on whether the project would affect any of these resources.		
7. *URBAN DESIGN:* *CEQR Technical Manual Chapter 10*		
(a) Would the proposed project introduce a new building, a new building height, or result in any substantial physical alteration to the streetscape or public space in the vicinity of the proposed project that is not currently allowed by existing zoning?		✓
(b) Would the proposed project result in obstruction of publicly accessible views to visual resources that is not currently allowed by existing zoning?		✓
8. *NATURAL RESOURCES:* *CEQR Technical Manual Chapter 11*		
(a) Is any part of the directly affected area within the Jamaica Bay Watershed? If "Yes," complete the Jamaica Bay Watershed Form.		✓
(b) Does the proposed project site or a site adjacent to the project contain natural resources as defined in section 100 of Chapter 11? If "Yes," list the resources and attach supporting information on whether the project would affect any of these resources.		✓
9. *HAZARDOUS MATERIALS:* *CEQR Technical Manual Chapter 12*		
(a) Would the project allow commercial or residential use in an area that is currently, or was historically, a manufacturing area that involved hazardous materials?		✓
(b) Does the project site have existing institutional controls (*e.g.* (E) designations or a Restrictive Declaration) relating to hazardous materials that preclude the potential for significant adverse impacts?		✓
(c) Would the project require soil disturbance in a manufacturing zone or any development on or near a manufacturing zone or existing/historic facilities listed in Appendix 1 (including nonconforming uses)?		✓
(d) Would the project result in the development of a site where there is reason to suspect the presence of hazardous materials, contamination, illegal dumping or fill, or fill material of unknown origin?		✓
(e) Would the project result in development where underground and/or aboveground storage tanks (*e.g.* gas stations) are or were on or near the site?		✓
(f) Would the project result in renovation of interior existing space on a site with potential compromised air quality, vapor intrusion from on-site or off-site sources, asbestos, PCBs or lead-based paint?		✓
(g) Would the project result in development on or near a government-listed voluntary cleanup/brownfield site, current or former power generation/transmission facilities, municipal incinerators, coal gasification or gas storage sites, or railroad tracks and rights-of-way?		✓
(h) Has a Phase I Environmental Site Assessment been performed for the site? If 'Yes," were RECs identified? Briefly identify:		✓
10. *INFRASTRUCTURE:* *CEQR Technical Manual Chapter 13*		
(a) Would the proposed project result in water demand of more than one million gallons per day?		✓
(b) Is the proposed project located in a combined sewer area and result in at least 1,000 residential units or 250,000 SF or more of commercial space in Manhattan or at least 400 residential units or 150,000 SF or more of commercial space in the Bronx, Brooklyn, Staten Island or Queens?		✓
(c) Is the proposed project located in a separately sewered area and result in the same or greater development than that listed in Table 13-1 of Chapter 13?		✓
(d) Would the project involve development on a site five acres or larger where the amount of impervious surface would increase?		✓
(e) Would the project involve development on a site one acre or larger where the amount of impervious surface would increase and is located within the Jamaica Bay Watershed or in certain specific drainage areas including: Bronx River, Coney Island Creek, Flushing Bay and Creek, Gowanus Canal, Hutchinson River, Newtown Creek, or Westchester Creek?		✓
(f) Is the project located in an area that is partially sewered or currently unsewered?		✓
(g) Is the project proposing an industrial facility or activity that would contribute industrial discharges to a WWTP and/or generate contaminated stormwater in a separate storm sewer system?		✓
(h) Would the project involve construction of a new stormwater outfall that requires federal and/or state permits?		✓
11. *SOLID WASTE AND SANITATION SERVICES:* *CEQR Technical Manual Chapter 14*		
(a) Would the proposed project have the potential to generate 100,000 pounds (50 tons) or more of solid waste per week?		✓
(b) Would the proposed project involve a reduction in capacity at a solid waste management facility used for refuse or recyclables generated within the City?		✓

	YES	NO
12. *ENERGY:* *CEQR Technical Manual Chapter 15*		
(a) Would the proposed project affect the transmission or generation of energy?		✓
13. *TRANSPORTATION:* *CEQR Technical Manual Chapter 16*		
(a) Would the proposed project exceed any threshold identified in Table 16-1 of Chapter 16?		✓
(b) If "Yes," conduct the screening analyses, attach appropriate back up data as needed for each stage, and answer the following questions:		
(1) Would the proposed project result in 50 or more Passenger Car Equivalents (PCEs) per project peak hour? If "Yes," would the proposed project result in 50 or more vehicle trips per project peak hour at any given intersection?		
***It should be noted that the lead agency may require further analysis of intersections of concern even when a project generates fewer than 50 vehicles in the peak hour. See Subsection 313 of Chapter 16, "Transporation," for information.*		
(2) Would the proposed project result in more than 200 subway/rail or bus trips per project peak hour? If "Yes," would the proposed project result, per project peak hour, in 50 or more bus trips on a single line (in one direction) or 200 subway trips per station or line?		
(3) Would the proposed project result in more than 200 pedestrian trips per project peak hour? If "Yes," would the proposed project result in more than 200 pedestrian trips per project peak hour to any given pedestrian or transit element, crosswalk, subway stair, or bus stop?		
14. *AIR QUALITY:* *CEQR Technical Manual Chapter 17*		
(a) *Mobile Sources:* Would the proposed project result in the conditions outlined in Section 210 of Chapter 17?		✓
(b) *Stationary Sources:* Would the proposed project result in the conditions outlined in Section 220 of Chapter 17? If 'Yes,' would the proposed project exceed the thresholds in the Figure 17-3, Stationary Source Screen Graph? (attach graph as needed)		✓
(c) Does the proposed project involve multiple buildings on the project site?		✓
(d) Does the proposed project require Federal approvals, support, licensing, or permits subject to conformity requirements?		✓
(e) Does the proposed project site have existing institutional controls (*e.g.* E-designations or a Restrictive Declaration) relating to air quality that preclude the potential for significant adverse impacts?		✓
15. *GREENHOUSE GAS EMISSIONS:* *CEQR Technical Manual Chapter 18*		
(a) Is the proposed project a city capital project, a power plant, or would fundamentally change the City's solid waste management system?		✓
(b) If "Yes," would the proposed project require a GHG emissions assessment based on the guidance in Chapter 18?		✓
16. *NOISE:* *CEQR Technical Manual Chapter 19*		
(a) Would the proposed project generate or reroute vehicular traffic?		✓
(b) Would the proposed project introduce new or additional receptors (see Section 124 of Chapter 19) near heavily trafficked roadways, within one horizontal mile of an existing or proposed flight path, or within 1,500 feet of an existing or proposed rail line with a direct line of site to that rail line?		✓
(c) Would the proposed project cause a stationary noise source to operate within 1,500 feet of a receptor with a direct line of sight to that receptor or introduce receptors into an area with high ambient stationary noise?		✓
(d) Does the proposed project site have existing institutional controls (*e.g.* E-designations or a Restrictive Declaration) relating to noise that preclude the potential for significant adverse impacts?		✓
17. *PUBLIC HEALTH:* *CEQR Technical Manual Chapter 20*		
(a) Would the proposed project warrant a public health assessment based upon the guidance in Chapter 20?		✓
18. *NEIGHBORHOOD CHARACTER:* *CEQR Technical Manual Chapter 21*		
(a) Based upon the analyses conducted for the following technical areas, check yes if any of the following technical areas required a detailed analysis: Land Use, Zoning, and Public Policy, Socioeconomic Conditions, Open Space, Historic and Cultural Resources, Urban Design and Visual Resources, Shadows, Transportation, Noise	✓	
If "Yes," explain here why or why not an assessment of neighborhood character is warranted based on the guidance of in Chapter 21, "Neighborhood Character." Attach a preliminary analysis, if necessary.		

The proposed action involves TLC entering into an agreement with Nissan, to develop and provide the NV200. No new development would occur as part of the proposed action. Therefore, detailed analyses for the following technical areas are not required: Land Use, Zoning, and Public Policy, Open Space, Historic and Cultural Resources, Urban Design and Visual Resources, and Shadows. This action would not increase or decrease the number of medallions currently in service.

		YES	NO
19.	***CONSTRUCTION IMPACTS:*** *CEQR Technical Manual Chapter 22* Would the project's construction activities involve (check all that apply):		
	• Construction activities lasting longer than two years;		✓
	• Construction activities within a Central Business District or along an arterial or major thoroughfare;		✓
	• Require closing, narrowing, or otherwise impeding traffic, transit or pedestrian elements (roadways, parking spaces, bicycle routes, sidewalks, crosswalks, corners, etc);		✓
	• Construction of multiple buildings where there is a potential for on-site receptors on buildings completed before the final build-out;		✓
	• The operation of several pieces of diesel equipment in a single location at peak construction;		✓
	• Closure of community facilities or disruption in its service;		✓
	• Activities within 400 feet of a historic or cultural resource; or		✓
	• Disturbance of a site containing natural resources.		✓

If any boxes are checked, explain why or why not a preliminary construction assessment is warranted based on the guidance of in Chapter 22, "Construction." It should be noted that the nature and extent of any commitment to use the Best Available Technology for construction equipment or Best Management Practices for construction activities should be considered when making this determination.

N/A - The proposed action would not involve any construction activities.

20. ***APPLICANT'S CERTIFICATION***

I swear or affirm under oath and subject to the penalties for perjury that the information provided in this Environmental Assessment Statement (EAS) is true and accurate to the best of my knowledge and belief, based upon my personal knowledge and familiarity with the information described herein and after examination of pertinent books and records and/or after inquiry of persons who have personal knowledge of such information or who have examined pertinent books and records.

Still under oath, I further swear or affirm that I make this statement in my capacity as the

Conan Freud, Deputy Commissioner for Finance and Administration of New York City Taxi and Limousine Commission

APPLICANT/SPONSOR NAME THE ENTITY OR OWNER

the entity which seeks the permits, approvals, funding or other governmental action described in this EAS.

Check if prepared by: ☐ APPLICANT/REPRESENTATIVE or ☑ LEAD AGENCY REPRESENTATIVE (FOR CITY-SPONSORED PROJECTS)

	Conan Freud, Deputy Commissioner for Finance and Administration
APPLICANT/SPONSOR NAME:	LEAD AGENCY REPRESENTATIVE NAME:
SIGNATURE:	DATE: 9/12/12

PLEASE NOTE THAT APPLICANTS MAY BE REQUIRED TO SUBSTANTIATE RESPONSES IN THIS FORM AT THE DISCRETION OF THE LEAD AGENCY SO THAT IT MAY SUPPORT ITS DETERMINATION OF SIGNIFICANCE.

PART III: DETERMINATION OF SIGNIFICANCE (To Be Completed By Lead Agency)

INSTRUCTIONS:
In completing Part III, the lead agency should consult 6 NYCRR 617.7 and 43 RCNY §6-06 (Executive Order 91 of 1977, as amended) which contain the State and City criteria for determining significance.

1. For each of the impact categories listed below, consider whether the project may have a significant effect on the environment. For each of the impact categories listed below, consider whether the project may have a significant adverse effect on the environment, taking into account its (a) location; (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude.

	Potential Significant Adverse Impact	
IMPACT CATEGORY	**YES**	**NO**
Land Use, Zoning, and Public Policy		✓
Socioeconomic Conditions		✓
Community Facilities and Services		✓
Open Space		✓
Shadows		✓
Historic and Cultural Resources		✓
Urban Design/Visual Resources		✓
Natural Resources		✓
Hazardous Materials		✓
Water and Sewer Infrastructure		✓
Solid Waste and Sanitation Services		✓
Energy		✓
Transportation		✓
Air Quality		✓
Greenhouse Gas Emissions		✓
Noise		✓
Public Health		✓
Neighborhood Character		✓
Construction Impacts		✓

2. Are there any aspects of the project relevant to the determination whether the project may have a significant impact on the environment, such as combined or cumulative impacts, that were not fully covered by other responses and supporting materials? If there are such impacts, explain them and state where, as a result of them, the project may have a significant impact on the environment.

No.

3. ***LEAD AGENCY CERTIFICATION***

Deputy Commissioner for Finance and Administration
TITLE

New York City Taxi and Limousine Commission
LEAD AGENCY

Conan Freud
NAME

SIGNATURE

☐ **Check this box if the lead agency has identified one or more potentially significant adverse impacts that MAY occur.**

☐ Issue ***Conditional Negative Declaration***

A ***Conditional Negative Declaration*** **(CND)** may be appropriate if there is a private applicant for an Unlisted action AND when conditions imposed by the lead agency will modify the proposed project so that no significant adverse environmental impacts would result. The CND is prepared as a separate document and is subject to the requirements in 6 NYCRR 617.

☐ Issue ***Positive Declaration*** and proceed to a draft scope of work for the Environmental Impact Statement.

If the lead agency has determined that the project may have a significant impact on the environment, and if a conditional negative declaration is not appropriate, then the lead agency issues a ***Positive Declaration***.

NEGATIVE DECLARATION (To Be Completed By Lead Agency)

Statement of No Significant Effect

Pursuant to Executive Order 91 of 1977, as amended, and the Rules of Procedure for City Environmental Quality Review, found at Title 62, Chapter 5 of the Rules of the City of New York and 6NYCRR, Part 617, State Environmental Quality Review, the [TLC] assumed the role of lead agency for the environmental review of the proposed project. Based on a review of information about the project contained in this environmental assessment statement and any attachments hereto, which are incorporated by reference herein, the [TLC] has determined that the proposed project would not have a significant adverse impact on the environment.

Reasons Supporting this Determination

The above determination is based on information contained in this EAS that finds, because the proposed project:

would not have the potential to result in any significant adverse impact on any impact category of concern under CEQR. As detailed in the attached EAS Supplementary Document, the proposed project would not result in any significant adverse impact on air quality, the taxi industry, or any business that derives a significant amount of its income in support of the taxi industry, including the automotive body, interior and glass repair industry.

See attached letter of significance for more details.

No other signficant effects upon the environment that would require the preparation of a Draft Environmental Impact Statement are foreseeable. This Negative Declaration has been prepared in accordance with Article 8 of the New York State Environmental Conservation Law (SEQRA).

Deputy Commissioner for Finance & Admin.
TITLE

Taxi and Limousine Commission
LEAD AGENCY

Conan Fred
NAME

SIGNATURE

Taxi of Tomorrow
City Environmental Quality Review
Environmental Assessment Statement
Supplementary Document
CEQR # 11TLC056Y

This supplementary document to the Environmental Assessment Statement (EAS) for the Proposed Action includes:

- A comparison of the impacts of the Proposed Action against screening criteria included in the *2012 City Environmental Quality Review (CEQR) Technical Manual* to determine whether a detailed assessment of the impact of the Proposed Action is warranted for each impact category identified in the *2012 CEQR Technical Manual.*

- A detailed assessment of the impacts of the Proposed Action in conformance with the requirements of the *2012 CEQR Technical Manual* for each impact category for which the initial screening indicated the need for a detailed assessment.

1.0 DESCRIPTION OF PROPOSED ACTION

1.1 Background and Need for Proposed Action.

The New York City (City) Taxi and Limousine Commission (TLC) is responsible for the licensing and regulation of vehicles for hire in the City, including taxis, liveries, black cars, limousines, paratransit vehicles, and commuter vans. In the City, taxis (also known as "yellow cabs" due to the TLC-mandated distinctive yellow color of their bodies) are vehicles providing transportation for hire that are available by street hail.

At this time, the "Stretch" Ford Crown Victoria accounts for approximately 44% of the 13,237 taxis that are allowed by TLC to operate in the City. Ford Motor Company stopped production of the Stretch Ford Crown Victoria in 2011.[1] The remainder of the taxi fleet is largely made up of a variety of other vehicles including hybrids (most notably the Ford Escape), minivans (most notably the Toyota Sienna), and wheelchair-accessible vehicles as specified in TLC rules.[2] None of the vehicles currently approved as a taxi was designed and built as a taxi by the original equipment manufacturer (OEM). Instead, vehicles that have been approved for use as taxis are outfitted ("hacked-up") after-market by third-party outfitters, garages and meter shops to conform to taxi specifications (e.g., containing a partition, taximeter, rooflight) as prescribed under TLC regulations.

Recognizing the need to provide a uniformly safe, comfortable, economic, durable, and environmentally-friendly taxi that is more easily accessible to passengers, and with modern amenities and features that improve conditions for taxi drivers, passengers, and others sharing the road, the TLC completed a unique multi-year process to identify and procure a "Taxi of

[1] Source: http://autos.ca.msn.com/editors-picks/off-ramp-the-years-discontinued-cars?page=7
[2] Other vehicles comprise less than 6.2% of the taxi fleet.

Tomorrow" (ToT) that addresses these needs. The goal of the process was to leverage the buying power of the entire taxi industry to produce a superior taxi for use in the City that will offer both passengers and drivers a safe, comfortable ride with never-before-available amenities. To initiate this process, in 2007 the TLC convened a ToT Stakeholder Committee, which provided guidance on the specific features and attributes that would be desirable in the ToT. Based in part on this guidance, TLC released a *New York City Taxi of Tomorrow Request for Information (RFI)* on February 20, 2008 that identified:

- The principal attributes to be achieved by the ToT as defined by a ToT Advisory Committee. These include a taxi vehicle that will:
  - Support the goals of PlaNYC 2030, which identifies improvements to public transportation, of which the taxi is an integral part, as a critical need for the City
  - Meet the highest safety standards
  - Provide superior passenger experience attributes
  - Provide superior driver comfort and amenities
  - Be available at an appropriate purchase price and have appropriate costs associated with on-going maintenance and repair costs
  - Result in a smaller "environmental footprint"
  - Result in a smaller "physical footprint" with more useable interior room
  - Comply with all appropriate and applicable Americans with Disability Act (ADA) requirements
  - Have an iconic design that will identify the new taxi with the City;
- A preliminary Vehicle Technical Specification (VTS) for the ToT based on a vision for the ToT developed by the Design Trust for Public Space and Smart Design and guidance from a number of design firms, automobile and industry manufacturers, and suppliers; and
- Three "brand values" that could be developed and expressed through a new iconic taxi: "Environmental Sustainability," "Sophisticated Durability," and "Trendsetting Urban Design for Diverse Users."

The RFI was issued to ascertain the current and anticipated state of technological availability, commercial feasibility and compatibility of desired options for the ToT, with the goal of identifying those parameters that could reasonably be incorporated into the requirements for the vehicle. Respondents were specifically requested to advise the TLC as to (i) whether they believed that all of the requirements enumerated in the preliminary VTS could be provided in a single vehicle, and, if so, by when, and how the TLC could work to keep the ToT with changes in available vehicle features well into the future; (ii) a "roadmap" indicating how and when

respondents believed each of the requirements in the preliminary VTS could be met; (iii) which of the preliminary VTS requirements could realistically be provided and by when; (iv) what economic considerations will need to be addressed to meet these requirements, including what price and/or economic incentives respondents believed OEMs would need to provide the vehicle; and (v) how different methods of project delivery would impact achieving the goals of the projects and which they believed worked best and why.

Based on the responses to the RFI, the City Department of Citywide Administrative Services (DCAS) issued, on behalf of TLC, a *Request for Proposals for NYC Taxi of Tomorrow (RFP)* on December 17, 2009 that sought to identify an OEM, or a team that included an OEM, to provide an innovative vehicle developed or modified to serve as a new taxi for use in the City. The *RFP* indicated that the successful respondent would be the exclusive provider of City taxis for a period of ten years. The *RFP* further indicated that the successful respondent would be expected to incorporate improvements to the selected vehicle at the same pace or better than the pace of improvements to the features of a typical passenger car. The *RFP* indicated that subsequent to the end of the ten-year vehicle delivery period, that the successful respondent must continue to provide agreed-upon warranty, service and parts in support of the vehicles sold during the ten-year vehicle delivery period.

The RFP included a number of specifications and requests. These included:

- Minimum vehicle technical specifications that must be achieved by the selected vehicle (See Table 1: Vehicle Technical Specifications);
- Taxi Content Features (See Table 2: Taxi Content);
- Production of approximately 2,650 vehicles/year throughout the term of the contract, delivering an average of 220 vehicles/month to the City taxi industry;
- Development of a ToT design that will be an iconic symbol of the City;
- A demonstration of the process to be used to achieve improved levels of safety, performance, efficiency and functionality over the term of the contract;
- Consideration of marketing strategies to offset costs associated with bringing the ToT to the City;
- Identification of ways in which the City may benefit directly through a strategic partnership with the selected respondent; and
- Total lifecycle cost, to be calculated as the average cost to the taxi industry to purchase and operate the vehicles as a taxi. These costs to the industry include the price of the vehicle, the anticipated lifetime repair and parts replacement costs, maintenance costs, and fuel cost over a five-year period.

Table 1: Vehicle Technical Specifications

1. Demonstrated compliance with all relevant Federal Motor Vehicle Safety Standards with all taxi content fitted.
2. A minimum requirement for front, rear, side and rollover New Car Assessment Program Rating of 3 stars or higher with all taxi content fitted, based on the 2011 protocol.
3. A minimum Insurance Institute for Highway Safety (IIHS) requirement of "A" (average) for front offset, rear crash/head restraint, side and roof crush with all taxi content fitted.
4. A minimum requirement that all ToT vehicles have all taxi content defined based on feedback from stakeholder groups, validated as part of the vehicle sign-off process, and fully integrated in the OEM process.
5. A minimum requirement that ToT vehicles be capable to transfer a reduced-mobility rider from the curb to the taxi. If vehicles offered are not fully accessible as defined by TLC rules, additional vehicles must be provided to accommodate the 231 wheelchair-accessible medallions then in circulation, and, assuming a service life of 5 years for a vehicle, approximately 500 vehicles would be required over the term of the contract.
6. Compliance with all Federal Fuel Economy and New York State emissions regulations. If vehicles that are offered are not hybrid-electric or compressed natural gas (CNG)-fueled, additional vehicles must be provided to accommodate the 273 "alternative fuel" medallions then in circulation, and, assuming a service life of 5 years for a vehicle, approximately 550 vehicles would be required over the term of the contract.
7. A minimum requirement that a ToT must be painted yellow.
8. A minimum requirement of a 150,000 mile powertrain warranty.

Source: TLC

Table 2: Taxi Content

1. External communication package
2. Driver safety system
3. Trouble light and switch
4. Taximeter or fare recorder
5. Media, Payment and Location Technology Package
6. Driver/passenger communications system
7. Paint color (yellow)

Source: TLC

Seven proposals were received in response to the RFP. The proposals were evaluated based on organizational capability, previous experience, and proposed approach. That is, they were evaluated based on:

1. The qualifications and ability of the competing proposers to deliver the various aspects of the anticipated agreement based on an assessment of the organizational capability and relevant experience of each proposer; and

2. How the proposed vehicle would interact with passengers and operators on the basis of an assessment of such areas as the safety-related characteristics, ergonomics, average cost to the taxi industry to purchase the vehicle and lifecycle cost to operate the vehicle, internal air/environmental quality, overall quality of ride (noise and vibration), anticipated vehicle durability, accessibility, sustainability, and design elements of the vehicle, proposed warranty and service provisions, and the plans of each proposer for stakeholder outreach concerning final design of the vehicle.

In addition, 23,000 members of the public completed a survey of taxi vehicle preferences. Survey participants indicated that their three principal concerns in order of priority were environmental sustainability, passenger comfort and safety.

Based on the detailed review of the competing proposals, including consideration of the results of the rider survey, the NV200, designed by Nissan North America, Inc. (Nissan), was chosen as the winner of the ToT competition. A summary of the major features and specifications of the Nissan NV200 is provided in Table 3: Major Features of the Nissan NV200, and Table 4: Vehicle Sticker Information.

Table 3: Major Features of the Nissan NV200

Safety	▪ Passenger airbags designed to work around the driver/passenger partition ▪ Exterior alert lights to inform other drivers that taxi doors are being opened ▪ Sliding doors to eliminate "dooring" of other vehicles, cyclists and pedestrians
Comfort	▪ Flat middle seat ▪ Anti-bacterial, non-stick seats ▪ Flat "no hump" passenger floor area ▪ Custom-configured vehicle ride to deliver maximum comfort for passengers and drivers ▪ Independent passenger climate controls ▪ Filtered interior air
Amenities	▪ Passenger charging stations – one regular outlet and two USB passenger ports to charge mobile devices. ▪ Passenger reading lights ▪ Interior floor lighting for easy nighttime seating and to help locate belongings ▪ More luggage room than Crown Victoria ▪ Exterior "horn light" to reduce horn usage
Economy	▪ Excellent value (total cost of ownership) for quality vehicle (lowest total cost of ownership compared to competing proposals)
Ease of Entry and Exit	▪ Built-in grab handles to assist entrance ▪ Extra light, easy-to-open sliding doors ▪ Spacious cabin, no need to twist or pivot to be seated
Driver Features	▪ Separate driver climate controls ▪ High fuel efficiency ▪ GPS navigation ▪ More driver leg room
Fuel Efficiency	▪ Ability to be manufactured with fully electric power (under development)

Source: Nissan

Table 4: Taxi of Tomorrow Vehicle Sticker Information

Driver legroom	42.6 inches
Wheelbase	115 inches
Vehicle Height	73 inches
Vehicle Length	186 inches
Vehicle Width	68 inches
Engine Displacement	2.0 liters
Engine	Four cylinders
Estimated EPA Combined Label Fuel Efficiency	24 miles/gallon
Driven axle	Front
Estimated Base Taxi Manufacturers Suggested Retail Price (MSRP)	$29,700 (Includes features previously purchased after market for all prior taxi vehicles)

Source: Nissan

In addition, Nissan agreed to the following:

- Nissan commercial dealerships will accept walk-ins for taxi repairs and service by the first available technician at the first available service bay, helping to put taxis back on the street as expeditiously as practicable.
- Nissan will provide an option to train taxi fleet maintenance staff to perform limited warranty-covered repairs on the Nissan NV200 in-house, enabling taxi fleets to continue to perform many of their own repairs.
- The purchase price of the Nissan NV200 includes many taxi features that currently must be purchased and installed after-market at an additional cost to owners.
- Nissan may provide multi-vehicle purchase incentives to fleet purchasers.
- Nissan has designed a wheelchair-accessible version of the Nissan NV200 that it will make available to any taxi purchaser at an additional cost
- Nissan will work with stakeholders to identify and incorporate design features, including hand grips, safety step and extra large entry room, to make the Nissan NV200 more passenger-friendly.

1.2 Description of Proposed Action

The TLC proposes to enter into a contract with Nissan to develop and provide the Nissan NV200 as the vehicle for purchase for use as a taxi ("yellow cab") over the period 2013 thru 2023.[3] The ToT contract term would include three phases: 1) the period during which the vehicle would be under development, which would be a maximum of four years; 2) the ten-year period during

[3] The Department of Citywide Administrative Services (DCAS) is the agency of record and will sign the contract.

which the manufacturer would sell vehicles into the City taxi market, beginning in late 2013; and 3) a period of five years, beginning at the conclusion of the ten-year selling period, during which Nissan would provide agreed-upon service and parts support for vehicles previously sold. The TLC would not purchase vehicles; rather, TLC would adopt rules--primarily through changes to Chapter 67 of the TLC rules--that mandate the ToT vendor as the only authorized provider of taxi vehicles to be used with 12,237 taxi medallions.[4] This action would not increase or decrease the number of medallions currently in service.

TLC anticipates that the manufacturer will sell an average of approximately 220 vehicles per month (approximately 2,650 per year) for ten years. At that rate of manufacture, it would require approximately five years to manufacture the sufficient number of vehicles to replace the existing fleet of 13,237 yellow taxis. (The terms of the agreement between the City and Nissan guarantees that Nissan will sell ToT vehicles to 12,237 medallion owners). When the selling period begins (following a TLC vehicle specification rules change), the ToT vehicle would be phased into the taxi fleet as vehicles retire. The existing fleet of taxis would be retired in three to seven years, in conformance with vehicle retirement requirements identified in TLC vehicle retirement regulations 67-18 (NYCTLC Rules and Regulations. Chapter 67: Rules for Taxicab Hack-up and Maintenance. Effective April 1, 2011).

Based on current retirement dates identified in the TLC regulations and ToT phasing plan, it is anticipated that all vehicles in the existing taxi fleet will be retired, and at least 12,237 medallions will be operated with the Nissan NV200 ToT in the year 2020. The ToT would be retired in conformance with TLC vehicle retirement schedules and vehicle retirement extension provisions found in Chapter 67-19 of TLC rules and regulations.

Nissan will supply the Nissan NV200 for use as a taxi in the City fully hacked-up in conformance with TLC requirements, except they will not supply taximeters or the components of the Taxicab Technology Passenger Enhancements Project (T-PEP) (i.e., rear screen, driver monitor, and credit card reader). They will design the vehicle with these components in mind. It is anticipated that the installation of taximeters and these electrical components would be completed by local businesses currently providing similar equipment for the existing yellow taxi fleet.

[4] The remaining 1,000 medallions will be operated on a combination of different vehicles, to wit:

- 273 medallions are restricted for use with hybrid-electric or CNG vehicles, and the NV200 is ineligible for use with these.
- 231 medallions are restricted for use with wheelchair-accessible vehicles, and the accessible NV200 is eligible for use with these. It is anticipated that the NV200 would capture some, but not all, of this market since owners would have the option of selecting a competing vehicle.
- 496 medallions are unrestricted, and normally must be used with the ToT. However, these medallions would be eligible, with TLC consent, for a waiver where the medallion owner may use any TLC-approved wheelchair-accessible vehicle (but not any other type of vehicle). It is unknown at this point how many waivers would be requested.
- If the City sells additional taxi medallions in the future, these medallions would not be required to use the NV200.

1.3 Required Public Actions

The ToT project is a discretionary action subject to CEQR since the City would enter into a contract that brings about a programmatic change—requiring a single, specific vehicle for taxi use for the majority of the taxi fleet—that may have impacts on the environment. In addition, implementation of the project will require adoption of rules through the City's Administrative Procedure Act process, which would also be considered as an action subject to this environmental review.

2.0 FUTURE NO-ACTION TAXI FLEET

2.1 Introduction

According to the *2012 CEQR Technical Manual*, an assessment of the following conditions should be provided for each technical area requiring an analysis:

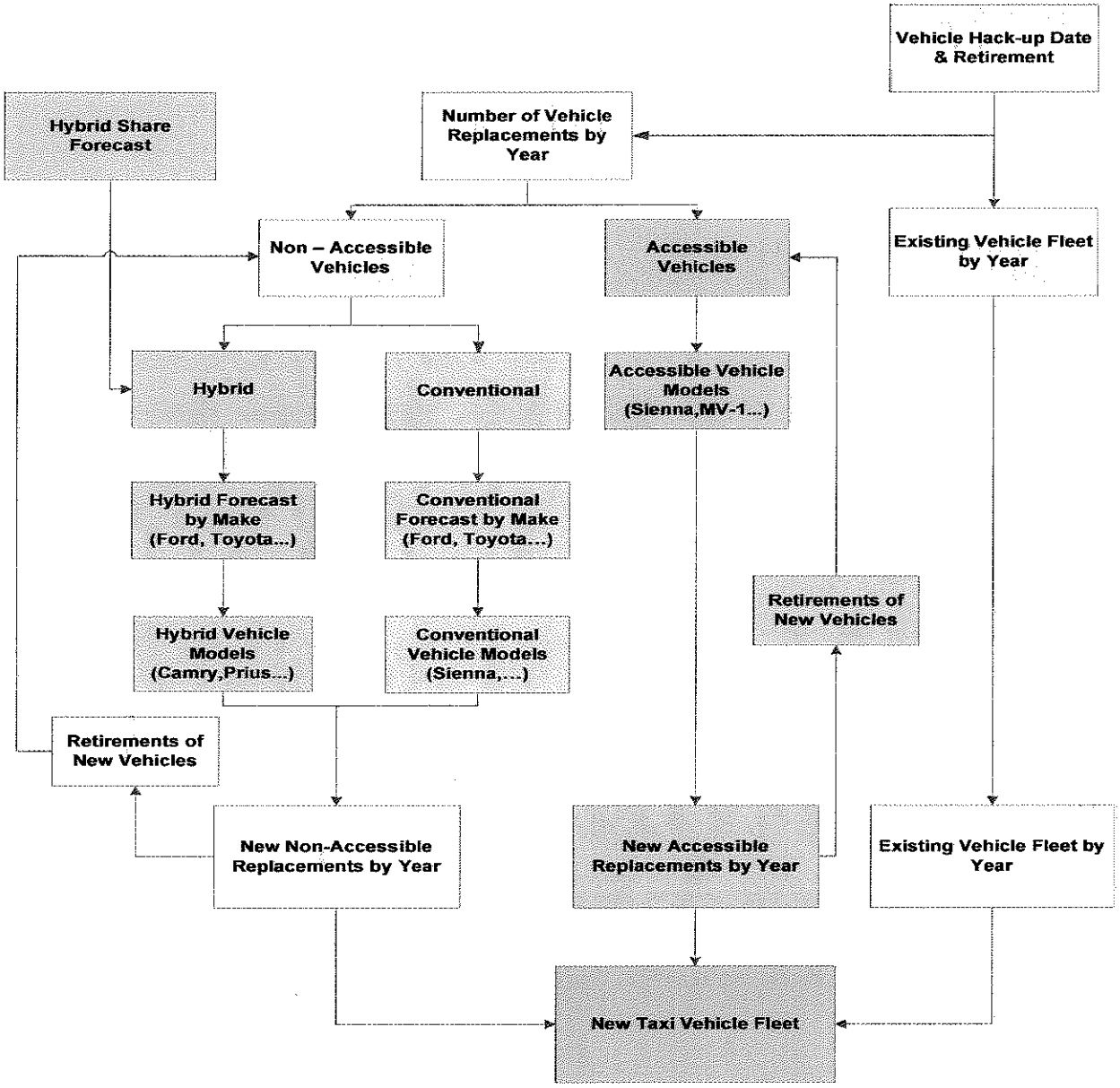
- The existing conditions;
- The future conditions without the proposed project (No-Action condition); and
- The future conditions if the proposed project is implemented (With-Action condition).

Comparison of the Future No-Action and the Future With-Action Conditions allows the project's incremental impacts to be identified. In conformance with the requirements of the *2012 CEQR Technical Manual*, a projection was completed of the composition of the taxi fleet that would be in place in the future (2020) without implementation of the Proposed Action. The year 2020 is the earliest full year when the existing taxi fleet could potentially be replaced with the ToT. (The terms of the draft agreement between the City and Nissan provide that a minimum of 12,237 medallion owners will be required to purchase the ToT.)

2.2 Methodology

Figure 1shows the multistep approach that was used to develop the detailed fleet forecasts for the taxi fleet without the ToT. Using data on the existing taxi fleet and the expected retirement dates of existing vehicles in service, projections were made, for each year until 2020, concerning the number of total vehicles that were expected to retire every year and be replaced with new vehicles. Retirement assumptions for hybrid vehicles, conventional vehicles and wheelchair-accessible vehicles were made using data from TLC that recorded the last hack-up date and the future expected retirement date for all taxi vehicles, in conformance with current vehicle retirement requirements identified in TLC vehicle retirement regulations Chapter 67-18 (NYCTLC Rules and Regulations. Chapter 67: Rules for Taxicab Hack-up and Maintenance. Effective April 1, 2011). In Figure 1, this is shown as the existing taxi vehicle fleet forecast by year.

Figure 1: Structure and Logic Diagram for Determination of the Composition of the Taxi Vehicle Fleet without the ToT



As vehicles are retired from the taxi fleet they are replaced by new vehicles. Wheelchair-accessible vehicles are replaced with wheelchair-accessible vehicles, while non-wheelchair-accessible vehicles are replaced with non-wheelchair-accessible vehicles.[5] Non-wheelchair-accessible vehicles are further categorized into either hybrid or conventional vehicles.

One important component of the analysis consisted of forecasting what share of the future taxi fleet would be comprised of hybrid vehicles in the absence of ToT. Based on historical data on the composition of the taxi fleet, the proportion of the taxi fleet that consists of hybrid vehicles was calculated and a statistical relationship was developed between changes in gas prices and the proportion of hybrid vehicles observed in the fleet over time. Additional technical details on this model are presented in Appendix A.

Based on historical fleet composition data, additional statistical models were developed to forecast the proportion of each conventional and hybrid vehicle that, in the absence of ToT, could be expected to be purchased from vehicle manufacturer. Thus using historical information on fleet composition, the share of hybrids that could be expected to be purchased from each manufacturer with a vehicle approved by TLC for taxi use[6] and the share of conventional vehicles for each manufacturer with a vehicle approved by TLC for taxi use was determined. Finally, the share of vehicles expected to be purchased from each manufacturer was distributed among different vehicle models based on the recommended sale price. For example, the most expensive Toyota hybrids received the lowest share of Toyota hybrids while the cheapest were apportioned the largest share.

2.3 Characteristics of the Existing Fleet

An important variable in the development of the No-Action taxi fleet is the proportion of hybrid vehicles that form the taxi fleet. A review of TLC's data indicates that the share of hybrid vehicles in the taxi fleet increased from 15.7% in March 2009 to 46.6% as of July 2012. Figure 2 shows the distribution of medallions in the taxi fleet. Independent unrestricted (i.e., an independent medallion that is not restricted to use with wheelchair-accessible or alternative fuel vehicles) and mini-fleet unrestricted medallion (i.e., a mini-fleet medallion that is not restricted to use with a wheelchair-accessible or alternative fuel vehicle) types account for approximately 97% of the taxi fleet.

Hybrid vehicles account for more than one third of both the independent and mini-fleet (Corporate) medallion types. As of July 2012, 46.5% of independent medallions (both restricted and unrestricted) were operated with hybrid vehicles, while a slightly higher proportion of mini-fleet medallions (46.7%) were operated with hybrid vehicles.

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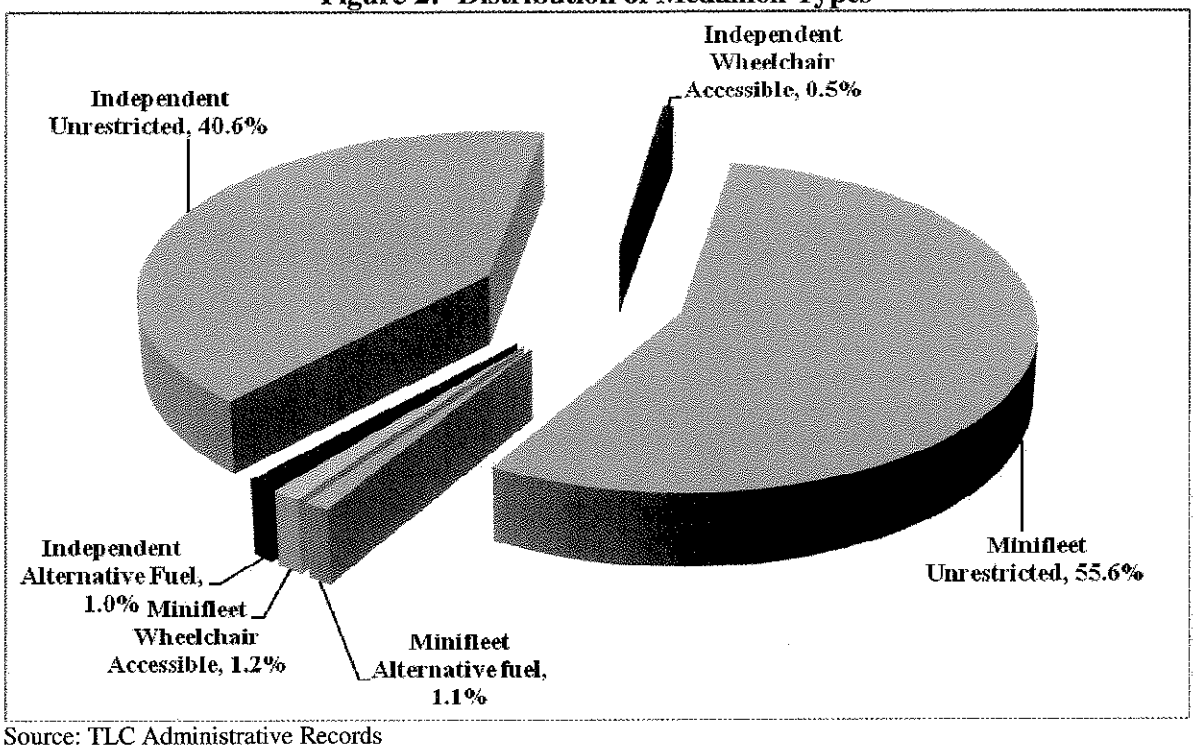
[5] All but two of the wheelchair-accessible taxis on the road are used with specially-restricted "accessible medallions." Wheelchair accessible medallion owners must always replace their existing vehicles with other wheelchair accessible vehicles upon vehicle retirement. Medallion owners without an accessible restriction may purchase wheelchair accessible vehicles upon vehicle retirement, but very few (currently only two) choose to do so. Therefore they are modeled as replacing retiring vehicles with non-wheelchair-accessible conventional or hybrid vehicles.

[6] http://www.nyc.gov/html/tlc/html/safety_emissions/taxicab_vehicles_in_use.shtml

Figure 2: Distribution of Medallion Types



Source: TLC Administrative Records

Table 5 depicts the current composition and expected lifecycle of vehicles in the taxi fleet based on TLC records. Conventional vehicles currently have an expected average lifecycle of 4.6 years, while hybrid vehicles have an expected average lifecycle of 6.2 years. Wheelchair-accessible vehicles have an expected average lifecycle of 5.2 years.

Table 5: Weighted Average Lifecycle of Vehicle by Major Medallion Type[7]

Vehicle Type	Medallion Type		
	Mini-fleet Unrestricted	Independent Unrestricted	All Medallions
Conventional	4.3	5.1	4.6
Hybrid	5.9	6.8	6.2
Wheelchair-Accessible[8]	4.8	6.3	5.2
Overall			**5.2**

Source: TLC Administrative Records

[7] Calculations were based on TLC records of each taxi vehicle's actual hack-up date and its required future retirement.

[8] For wheelchair-accessible vehicles, lifecycles are shown for (restricted) wheelchair accessible medallions (both independent and mini-fleet) and not for the two unrestricted medallions as shown for non-wheelchair-accessible vehicles.

2.4 Characteristics of the Projected Future (2020) No-Action Taxi Fleet

To understand the impact of the ToT on the City's environment and economy, we do not compare a ToT-dominated fleet to the existing fleet. Rather, we project what the future taxi fleet would look like in the absence of the ToT and compare this projected future fleet to a ToT-dominated fleet at this same future point in time. In addition to the 13,237 existing taxi medallions, this No-Action condition incorporates the 2,000 wheelchair-accessible taxi medallions the City was given authorization to sell through June 2011 New York State legislation (S5825/A8496).[9]

As mentioned earlier, the share of the taxi fleet that would be hybrid in the future without the ToT is key to understanding what the environmental and economic impact of the ToT would be. Statistical modeling demonstrated that higher fuel costs are associated with higher adoption of hybrid vehicles in the taxi industry. Therefore in projecting the share of the future taxi fleet that would be hybrid versus conventional vehicles in the absence of the ToT, we used projections of future fuel costs to estimate the rates of hybrid adoption that could be expected to occur without the ToT. To recognize the uncertainty surrounding projections of future fuel costs and the lifecycles of different taxi vehicles, changes in the values of a corporate and independent medallion (key indicators of whether the ToT would have an impact on the economics of the taxi industry) were estimated on the basis of four forecast scenarios for what the composition of the taxi fleet would be without the Proposed Action. Lifecycles[10] of vehicles were based on TLC administrative records on the actual hack-up date and required retirement date for each vehicle operated as a taxi. Using the lifecycles of current vehicles, which vary from 3-7 years, and two different lifecycle assumptions for *newly replaced* vehicles (to account for a conventional taxi's lifecycle being between 4 and 5 years), four scenarios were developed for the proportion of hybrid vehicles that would be in the taxi fleet in the Future Conditions without the Proposed Action.

Actual fleet forecasts by scenario are shown in Table 6. For conventional vehicles, the Ford Taurus and the Transit Connect are modeled to replace the current Ford Crown Victoria (which form a majority of the current fleet).

For hybrid vehicles, the Nissan Altima, and Toyota Camry and Prius are forecasted to form the majority of the hybrid fleet. Amongst the wheelchair-accessible taxi fleet, TLC expects the VPG Auto's MV-1 and the currently popular Toyota Sienna to feature prominently in the composition of wheelchair-accessible vehicles in the future.

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[9] In August 2012 a judge ruled that the bill authorizing the sale of the addition medallions was invalid. The City plans to appeal this ruling. Notwithstanding this order, the additional medallions are included in this analysis to evaluate a reasonable worst-case scenario. Since inclusion of the additional 2,000 medallions in the analysis of the impact of the ToT would result in disclosure of equal or greater impacts than without their inclusion, the impact evaluation included in this assessment assumes sale of all 2,000 medallions by the year 2020. This is because any negative impact found based on a per-vehicle analysis is greater when it is multiplied by more vehicles.

[10] Based on TLC vehicle hack-up date and expected retirement date data, the overall vehicle fleet average lifecycle is 5.2 years. Conventional vehicles have an expected lifecycle of 4.6 years, while hybrid vehicles have an expected lifecycle of 6.2 years. Accessible vehicles have an expected lifecycle of 5.2 years.

The detailed methodology and assumptions behind the taxi fleet forecast are presented in Appendix A.

Table 6: Taxi Fleet Forecasts in 2020 by Scenario[11]

Vehicle Type	Make	Model Year	Current July-12	Scenario 1 2020	Scenario 2 2020	Scenario 3 2020	Scenario 4 2020
Conventional	Chevy	Impala	-	1,857	1,188	1,643	1,000
Conventional	Ford	Crown Victoria	5,774	-	-	-	-
Conventional	Ford	Escape	35	-	-	-	-
Conventional	Ford	Taurus	-	1,779	1,139	1,574	959
Conventional	Ford	Transit Connect	211	2,136	1,365	1,890	1,149
Conventional	Honda	Odyssey	3	-	-	-	-
Conventional	Toyota	Highlander	257	-	-	-	-
Conventional	Toyota	Camry	80	-	-	-	-
Conventional	Toyota	Sienna	452	383	245	324	197
Conventional	Nissan	Altima	12	-	-	-	-
Conventional	Hyundai	Sonata	1				
Conventional	Mercedes	ML 350	3				
Hybrid	Chevy	Malibu	17	2	4	3	4
Hybrid	Ford	Escape	4343	-	-	-	-
Hybrid	Lexus	RX 400H	6	-	-	-	-
Hybrid	Mercury	Mariner	5	-	-	-	-
Hybrid	Nissan	Altima	321	986	1,305	1,086	1,388
Hybrid	Toyota	Camry	953	2,053	2,714	2,269	2,907
Hybrid	Toyota	Highlander	130	1,455	1,925	1,609	2,062
Hybrid	Toyota	Prius	392	2,357	3,123	2,610	3,342
Hybrid	Volkswagen	Jetta	10	-	-	-	-
Hybrid	Hyundai	Sonata	1	-	-	-	-
Wheelchair-Accessible	Dodge	Caravan	14	-	-	-	-
Wheelchair-Accessible	Toyota	Sienna	215	1,199	1,199	1,199	1,199
Wheelchair-Accessible	VPG Autos	MV-1	2	1,030	1,030	1,030	1,030
		Total	**13,237**	**15,237**	**15,237**	**15,237**	**15,237**

Source: HDR modeling using historical hybrid taxi adoption rates, future gas price projections, and TLC data on historical and existing taxi fleet composition.

3.0 LAND USE, ZONING, AND PUBLIC POLICY

The Proposed Action is limited to the introduction of the Nissan NV200 as the vehicle for purchase as use for a taxi and does not require the direct or indirect use of any existing land use or result in a change in land use, zoning, or an officially adopted and promulgated public policy. Therefore, in conformance with the *2012 CEQR Technical Manual* screening criteria, the Proposed Action would not have the potential to result in a significant impact on land use, zoning or public policy and a detailed analysis is not required to determine whether the Proposed Action would result in a significant adverse impact on land use, zoning, and public policy.

[11] The Lexus and Odyssey currently form very low shares of taxi fleet. The Mariner, the Ford Escape Hybrid, and the Crown Victoria are being phased out of production.

4.0 SOCIOECONOMIC CONDITIONS

4.1 Introduction and Study Area Delineation

Provided in this chapter is an assessment of the impact of the Proposed Action on socioeconomic conditions. As defined in the *2012 CEQR Technical Manual*, the socioeconomic character of an area includes its population, housing, and economic activity. Socioeconomic changes may occur when a proposed action directly or indirectly changes any of these elements. Even when socioeconomic changes do not result in impacts on these issues of concern, they are disclosed if they would affect land use patterns, low-income populations, the availability of goods and services, or economic investment in a way that changes the socioeconomic character of an area. According to the *2012 CEQR Technical Manual*, the five principal issues of concern with respect to socioeconomic conditions are whether a proposed action would result in significant adverse impacts due to: (1) direct residential displacement; (2) direct business and/or institutional displacement; (3) indirect residential displacement; (4) indirect business and/or institutional displacement; and (5) adverse effects on industries of importance to the City.

Since the Proposed Action would not entail any construction activities or on-site development, it would not result in any direct or indirect displacement of any residence or business in the City. Consequently, the impact assessment included in this chapter is limited to an assessment of the impact of the Proposed Action on specific industries of importance to the City. These include the taxi industry and industries that derive a significant amount of their income in providing services to the taxi industry. Consistent with guidance in the *2012 CEQR Technical Manual,* the impact assessment includes evaluation of whether the Proposed Action would:

- Result in a significant adverse effect on the business conditions affecting the viability of the taxi industry and businesses that derive a significant amount of their income in support of the taxi industry, including the automotive body, interior and glass repair industry, which includes businesses that currently hack-up vehicles for use as taxis.

- Indirectly substantially reduce employment or impair the economic viability of the taxi industry and businesses that derive a significant amount of their income in support of the taxi industry.

Specifically, assessments are provided of the:

- Potential impacts of the Proposed Action on the value of a taxi medallion due to the replacement of the existing taxi fleet with the ToT;

- The potential impact of the introduction of the ToT on the automotive body, interior and glass repair industry, which includes businesses that currently hack-up vehicles for use as taxis; and

- The potential impact of the introduction of the ToT on the outdoor exterior advertising industry, which includes businesses that currently provide exterior rooftop advertising on taxis.

As detailed in Section 4.2, separate assessments are undertaken of the impact of the Proposed Action on the value of independent and corporate medallions.

As is the case with the existing fleet of taxis, the ToT will be sold by local dealerships and maintenance of the ToT will be undertaken by local dealerships, service stations and taxi medallion holders. Consequently, there would be no net overall economic impact on auto dealerships or taxi maintenance businesses in the City as a consequence of the Proposed Action.

Since the Proposed Action has the potential to affect businesses throughout the City, the Study Area for the impact assessment encompasses the entire City.

4.2 Analysis Methodology

This section presents a summary of the methodology used to evaluate potential impacts on the value of a taxi medallion, on the automotive body, interior and glass repair industry[12] (which includes businesses that currently hack-up vehicles for use as taxis), and on the outdoor advertising industry (which currently provides exterior rooflight advertising to the taxi industry).

4.2.1 Analysis Years

The evaluation of the impact of the Proposed Action on socioeconomic conditions was completed for the year 2020, the earliest first full year when the existing taxi fleet could potentially be replaced with the ToT. (The terms of the agreement between the City and Nissan provide that a minimum of 12,237 medallion owners will be required to purchase the ToT.)

4.2.2 Factors that Affect the Value of a Taxi Medallion

The taxi medallion is a financial asset, the owner of which accrues a stream of net revenues, whether through driving the taxi or leasing the medallion to another driver. Major factors that affect net revenues, and, consequently, the value of a medallion, include overall economic conditions in the City, taxi vehicle operating and maintenance costs (most notably fuel costs), lease costs, fare rates, tips, and the cost of financing the acquisition of a medallion. The introduction of the ToT would affect future net revenues by changing the costs associated with acquiring, operating and maintaining a taxi.

The Haas Act of 1937 established two types of taxi medallions: corporate medallions and independent medallions, and set a nominal "60/40" ratio of the number of corporate to independent medallions. The impact of the Proposed Action on the values of these two types of medallions would differ due to differences in the business and operating arrangements between these two types of medallions.

The value of a medallion when it first began to be traded after World War II under the Haas Act averaged $2,500. The value of a medallion has shown significant growth since then. In May

[12] According the to the Bureau of Labor Statistics this industry is classified 81112 Automotive body, interior, and glass repair under the NAICS 2010 classification

2012, independent medallions sold for $700,000 to $720,000, while corporate medallions sold for $950,000 to $1,000,000.[13]

The value of a medallion is derived from the fares and tips received by an owner who drives the taxi himself, or from leasing the right to drive the taxi to others. Currently, medallions operate under one of three ownership structures: (1) owner-drivers, who own the medallion and the taxi vehicle, many of whom are required to drive a minimum number of annual shifts themselves pursuant to TLC rules; (2) driver-owned vehicles (DOVs) in which the medallion owner (usually through an agent) leases the medallion to a driver, who pays for vehicle costs of ownership himself; and (3) mini-fleets, in which a company controls multiple medallions (which it owns or manages for others) and maintains a fleet of taxi vehicles that are leased to drivers generally on a per-shift basis.

Income for owner-operators of a medallion is derived from fares and tips received from passengers and leasing to additional drivers less the cost of maintaining and operating the vehicle (including fuel, maintenance and insurance costs, of which fuel costs represent the most significant share). Incomes for owners of medallions who lease to DOVs are based on lease fees less any management or agent costs for managing medallions. Incomes for fleet operators are based on lease fees less the cost of maintaining and insuring the vehicle, dispatching and operating the garage (and, for fleets that lease out medallions they themselves do not own, less money paid to medallion owners for the right to operate the medallion). Fuel costs are currently borne by the driver, although in September 2012 an optional fuel surcharge will go into place in which a fleet may elect to charge a higher lease rate in exchange for providing the driver with fuel. For drivers who lease vehicles from a fleet or as second-shift drivers for an owner-operator or DOV driver, income is derived from fares and tips received from passengers less lease costs, fuel, and limited vehicle operating expenses (e.g., car washes).

The price of a medallion is set by the market, however, the economic value of a medallion can be estimated since the medallion confers upon its owner the right earn a future stream of net revenues. The net revenues would be discounted using a discount rate that reflects the cost of financing the acquisition of a medallion as well as the opportunity cost of investing in a taxi medallion versus other alternate investments.

The change in the value of a medallion can then be estimated through a standard procedure for estimating the value of an asset[14] as follows:

Change in medallion price ($) = Change in annual net revenue ($) / discount rate (1)

As indicated in this formula, net revenue is discounted (using a *discount rate*) to reflect the net value of money (i.e., the "opportunity cost" of using capital to fund the purchase of a medallion). As a consequence, the value of a medallion must be "discounted" to take this opportunity cost into account and calculate its value in 2020. As shown in the formula, the higher the discount rate the lower the value of a medallion.

[13] http://www.nyc.gov/html/tlc/html/about/average_medallion_price.shtml

[14] Investment Valuation: Tools and Techniques for the Determining the value of Any Asset, Aswath Domodaran 2012

Equation (1), shown above, is a general formula presenting the overall approach to valuing a medallion. More specifically, the medallions are valued according to the formula given in equation (2) and the revenues and costs with the ToT and without the ToT are forecasted. Forecasts for revenues and costs were made for the period 2020 to 2027. Cash flows are discounted for every year starting from 2020 to 2027. The discounted net cash flows are calculated such that the medallion value is compared for the Future with the ToT and the Future without the ToT.

The change in the value of the corporate and independent medallions was calculated by subtracting the discounted sum of future net revenues with the Proposed Action for the period 2020 to 2027 from the discounted sum of future net revenues without the Proposed Action for the period 2020 to 2027.

The valuation starts in the year 2020 since that is the first full year when all non-wheelchair-accessible vehicles and those vehicles not associated with alternative fuel medallions will retire and be replaced with the ToT. Thus, the ToT would be the operating vehicle for all taxis other than wheelchair-accessible and alternative fuel vehicles. The final analysis year, 2027, is the first full year when tax depreciation from the sale of additional medallions would expire (included in the Future with the ToT and without the ToT)[15]. The growth rate of future revenues (term g in equation (2)) accounts for the growth in fare revenues expected for independent medallions (see Appendix A for details).

$$\text{MedallionValue}=\frac{\text{Net Revenue}_{2020}}{(1+r)^{0}}+\ldots+\frac{\text{Net Revenue}_{2027}}{(1+r)^{7}}+\frac{\text{Net Revenue}_{2027}(1+g)}{(r-g)}\frac{1}{(1+r)^{7}} \quad (2)$$

On July 12, 2012, TLC approved the following revisions to its rules governing fares charged by taxis and the regulated lease caps (i.e., the maximum lease amounts a driver can be charged by owners of medallions--or agents managing medallions—for use of a medallion and/or taxi vehicle).

Taxi Fares

The fares allowed to be charged in taxis were increased by an amount that the TLC estimates will be the equivalent of approximately 17% for the typical fare. Specifically:

- The initial charge was maintained at $2.50/trip;
- The unit charge for taxis traveling at 12 miles an hour or more was increased from $.40 per one-fifth mile to $.50 per one-fifth mille; and
- The unit charged for taxis that are not in motion or travelling at less than 12 miles per hour was increased from $.40 per minute to $.50 per minute.

[15] The sale of 2,000 additional taxi medallions is included in the analysis for both the future with the Proposed Action and without the Proposed Action. Medallion purchase is assumed to be capitalized and then expensed on a 15 year schedule based on the classification a of taxi medallion as a section 197 intangible. Therefore starting from 2012, the year 2027 is the first year that the purchase of the medallion cannot be expensed and the medallion owner would have to pay taxes on all net revenues.

In addition to the metered rate of fare, taxis will continue to add the following surcharges, except where surcharges are specifically exempted:

- A rush hour surcharge of $1.00 for all trips beginning on a weekday after 4:00 PM and before 8:00 PM (this surcharge will not be applied on legal holidays); and
- A nighttime surcharge of $.50 for all trips beginning after 8:00 PM and before 6:00 AM.

The following changes were also incorporated into the fares between Manhattan and John F. Kennedy and Newark International Airports:

- The flat fare of a trip between Manhattan and John F. Kennedy International Airport was increased from $45.00 plus any intervening tolls to $52.00 plus any intervening tolls.
- The surcharge added to the amount shown on the taximeter and all intervening tolls for a trip between Manhattan and Newark International was increased from $15.00 to $17.50.

Standard Lease Cap Rates

The standard lease cap rates for a medallion and vehicle for one shift were modified as follows:

- The standard lease cap rate for a medallion and vehicle for one shift was increased from $105 to $115 for all 12-hour day shifts;
- The standard lease cap rate for a medallion and vehicle for the 12-hour shifts on Sunday, Monday and Tuesday was increased from $115 to $125;
- The standard lease cap rate for a medallion and vehicle for the 12-hour night shift on Wednesday was increased from $120 to $130;
- The standard lease cap rate for a medallion and vehicle for the 12-hour shifts on Thursday, Friday and Saturday was increased from $129 to $139;
- The standard lease cap rate for a medallion and vehicle for any one-week day shift for one week or longer was increased from $666 to $690; and
- The standard lease cap rate for a medallion and vehicle for any one week night shift for one week or longer was set at $797.

Cost Adjustments for the Lease of Hybrid Electric and Diesel-Fueled Vehicles

The standard lease cap rate for hybrid electric taxis and diesel-fueled taxis were increased by $10 per shift ($21 per week), so that the lease amount for one shift must not now exceed:

- $118 (from $108) for all 12-hour day shifts
- $128 (from $118) for the 12-hour night shift on Sunday, Monday and Tuesday
- $133 (from $123) for the 12-hour night shift on Wednesday

- $141 (from $131) for the 12-hour night shifts on Thursday, Friday and Saturday
- $708 (from $687) for any one-week day shift for one week or longer
- $812 for any one week night shift for one week or longer

Standard Lease Cap

- For a medallion-only hybrid taxi: $1,114 (from $842)
- For all other medallion-only taxis (including wheelchair-accessible taxis): $1,072 (from $800)

Long-term Lease Cap

The long-term weekly lease cap for both a taxi medallion and a vehicle leased as a pair on a lease-to-own program is set as

- For a hybrid or ToT or wheelchair-accessible taxi: $1,389 per week
- For all other taxis (including wheelchair-accessible taxis): $1,347 per week

In addition, the TLC plans to select a health care assistance entity to provide the taxi driver health care navigation and disability coverage. Drivers will pay for the coverage through a deduction of $0.06 per trip for all trips. Funds will be collected in the following manner: T-PEP vendors will charge owners six cents per trip, and owners will pass this cost on to drivers by deducting the sum from drivers' fare receipts.

This rules change also included shifting the responsibility for payment of credit card fees from drivers to medallion owners.[16] T-PEP vendors currently charge medallion owners about 3.5% of the credit card transaction amount for processing. Before this rules change, medallion owners had charged drivers 1.5% on top of the T-PEP processing fee to cover their administrative expenses, bringing driver credit card fees to 5% of credit card fares. The increases in lease cap rates were put into place to offset medallion owners' newly taking on the responsibility for paying credit card fees. Drivers have a higher lease cap, but they no longer pay any credit card fees.

Finally, with the introduction of the ToT , the TLC will allow medallion owners who operate taxi medallions as DOV's to charge the higher ToT lease cap ($1,389 per week). Medallion owners who operate as fleets or independent owner drivers will not be able to benefit from higher lease rates. Fleet owners would be able to, as part of these proposed rule changes, charge a fuel surcharge to drivers as part of the lease cap rate in return to providing fuel to taxi drivers. Based on the costs of providing fuel relative to the revenue that can be gained through the fuel surcharge, it is likely that medallions operated by fleets will likely take advantage of this option. The surcharge would be determined according to the schedule shown in Table 7 below, where "index" refers to the six month trailing gas price in the City as published by the Energy Information Agency (EIA). Therefore if the fuel price index lies between $2.50 to $2.99

[16] Medallion owners had previously charged drivers 5% of credit card fares in processing fees.

medallion owners can charge $16 in the Future without the ToT and $19 in the Future with the ToT.[17] The higher fuel surcharge with the ToT would compensate medallion owners who could have charged higher lease rates using hybrid vehicles (for the future without the Proposed Action).

Table 7: Fuel Surcharge per Shift for Corporate Medallions

Fuel Price Index	Future without the ToT	Future With the ToT
$2.49 or less	$13	$16
$2.50 to $2.99	$16	$19
$3.00 to $3.49	$18	$21
$3.50 to $3.99	$21	$24
$4.00 to $4.49	$23	$26
$4.50 to $4.99	$26	$29
$5.00 or more	$28	$31

Source: TLC Rule Book

Independent medallion owners are not likely to avail themselves of the fuel surcharge and thus have been conservatively assumed not to benefit from the fuel surcharge. The primary source of revenues for independent medallion owners is from driving and collecting fares. However, a significant portion does lease to their medallion to second shift drivers. Typically, these are informal agreements that operate as longer term agreements and the lease income is likely to be according to the long term lease cap arrangement ($1,389 per week for a hybrid, ToT or wheelchair-accessible vehicle and $1,347 per week for all others). Independent medallion owners therefore would not expect any declines in leasing income from the Proposed Action.

The calculation of the impact of the Proposed Action on the values of corporate and independent medallions incorporated the above changes in taxi fares and proposed lease cap rates, changes in capital, and operation and maintenance costs that would result from the replacement of the existing fleet of taxi vehicles with the ToT.

Revenues with and without the introduction of the ToT were estimated as part of the analysis. Currently, medallion owners whose medallions are operated with hybrid vehicles are allowed to charge drivers a higher lease rate than medallion owners whose medallions are operated with conventional vehicles. The ToT is a conventional vehicle. As part of the rules changes that will implement the ToT program, medallion owners who lease on a weekly basis to DOV drivers (through medallion-only weekly leases or lease-to-own vehicle and medallion weekly leases) will be permitted to charge a higher lease rate (equal to the hybrid-level lease cap) for ToT vehicles and wheelchair-accessible vehicles. In addition, the rules change that will implement ToT will increase the optional fuel lease cap surcharge by $3 per shift (an amount equal to the per-shift lease cap bonus medallion owners running their vehicles with hybrids) for any vehicle

[17] As part of the rules implementing the ToT program, in addition to other changes in the lease caps, the TLC will be increasing the optional gas surcharge amount by $3 for all levels of the Fuel Price Index.

being leased. This surcharge increase would go into effect once ToT vehicles are available for purchase by any taxi operator.

Primary impacts due to the introduction of the ToT on the value of a medallion were estimated based on the change in costs of purchasing new ToT vehicles (fixed capital cost) and operating costs of the ToT (mainly fuel). Fuel costs do not currently impact mini-fleet medallion owners because they do not purchase fuel. Fuel costs do impact owner-operators--largely independent medallion owners--because they pay for fuel on the shifts they drive. Other costs included in the analysis were hack-up costs. These affect fleet operators and owner-operators (because they must purchase and hack-up vehicles), but not medallion owners who lease out on a medallion-only basis (i.e., medallion owners who lease to DOV drivers). Maintenance costs and insurance costs were included, but did not vary between the scenario with the ToT and without the ToT. Because the new lease cap structure shifts responsibility for paying credit card fees to medallion owners, credit card fees were included as an expense to medallion owners and varied depending on the number of shifts the medallion operates (since the total number of transactions would varies with the number of operating shifts). Health care fees were included as an expense for independent medallions (modeled as owner-operators) because they reduce the fare income the owner earns from the shifts he drives personally (though these fees will likely benefit the owner-operator by providing him with disability insurance and assistance obtaining healthcare).

The analysis was based on the following assumptions:

- A discount rate of 3.1% was used for corporate medallions and 6.1% for independent medallions. Thus, the calculated weighted average discount rate for all medallions (i.e., corporate and independent medallions) is 4.4%. The discount rates were calculated such that the calculated value of (independent and corporate) medallions without the Proposed Action was equal to the average 2012 observed market price of each of these types of medallions. This approach on estimating an appropriate discount rate can be compared to the observed interest rate on Medallion Financial's portfolio of taxi medallion loans (Medallion Financial is one of the principal lenders to the taxi industry). The average nominal interest rate on Medallion Financial's portfolio of New York medallion loans was 4.43% (SEC 10-Q Filing, June 2012)[18] which, after accounting for inflation, is equal to a 3.0% discount rate. The calculated discount rate (4.4%) is close to the real interest rate on Medallion Financials' portfolio of New York City taxi medallions.

- A tax rate of 40%, based on KPMG Corporate and Indirect Tax Survey (2010).

- An average assumed taxi vehicle depreciation for tax purposes of 5 years based on mandatory retirement schedules for taxi vehicles.[19]

- An average taxi vehicle salvage value of $3,100 based on information collected by TLC.

[18] Based on Medallion Financial's June 2012 10-Q filing with the SEC in Consolidated Schedule of Investments e (http://www.sec.gov/Archives/edgar/data/1000209/000119312512338045/d390523dex991.htm).

[19] Based on TLC vehicle hack-up date and expected retirement date data, the overall vehicle fleet average life-cycle is 5.2 years. Conventional vehicles have an expected lifecycle of 4.6 years, while hybrid vehicles have an expected lifecycle of 6.2 years. Wheelchair-accessible vehicles have an expected lifecycle of 5.2 years.

The financial valuation evaluates impacts on the three ownership structures (owner-operator, fleet and DOV) of medallions described above. The analysis assumes different discount rates (which reflect the opportunity cost of capital) for corporate medallion owners and independent medallion owners because they are likely to face different financing costs. Corporate medallion owners own multiple medallions (some operate vehicle fleets) and are likely to have greater collateral and higher credit ratings to support any loans that they might receive. Therefore, they are likely to experience lower financing costs than individual medallion owners do, many of whom borrow to finance the purchase of a single medallion. Assumptions used in the valuation are discussed in further detail in Appendix A.

Depending on the type of medallion (independent vs. corporate medallion) and the ownership structure under which a medallion operates expected impacts due to the Proposed Action would be different. The impacts vary by different ownership structures. The ownership structures include the *owner-driver model* in which the same individual owns the medallion and the taxi vehicle and is often required to drive a minimum number of annual shifts himself; the *DOV model* in which a DOV driver leases the medallion only and pays for vehicle costs of ownership himself;[20] and the *mini-fleet model* in which a company owns multiple medallions (or manages multiple medallions for others) and maintains a fleet of taxi vehicles that are leased to drivers on a per shift basis. Estimated changes in capital and operating costs could directly affect net revenues for medallion owners operating under the various ownership structures and as a consequence, the value of an independent or corporate medallion.

The results of this analysis are discussed in Section 4.5.1 of this Chapter. Since the net revenue received by a medallion owner typically varies between the owner of a corporate and independent medallion (based on factors such as the independent medallion owners' owner-must-drive requirements), separate estimates are provided of the impact of the Proposed Action on the change in value of a corporate and independent medallion. A detailed description of the methods and detailed analytical results of this analysis are provided in Appendix A.

To recognize the uncertainty surrounding projections of future fuel costs and the lifecycles of different taxi vehicles, changes in the values of a corporate and independent medallion were estimated on the basis of four forecast scenarios for what the composition of the taxi fleet would be without the Proposed Action. Lifecycles[21] of vehicles were based on TLC administrative records on the actual hack-up date and required retirement date for each vehicle operated as a taxi.

- **Scenario 1** assumes that hybrid vehicles would have a life-cycle of 6 years, conventional vehicles a life-cycle of 5 years and wheelchair-accessible vehicles a life-cycle of 5 years. Gas prices were assumed to follow the Year 2011 "Reference Case Scenario" from the

[20] Under the new lease cap rules passed in July 2012, medallion owners who run their medallions using the DOV model now have an option of leasing a medallion, a vehicle (on a lease-to-own basis), and other associated vehicle expenses as a "package deal" under a special lease cap. This analysis assumes that medallion owners operating their medallions through the DOV model charge the medallion-only lease cap rate and DOV drivers continue to cover their own vehicle-related expenses.

[21] Based on TLC vehicle hack-up date and expected retirement date data, the overall vehicle fleet average lifecycle is 5.2 years. Conventional vehicles have an expected lifecycle of 4.6 years, while hybrid vehicles have an expected lifecycle of 6.2 years. Wheelchair-accessible vehicles have an expected lifecycle of 5.2 years.

US Energy Information Administration (Annual Energy Outlook 2011, Energy Information Agency (EIA)). In addition, a mean estimate for a declining trend growth rate (for factors not captured by fuel price alone) was used (see Appendix A for further details).

- **Scenario 2** is the same as Scenario 1 except that gas prices were assumed to follow the Year 2011 "High Price Scenario" from the EIA. In addition, a high estimate for a declining trend growth rate (for factors not captured by fuel price alone) was assumed (see Appendix A for further details)

- **Scenario 3** is the same as Scenario 1, except that it was assumed that conventional vehicles would have a life-cycle of 4 years instead of 5 years, since, based on TLC hack-up and retirement data, the average vehicle life-cycle of a conventional vehicle is 4.6 years, which is approximately midway between 4 and 5 years.

- **Scenario 4** is the same as Scenario 2, except that it was assumed that conventional vehicles would have a life-cycle of 4 years.

As described above, net revenue estimates for each scenario were discounted by a discount rate of 6.1% for independent medallions and a discount rate of 3.1% for corporate medallions.

Future revenues and costs for each of the four vehicle fleet forecast scenarios and the two lease rate scenarios described above were estimated on the basis of a number of assumptions regarding revenue earned per trip and the average number of trips per taxi that would occur in the Future with and without the Proposed Action. These included:

- Hack-up costs per vehicle with and without the ToT;

- The capital cost of a taxi vehicle with and without the ToT;

- An average salvage value of a City taxi ($3,100);

- Maintenance and insurance costs, based on a number of per mile and total mileage assumptions included in Appendix A;

- Depreciation of a vehicle and amortization of a medallion as allowed under current tax law; and

- Taxi driver earnings, based on hourly wage assumptions included in Appendix A.

Estimates of the net value of the medallion were completed for Future Conditions with and without the ToT. Since the medallion confers a right to future revenues from the operation of a taxis, the net cash flows should be viewed as income to the holder for an indefinite period in the future (the "terminal value" of the asset). Discounted cash flows that would accrue beyond 2020 were added to the discounted cash flows per medallion to estimate the value of a medallion (See Appendix A).

4.2.3 Impact on the Automotive Body, Interior and Glass Repair Industry, which includes Businesses that Hack-Up Vehicles for Use as New York City Taxis

The automotive body, interior and glass repair industry provides a broad range of vehicle repair and modification services to the automotive, taxi and trucking industry in the New York Region. Total earnings generated by the industry in the City area in 2011 were estimated at $74.4 million dollars and grew about 3.6% compared to earnings in 2009. The automotive body, interior and glass repair industry includes a number of businesses in the City that provide "hack-up" services to the taxi owners in the City. As summarized in Table 8 the Automotive, Body Interior and Glass Repair industry employs approximately 2,200 people in the City, of which over half are employed in Kings and Queens Counties.

Table 8: Employment in Automotive Body, Interior and Glass Repair

Area	Industry	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bronx County, New York	NAICS 81112 Automotive body, interior, and glass repair	511	482	451	446	449	451	459	485	443	422	396
Kings County, New York	NAICS 81112 Automotive body, interior, and glass repair	810	804	755	709	695	679	710	717	687	659	706
New York County, New York	NAICS 81112 Automotive body, interior, and glass repair	202	158	139	126	137	154	168	159	141	142	138
Queens County, New York	NAICS 81112 Automotive body, interior, and glass repair	852	804	778	755	725	728	753	747	689	657	686
Richmond County, New York	NAICS 81112 Automotive body, interior, and glass repair	224	213	209	220	191	252	266	282	314	316	313
	Total Employment	**2,599**	**2,461**	**2,332**	**2,256**	**2,197**	**2,264**	**2,356**	**2,390**	**2,274**	**2,196**	**2,239**

Source: Bureau of Labor Statistics (2011)

Vehicles in the existing fleet of taxis do not come from a dealer fully "hacked-up" for use as a taxi and, consequently, must be modified ("hacked up") for use as a taxi by local businesses prior to receiving a taxi license from the TLC. Taxi hack-up requirements are established under Chapter 67 ("Rules for Taxi Hack-up and Maintenance") of the TLC Rules and Regulations. The ToT would be delivered fully hacked-up for use as a taxi in conformance with TLC requirements, except for the incorporation of a taxi meter and the components of the taxi T-PEP (i.e., rear screen, driver monitor, and credit card reader). While this reduces the cost for vehicle owners, businesses that currently hack-up vehicles for use as a taxi could potentially be adversely affected by the introduction of the ToT due to the substantially lesser degree of hack-up required for the ToT.

Approximately thirty-one businesses, located in all five boroughs of the City, are licensed to install meters in taxis (TLC, List of Meter Shops in New York. 2011). Other automotive body, interior and glass repair businesses can also provide non-meter related hack-up services. As a consequence, the study area used in the assessment of potential impacts on the hack-up industry encompassed the entire City.

Estimates of the cost to hack-up a vehicle (TLC, April 2011) and data from the Regional Input-Output Modeling System (RIMS II) were used to estimate the impact of the Proposed Action on the hack-up industry. In completing this assessment, it is assumed that businesses that complete hack-ups of vehicles for use as taxis are entirely within the *automotive body, interior and glass repair* industrial classification incorporated in RIMS II. RIMS II allows for the estimation of the economic multiplier effect of changes in the economic activity of a given class of business within a defined region. A description of RIMS is provided in Appendix A to this EAS.

4.2.4 Impact on the Outdoor Advertising Industry

The TLC currently permits exterior roof-light advertising on taxis in the City. Businesses that provide exterior roof-light advertising represent a subset of the larger outdoor advertising industry. Advertising is provided by businesses within the overall outdoor advertising industry. Since the TLC may not be allow exterior rooflight advertising on ToT vehicles (at least in its current form), an estimate was completed of the potential loss in revenue to the industry that would occur with implementation of the ToT. Revenue that would be generated by the industry with and without the ToT was compared to determine whether the ToT would result in a significant adverse impact on the industry.

4.2.5 2,000 New Wheelchair-accessible Taxi Medallions

Estimates of the impact on the value of a medallion as a result of the introduction of the ToT included the effect of the proposed sale of 2,000 additional taxi medallions, all of which would be wheelchair-accessible. The additional taxis--which the City had been authorized to sell by New York State Legislation (New York State Senate Bill S5825-2011 and New York State Assembly Bill A8496-2011)--were included in the analysis of the impact of ToT on the value of the medallion for the Future Conditions both without and with the ToT. The sale of 2,000 additional taxi medallions would be a separate action from ToT, and the City is required to perform a separate environmental review for this increase under CEQR (this review was registered as Taxi Medallion Increase, 12TLC026Y). The legislation allowing for the sale of the medallions has undergone recent legal challenge. On August 17, 2012 the New York State Supreme Court ruled that the legislation was invalid. The City has stated its intention to challenge the ruling. Since inclusion of the additional 2,000 medallions in the analysis of the impact of the ToT would result in equal or greater impacts than without their inclusion, the impact evaluation included in this assessment assumes sale of all 2,000 medallions by the year 2020, the analysis year by which the entire existing taxi fleet will be largely replaced with the ToT (See Section 2.1.2 in Appendix A for a discussion of which taxis will and will not be required to purchase the ToT vehicle). While TLC's agreement with Nissan does not extend to the sale of additional medallions, since these will be wheelchair-accessible vehicles, the analysis

assumes these new medallions would be operated using a mix of wheelchair-accessible vehicles that includes the wheelchair-accessible version of the ToT.

4.3 Existing Conditions

Taxis are a vital part of the City economy. In 2012, the 13,237 yellow medallion taxis provided approximately 500,000 trips to patrons on an average day. An over $2 billion per year industry[22], which includes drivers, owners, agents, brokers, mechanics, and supportive businesses, taxis are critical to the day-to-day functioning of the City, and meet the critical transportation needs of the residents, businesses and visitors to City.

The 13,237 yellow taxis are authorized to pick up passengers by street hail *anywhere* in the City. The same legislation that allowed for the increase in the number of taxi medallions (which the City is not implementing due to the recent NYS Supreme Court decision, which it plans to appeal) would allow for the issuance of up to 18,000 HAIL vehicle licenses that would allow specially licensed livery vehicles to accept street hails *only* in the areas of the City rarely served by yellow taxis: Brooklyn, Queens (excluding airports), Staten Island, the Bronx, and Northern Manhattan (north of West 110th and East 96th Street in Manhattan). Although existing livery vehicle owners are not required to apply for a street hail license, the City expects that if and when it obtains authorization to implement the program, a significant number of livery vehicle owners and operators will take advantage of the HAIL program by the 2020 Analysis Year. At a minimum, street hail livery vehicles would be required to be outfitted with:

- Roof light
- Partition (or camera if not using partition)
- Technology System Provider
- Taximeter
- Street Hail Livery decals and markings approved by TLC
- Base Affiliation Decals
- "Big Apple Green" paint job

It is estimated that hack-up costs for street hail livery vehicles would range from $2,000 to $3,000.

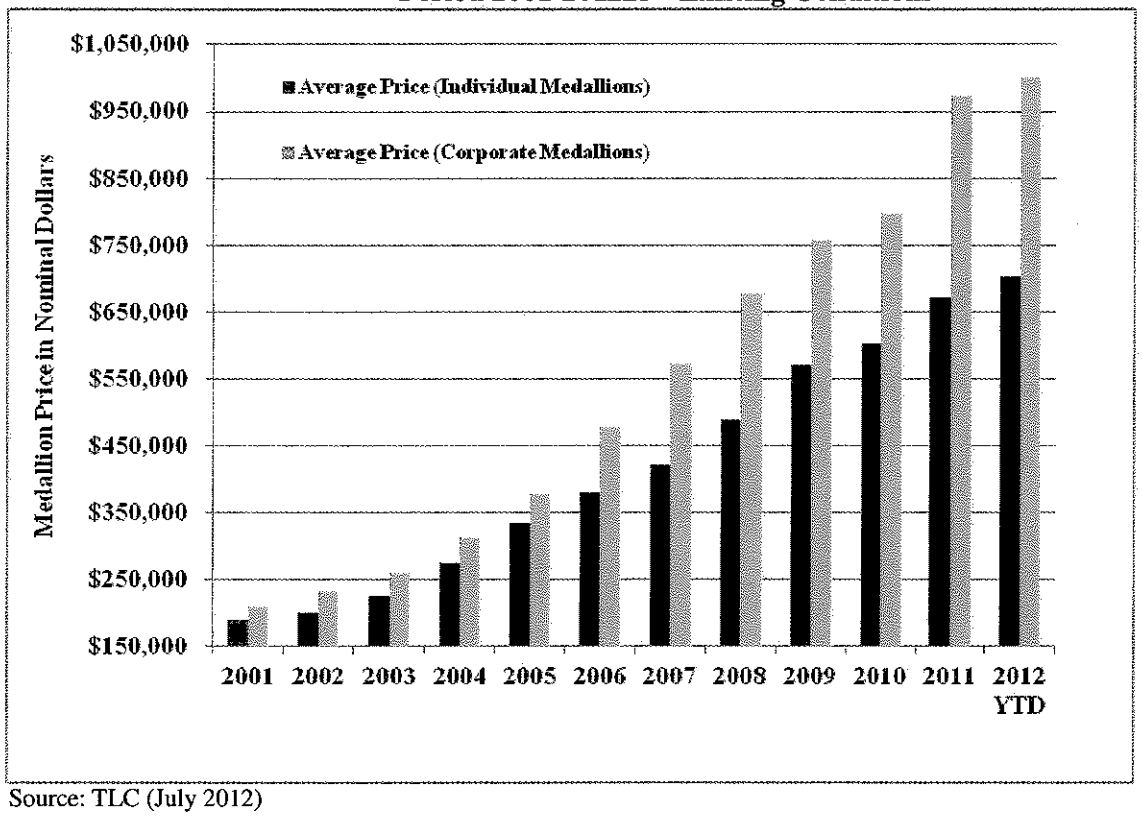
4.3.1 Value of a Taxi Medallion

The value of a medallion is derived from fares and tips received by owner-operators and/or from leasing the right to drive a taxi to others (owners of both corporate medallions and independent medallions often lease the medallion and/or vehicle to others). For owner-operators, income from the ownership of a medallion is derived from fares, tips and from leasing the car to a second-shift driver. For lease drivers, income is derived after deducting lease fees and fuel costs from fare and tip revenue received from passengers. For medallion owners who do not drive the vehicle personally, income is derived from leasing the medallions to others.

[22] Estimates assume 178 million annual fleet trips based on TLC data and average revenue per trip of $12.

As discussed previously, factors that affect the value of a medallion include taxi fares, interest rates, the demand for taxi service, the availability of taxi medallion financing, the market for the medallion, the availability of drivers, and anticipated return on the investment to acquire a medallion. Historical nominal prices of individual and corporate medallions are shown in Figure 3. Nominal prices of medallions have increased significantly since they first began to be traded after World War II when the value of a medallion averaged $2,500. As shown in Figure 3, the average price of an individual medallion (approximately $703,630) as of July 2012 was approximately 70% of the average price of a corporate medallion (approximately $1,000,000).

Figure 3: Medallion Prices (Nominal Dollars) for the Period 2001-201223 - Existing Conditions



Source: TLC (July 2012)

4.3.2 Automotive Body, Interior and Glass Repair Industry

Businesses that provide taxi hack-up services are a subset of the larger automotive body, interior and glass repair industry, as defined under the RIMS II. Since the ToT would reduce the need for taxi hack-up services, an assessment is included of its impact on the automotive body, interior and glass repair industry.

[23] Transfers that took place more than 10% below the market price were excluded from the calculation. In addition, individuals selling stock in their medallion are not included in the analysis.

As detailed in Table 9, the current vehicle fleet requires approximately $2,650 per vehicle in hack-up services for the installation of partitions, meters, painting and other requirements. The estimated expenditures for hack-up services are based on the estimated costs for American, Oldecar and Community garages to complete hack-up services.[24]

Table 9: Estimated Hack-up Costs of Taxi Fleet Existing Conditions

Existing Equipment	American	Oldecar	Community	Average
Trouble lights	$70	$89	$105	$88
Meter	$450	$460	$463	$458
Roof light wiring	$60	$75	-	$68
Markings	$50	$48		$49
T-PEP	$200	$150	-	$175
Painting	-	$1,200	-	$1,200
Roof light	$125	$140	$233	$166
Partition	$370	$535	$425	$443
Camera	$685	$700	-	$693
Total in the Future without the ToT[25]				**$2,647**

Source: Based on quotes received from American, Oldecar Community hack-up service providers, as told to TLC Chief of Safety and Emissions, December 2011.

4.3.3 Outdoor Advertising Industry

According to TLC administrative records, 9,205 (approximately 70%) of today's taxis have rooflight advertising. Roof-light advertising, identified by the North American Industry Classification System as a subset of the outdoor advertising industry, is the only form of exterior advertising currently permitted on taxis. Exterior advertising on taxis, which currently takes the form of roof-light advertising, accounts for approximately $21 million per year in gross revenues and, according to TLC administrative records, over 99% of all taxi exterior advertising is currently managed through a single firm, VeriFone Media, a subsidiary of Verifone Systems, which had net revenues of approximately $1.3 billion according to Verifone Systems, Inc. 2011 10-K report. Since the ToT would limit the use of roof-light advertising, an assessment of its impact on the outdoor advertising industry was included in the socioeconomic conditions impact analysis.

4.4 Future Conditions Without the Proposed Action

A description of socioeconomic conditions that would occur in the Future without the Proposed Action is provided below based on the forecasted taxi fleet vehicle mix as described in Chapter 2 of this EAS Supplemental document.

[24] Based on quotes received from American, Oldecar and Community hack-up service providers, as told to TLC Chief of Safety and Emissions, April 2011.

[25] Current regulations require a camera be installed or a partition but not both. Camera installation is relatively rare and thus the costs of partitions rather than cameras are included in the calculation of total hack-up costs.

4.4.1 Value of a Taxi Medallion

As described in Section 4.2, the value of a corporate and independent medallion was determined for the Future Condition without the Proposed Action using the estimated future revenues and costs. In the future without the Proposed Action, hybrid vehicles would form a significant portion of the fleet. Medallion owners would be able to charge a slightly higher lease rate per shift for these vehicles. Overall, fuel efficiency of the vehicle fleet would benefit (depending on the proportion of vehicles assumed to be hybrids) given the higher fuel efficiency of hybrid vehicles. Life cycles of hybrid vehicles are longer (about 6 years) and as the percentage hybrids in the fleet increases overall vehicle purchasing costs would decline slightly.

For medallions operated as DOV's, in the future without the Proposed Action, no changes in real annual revenues would be expected (since a majority of the DOV's operate as hybrids). Similarly costs which include management fees (payment to the agent for managing the medallion), license renewal fees would stay constant in real terms. Credit card fees would increase in real terms as the number of credit card transactions increase over time.

For medallions operated as fleets, increases in the proportion of hybrids would tend to increase total revenues from leasing (since hybrids can charge about $3 more than conventional vehicles per shift). Net revenues from the fuel surcharge would also increase over time as the fleet becomes more fuel efficient. Vehicle purchase costs, on average, would decline slightly as the proportion of hybrids increases (since hybrids have longer life cycles). Other costs such as insurance, maintenance of the vehicle would stay constant in real terms while credit card fees would increase along with the number of credit card transactions.

For independent medallions, fare revenues increase in real terms as employment and population increases mean a greater number of trips per shift. Lease revenues from leasing to second shift drivers would increase as the proportion of hybrid vehicles increases in the fleet. As the proportion of hybrid vehicles increases, fuel efficiency would increase and vehicle purchase costs on an average annual basis would decline. Other costs such as insurance, maintenance of the vehicle, health care fees, driver wages, would stay constant in real terms while credit card fees would increase along with the number of credit card transactions (see Appendix A for details).

For reasons described earlier, a separate discount rate was used for independent medallions (6.1%), and corporate medallions (3.1%). The estimates of the average future revenues and costs for the Future Conditions without the ToT were based on changes in fuel expenses, hack-up costs, salvage value of the vehicles, and the purchase price of the vehicles consisting of:

- the forecasted taxi fleet vehicle mix as described in Chapter 2 of this EAS; and
- the sale of the 2,000 additional wheelchair-accessible taxi medallions (the sale of these medallions is on hold due to court proceedings, but they are included in this analysis as a conservative worst-case scenario).
- Vehicle insurance and maintenance costs were also included but do not vary with and without the Proposed Action.

4.4.2 Automotive Body, Interior and Glass Repair Industry

For independent medallions, fare revenues increase in real terms as employment and population increases mean a greater number of trips per shift. Lease revenues from leasing to second shift drivers could be expected to increase as the proportion of ToT vehicles increases in the fleet since medallions leased out to second shift drivers could reasonably be expected to mirror the higher long term lease rates for DOV lease caps that would go into effect with ToT. As the proportion of ToT vehicles increases, fuel efficiency would increase (though not as much as without the Proposed Action) and vehicle purchase costs on an average annual basis would increase. Other costs, such as insurance, maintenance of the vehicle, health care fees and driver wages, would stay constant in real terms while credit card fees would increase as the number of credit card transactions grows (see Appendix A for details).

4.4.3 Outdoor Advertising Industry

Revenue to businesses that provide taxi exterior advertising in the Future without the ToT would remain approximately the same as under Existing Conditions since the exterior advertising industry would have the same ability to provide roof-light advertising to the taxi fleet under the Future Conditions Without the ToT that it does today.

4.5 Future Conditions With the Proposed Action

Provided in this section is a description of socioeconomic conditions that would occur in the Future with the ToT.

4.5.1 Value of a Taxi Medallion

As described in Section 4.2, the value of a medallion was determined for the Future Condition with the Proposed Action using the average future revenue and costs expected for the ToT. In the future with the Proposed Action, the ToT would form a significant portion of the fleet. As hybrid vehicles are replaced with ToT vehicles, fuel efficiency of the fleet will decrease slightly and since the ToT is a conventional vehicle (with a shorter assumed life cycle), vehicle purchase costs on an average annual basis would rise.

For medallions operated as DOV's, no changes in real annual revenues would take place since ToT vehicles will be able to charge the higher lease rate. Similarly, costs which include management fees (payment to the agent for managing the medallion) and license renewal fees would stay constant in real terms. Credit card fees would increase in real terms as the number of credit card transactions increase over time.

For medallions operated as fleets, increases in the proportion of ToT vehicles would tend to decrease revenues from leasing slightly (since hybrids can charge about $3 more than ToT vehicles per shift). Fuel efficiency of the vehicle fleet would improve over time as the proportion of ToT vehicles increase in the fleet (though not by as much as it would without the Proposed Action). Net revenues from the fuel surcharge would also increase over time both due to

improving fuel efficiency and the higher fuel efficiency surcharge allowed with the Proposed Action. Vehicle purchase costs on average would increase slightly as the proportion of ToT vehicles in the fleet increases (since the ToT is assumed to have a shorter life cycle). Other costs such as insurance and maintenance of the vehicle would stay constant in real terms while credit card fees increase as the number of credit card transactions grows.

For independent medallions, fare revenues increase in real terms as employment and population increases mean a greater number of trips per shift. Lease revenues from leasing to second shift drivers would increase as the proportion of ToT vehicles increases in the fleet since these will be able to charge the hybrid or ToT rate with the Proposed Action. As the proportion of ToT vehicles increases, fuel efficiency would increase (though not as much as without the Proposed Action) and vehicle purchase costs on an average annual basis would increase. Other costs, such as insurance, maintenance of the vehicle, health care fees and driver wages, would stay constant in real terms while credit card fees would increase along with the number of credit card transactions (see Appendix A for details)

For reasons described earlier, a separate discount rate was used for independent medallions and a discount rate of 3.1% was used for corporate medallions and discount rate of 6.1% was used for independent medallions. The average future revenues and costs for the Future Conditions with the ToT were based on the projected changes in fuel expenses, hack-up costs, salvage value of the vehicles, vehicle insurance and maintenance costs, and the purchase price of the vehicles consisting of:

- With the exception of the alternative fuel medallions, all non-wheelchair-accessible taxi vehicles consisting of ToT;
- All wheelchair-accessible taxi vehicles consisting of ToT, MV-1, and Toyota Sienna wheelchair-accessible vehicles; and
- The sale of the 2,000 additional wheelchair-accessible taxi medallions (the sale of these medallions is on hold due to court proceedings, but they are included in this analysis as a conservative worst-case scenario)

Table 10 shows the estimated value of the corporate medallion based on a comparison of Future Conditions with the ToT and without the ToT for the four different vehicle forecast scenarios previously outlined (See Section 2.0). Assuming the lease rate structure that would be put into place as part of the ToT rules package, the impact on the value of a corporate medallion would vary between reduction of 1.8% to an increase of 0.7%. To the extent that there could be a small negative impact, it would be driven primarily by the shorter retirement schedules available to ToTs (as conventional vehicles) as compared to the longer hybrid retirement schedules from which some operators benefit (i.e., some operators would have to replace their vehicles more often with the ToT than they would have when they were operating hybrid vehicles [which get longer retirement schedules], which increases overall expenses).

Table 10: Impact on the Value of a Corporate Taxi Medallion Future Conditions with the ToT

Scenario	Impact in Percent
Scenario 1	0.7%
Scenario 2	-0.9%
Scenario 3	-0.1%
Scenario 4	-1.8%

Source: HDR Analysis

Impacts on the value of an independent taxi medallion are shown in Table 11. Impacts are expected to range from a reduction in the value of the independent medallion from 0.1% to 2.6%.

Table 11: Impact on the Value of a Independent Taxi Medallion Future Conditions with the ToT

Year	Impact in Percent
Scenario 1	-0.1%
Scenario 2	-1.3%
Scenario 3	-1.2%
Scenario 4	-2.6%

Source: HDR Analysis

The small negative impact on the value of the independent medallion is driven by some operators' having to retire their vehicles more frequently (as described above) and by fuel costs. That is, owner-operators are responsible for fuel costs while they are driving the vehicle themselves, and with the ToT some owner-operators who had been benefiting from very low fuel costs by operating hybrid vehicles would face somewhat higher fuel expenses with the ToT.

Under any of the above scenarios, the impact on the value of a medallion would not be anticipated to result in a significant adverse impact on the taxi industry as whole per CEQR standards. That is, it would not substantially impair the ability of the taxi industry to continue operating in the City. Although the *2012 CEQR Technical Manual* does not define a particular impact threshold for what is determined "significant" by CEQR standards as it pertains to impacts on specific industries, even the worst-case impacts projected here are well under the 5% threshold used as a standard elsewhere the *2012 CEQR Technical Manual.*

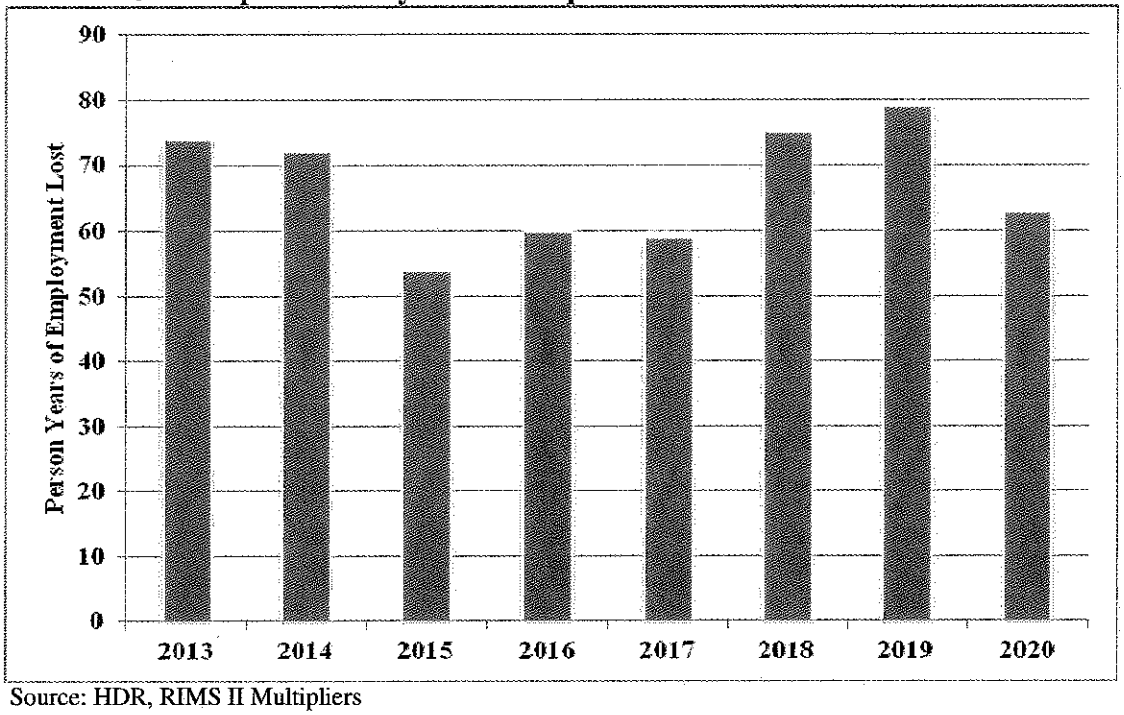
4.5.2 Automotive Body, Interior and Glass Repair Industry

The introduction of the ToT would decrease hack-up costs from approximately $2,650 to approximately $600 (based on surveys of providers of hack-up services[26] and coordination with Nissan) since hack-up in the Future with the ToT would be limited to the installation of taxi meters and the components of the T-PEP. The results of the assessment indicate that the introduction of the ToT would result in a net decrease in revenue for the automotive body,

[26] Based on quotes received from American, Oldecar and Community hack-up service providers, as told to TLC Chief of Safety and Emissions, April 2011,

interior and glass repair industry ranging from $4.6 million to $6.7 million per year (or a worse case impact of $6.7 million per year) in the Future with the introduction of the ToT for the four scenarios. The employment impacts measured on the basis of person-years of employment lost would vary from year to year depending on the number of vehicles that would be hacked-up in a year and the timing of retirement of vehicles in the taxi fleet. As a consequence, the impact of the introduction of the ToT on the automotive body, interior and glass repairs businesses would vary between 54 and 79 person-years depending on the year. Annual impacts on employment in person-years are shown in Figure 4. Declines in earnings are not projected to exceed an average of $1.8 million per year and the decline in the level of employment within the industry is not projected to exceed 79 person years of employment.

Figure 4: Person Years of Employment Lost Within the Automotive Body, Interior, and Glass Repair Industry as a Consequence of the Introduction of the ToT



Source: HDR, RIMS II Multipliers

As shown in Table 12, vehicle hack-up costs would decrease approximately 76% per vehicle in the Future with the ToT since the costs of installation of the taxi meter and the components of the T-PEP only account for 24% of current vehicle hack-up costs. As only the taxi meter and the components of the T-PEP would be installed locally, expenditures required to prepare the ToT for use in the City would be only approximately $630 per vehicle.

Table 12: Estimated Vehicle Hack-up Costs with the ToT

Existing Equipment	American	Oldecar	Community	Average
Meter	$450	$460	$463	$458
T-PEP	$200	$150	-	$175
Total in the Future with the ToT				**$633**

Source: Based on quotes received from American, Oldecar and Community hack-up service providers, as told to TLC Chief of Safety and Emissions, April 2011.

Table 13 summarizes the impact of the introduction of the ToT on the direct revenues, earnings and employment of the automotive body, interior and glass repair industry. The ToT is expected to be implemented in 2013 and expenditures related to hack-up are expected to decline from 2013 onwards. Average change in expenditure was calculated using the four scenarios, which, in part, assume different lifecycle of vehicles, resulting in different timing of hack-ups. Average changes in expenditures related to hack-ups reflect change in expenditure per hack-up as well as the expected timing of hack-ups. The results of the analysis indicate that the decline in revenue in the hack-up industry would vary between $4.98 million and $6.74 million per year in the Future with the introduction of the ToT. Impacts are not expected to exceed 79 person years of employment or a decline in revenue of $6.74 million. Declines in earnings are not projected to exceed an average of $1.82 million per year and the decline in the level of employment within the industry is not projected to exceed 79 per years of employment.

Table 13: Economic Impact on the Automotive Body, Interior and Glass Repair Industry as a Consequence of the Introduction of the ToT

Condition	Metric	2013	2014	2015	2016	2017	2018	2019	2020	Worst Case Annual Impact
Future without the ToT	**Expenditure per Hack-up in $**	2,647	2,647	2,647	2,647	2,647	2,647	2,647	2,647	
Future with the ToT	**Expenditure per Hack-up in $**	633	633	633	633	633	633	633	633	-
Average Change in Exp.	**Change Exp. In $ in thousands**	(6,311)	(6,066)	(4,573)	(5,039)	(4,979)	(6,366)	(6,739)	(5,342)	$(6,739)
Earnings:	**Direct Impact in $ in thousands**	(1,704)	(1,638)	(1,235)	(1,360)	(1,344)	(1,719)	(1,820)	(1,443)	$(1,820)
Employment:	**Direct Impact in Person Years**	74.0	71.1	53.6	59.1	58.4	74.6	79.0	62.6	79.0

Source: HDR Analysis

The estimated impacts on employment represent 3.5% of the employment of the automotive body, interior and glass repair industry and less than 2.4% of earnings of automotive body, interior and glass repair industry. This is not a significant adverse impact per CEQR standards

because it would not substantially impair the ability of the automotive body, interior and glass repair industry to continue operating in the City. Although the *2012 CEQR Technical Manual* does not define a particular impact threshold for what is determined "significant" by CEQR standards as it pertains to impacts on specific industries, even the worst-case impacts projected here are well under the 5% threshold used as a standard elsewhere in the *2012 CEQR Technical Manual.*

4.5.3 Outdoor Advertising Industry

The current form of exterior/outdoor advertising (rooftop lights) may not be permitted on ToT vehicles. However, TLC is currently considering alternative forms of exterior advertising that will be permitted on the ToT vehicles. Permitted exterior advertising could include decal advertisements on the left and right sides of the vehicle underneath the rear window, decal advertisements under the window of the sliding door and/or on the rear of the vehicle, or some type of "shark fin," which is a narrow advertising board mounted on the roof the vehicle. Based on figures provided by the industry and TLC's intention to allow exterior advertising in some form on the ToT, it is conservatively estimated that the amount of revenue that would be generated for the outdoor advertising industry from advertisements on the ToT could be reduced by as much as 50% as compared to what would be generated by offering rooflight advertising in its current form.

4.6 Identification of Significant Adverse Environmental Impacts

As summarized in Table 10, the Proposed Action would reduce the value of a corporate taxi medallion by a maximum of 1.8% . As summarized in Table 11, the Proposed Action would reduce the value of an independent medallion by a maximum of 2.6%.

Impacts due to the ToT are limited to costs, as revenues under all four scenarios are higher with the Proposed Action than without the Proposed Action because of the lease cap and gas surcharge adjustments that would be put into place as the ToT is implemented. The cost of operating a taxi vehicle with the Proposed Action on average is slightly more expensive than the cost of operating the taxi fleet without the Proposed Action. The cost of operating a taxi vehicle is driven by two factors: the purchase price of the vehicle and the assumed lifecycle of the vehicle (i.e., how often the owner must replace it). On average, with the ToT program, the purchase price does not impact operating costs but vehicle retirement cycles do have a modest impact. The taxi fleet without the Proposed Action has a significant proportion of hybrids, which TLC regulations permit to have longer lifecycles (averaging approximately 6 years) compared to ToT and other conventional vehicles (averaging between 4 and 5 years).

Not considering the different lifecycles of all vehicles, the fleet with the Proposed Action is only marginally more expensive, $300 to $400 per year on average, a difference that is more than offset by the reduction in hack-up costs that will accompany the ToT. The assumption of longer lifecycles for hybrid vehicles equal to 6 years increases the overall fleet acquisition costs by about $300 to $400 (annually) after accounting for hack-up costs for the fleet with the Proposed Action (relative to the fleet without the Proposed Action). Similarly, assuming shorter lifecycles for ToT and conventional vehicles equal to 4 years (Scenarios 3 & 4) increases overall average

annual fleet acquisition costs by approximately $700 after accounting for hack-up costs for the fleet with the Proposed Action (relative to the fleet without the Proposed Action).

Another factor negatively impacting the net revenues earned by medallion owners who operate their medallions under the fleet model is that under the "high gas price scenarios", the net revenue obtained from the fuel surcharge would be higher without the ToT as compared to with ToT. Compared to the Future without the Proposed Action, if gas prices follow "high" EIA projections, the introduction of the ToT decreases the profits a fleet could generate through the fuel surcharge. As discussed earlier, the fuel efficiency of the taxi fleet is also impacted by the scenarios' two conventional vehicle lifecycle assumptions because the scenarios that assume shorter lifecycles for conventional vehicles (4 years rather than 5) result in a taxi fleet that turns over more quickly, resulting in a higher proportion of hybrid vehicles' being adopted.

For independent medallions, revenues are slightly higher with the Proposed Action than without the Proposed Action because they could be expected to charge the higher long term lease rates for second shift drivers to mirror the DOV lease caps that would go into effect with ToT. Fuel costs are an important factor driving the small negative impacts of ToT on independent medallions because fuel costs for an owner-driver would average about $250-$850 more per year with the ToT than without it (depending on future fuel price assumptions). Owner-operators would face increases in vehicle purchase expenses that are similar to those that would be faced by vehicle purchasers under other models of operation. That is, vehicle ownership costs are on average higher because some owners would have to replace their ToT vehicles more often than they would have been required by TLC regulations to replace their hybrid vehicles.

Given the significant growth in medallion values that has occurred in recent years,[27] a reduction of a maximum of 1.8% in value of a corporate taxi medallion or a reduction of a maximum of 2.6% in the value of an independent taxi medallion would not result in a significant adverse effect on the yellow taxi industry according to CEQR standards. That is, due to the health of the taxi market, as reflected by recent growth in medallion values, a reduction in medallion value of the magnitude projected by this analysis would not substantially impair the ability of the taxi industry to continue operating in the City.

The estimated impacts in terms of lost revenue, earnings and employment for the automotive body, interior and glass repair industry, which includes hack-up service providers, represent less than 3.5% of the employment and less than 2.5% of the earnings of this industry. Although there could be a noticeable impact on specific businesses that specialize in hack-up services, the result of this analysis indicates that introduction of the ToT would not result in a significant adverse effect on the automotive body, interior and glass repair industry since it would not substantially impair the ability of this industry to continue operating in the City.

Although the amount of revenue that would be generated for the exterior advertising industry from potential forms of advertising on the ToTs may be reduced by up to 50% of that generated by roof-light advertising, given the size of the outdoor advertising industry in New York, in

[27] Medallion values have skyrocketed in recent years. According to records maintained by TLC, in 2001 the average sale price of an independent medallion was $188,958 and the average sale price of a corporate medallion was $209,458. The average independent medallion sale price thus far in 2012 was over $700,000. The average corporate medallion sale price thus far in 2012 was $1,000,000.

general, and Verifone Systems, in particular, the decrease in revenues that would result from advertising that would be allowed with the ToT would not result in a significant adverse impact on the exterior advertising industry in New York.

Since the introduction of the ToT would not result in a significant adverse socioeconomic impact on the City taxi industry, the automotive body, interior and glass repair industry or the outdoor advertising industry, the result of this analysis indicate that the Proposed Action would not result in significant adverse impacts on socioeconomic conditions in the City.

5.0 COMMUNITY FACILITIES AND SERVICES

The Proposed Action would not physically alter or displace any existing or planned community facility, nor would it add new populations that would create demand for services greater than the ability of existing facilities to provide those services. Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, it would not have the potential to result in a significant impact on community facilities and services, and a detailed analysis was not undertaken to determine if the Proposed Action would result in a significant adverse impact to community facilities and services.

6.0 OPEN SPACE

Consistent with guidance in the *2012 CEQR Technical Manual*, the Proposed Action would not have the potential to result in either direct or indirect impacts on open spaces. The Proposed Action would not result in direct impacts on open space resources because:

- The Proposed Action would not result in a physical loss of public open space by encroaching on an open space or displacing an open space;
- The Proposed Action would not change the use of an open space so that it no longer serves the same user population;
- The Proposed Action would not limit public access to an open space; and
- The Proposed Action would not cause increased odors or shadows on public open space that would affect its usefulness, whether on a permanent or temporary basis. As documented in the air quality and noise impact analyses included in this supplementary document, the Proposed Action would also not result in a significant adverse impact on noise or air pollutant levels at any open space resource.
- The Proposed Action would also not result in indirect impacts on open space resources because:
- The Proposed Action would not generate any additional residents or 125 workers in an underserved area, as defined in the *2012 CEQR Technical Manual*;
- The Proposed Action would not generate any additional residents or 750 workers in a well-served area, as defined in the *2012 CEQR Technical Manual*; and

- The Proposed Action would not generate any additional residents or 500 employees in an area outside of an undeserved or well-served area.

- Therefore, in conformance with the *2012 CEQR Technical Manual* screening criteria, it would not have the potential to result in a significant impact on open space resources and a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact on open space.

7.0 SHADOWS

The Proposed Action would not result in new structures—or additions to existing structures including the addition of rooftop mechanical equipment—of 50 feet or more or be located adjacent to, or across the street from, a sunlight-sensitive resource. Therefore, in conformance with the *2012 CEQR Technical Manual* screening criteria, it would not result in a significant impact on sunlight-dependent resources, and a detailed analysis is not required to determine if the Proposed Action would cause a significant adverse impact from new shadows.

8.0 HISTORIC AND CULTURAL RESOURCES

The Proposed Action would not result in any in-ground disturbance that could potentially affect archaeological resources. Nor would the Proposed Action result in:

- New construction, demolition, or significant physical alteration to any building, structure, or object;

- A change in scale, visual prominence, or visual context of any building, structure, or object or landscape feature;

- Construction, including but not limited to, excavating vibration, subsidence, dewatering, and the possibility of falling objects;

- Additions to or significant removal, grading, or replanting of significant historic landscape features;

- Screening or elimination of publicly accessible views; or

- Introduction of significant new shadows or significant lengthening of the duration of existing shadows on an historic landscape or on an historic structure.

Therefore, in conformance with the *2012 CEQR Technical Manual* screening criteria, the Proposed Action would not have the potential to result in a significant impact on historic and cultural resources and a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact to historic and cultural resources.

9.0 URBAN DESIGN AND VISUAL RESOURCES

The Proposed Action would not result in the construction of a new structure or alteration of an existing structure, nor would it require any zoning change. Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, the Proposed Action would not have the potential to

result in a significant impact on urban design and visual resources and a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact to urban design and visual resources.

10.0 NATURAL RESOURCES

The Proposed Action is not site-specific and entails the introduction of the ToT vehicle as the City's taxi. Therefore, the Proposed Action would not:

- either contain, or be near or contiguous to, natural resources or important subsurface conditions;
- contain any "built resource" that is known to contain or may be used as a habitat by a protected species as defined in the Federal Endangered Species Act (50 CFR 17) or the State's Environmental Conservation Law (6 NYCRR Parts 182 and 193); or
- contain any subsurface conditions, the disruption of which might affect the function or value of an adjacent or nearby natural resource.

Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, the Proposed Action would not have the potential to result in a significant impact on natural resources, and a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact to natural resources.

11.0 HAZARDOUS MATERIALS

The Proposed Action is not site-specific and entails the authorization of the TLC to introduce the ToT vehicle as the City's taxi. The Proposed Action would not require any new construction or in-ground disturbance. Consequently, the Proposed Action would not:

- increase pathways to human or environmental exposure on a site with elevated levels of hazardous materials;
- introduce new activities or processes using hazardous materials causing the risk of human or environmental exposure to be increased; or
- introduce a population to potential human or environmental exposure from off-site sources.

Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, the Proposed Action would not have the potential to result in a significant impact on hazardous materials and a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact on hazardous materials.

12.0 WATER AND SEWER INFRASTRUCTURE

The Proposed Action is not site-specific and would result in the introduction of the ToT vehicle as the City's taxi. Regarding water supply, the proposed project would not result in an

exceptionally large demand for water (e.g., those that are projected to use more than one million gallons per day such as power plants, very large cooling systems, or large developments); nor does it involve a project site that is located in an area that experiences low water pressure. Regarding the demand on wastewater and stormwater conveyance and treatment, the Proposed Action would not increase population density; nor would it increase impervious surfaces. Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact to water and sewer infrastructure.

13.0 SOLID WASTE AND SANITATION SERVICES

The Proposed Action would not result in solid waste generation associated with residential, institutional, commercial, and industrial uses. Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact to solid waste and sanitation services.

14.0 ENERGY

The Proposed Action is not site-specific and would result in the introduction of the ToT vehicle as the City's taxi, and does not involve any facility that would affect the transmission or generation of energy. Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact to energy transmission or generation.

15.0 TRANSPORTATION

15.1 Traffic Analysis

The Proposed Action is limited to the introduction of the Nissan NV200 as the vehicle for purchase for use as a taxi and does not introduce additional vehicles to the city roadways. The *2012 CEQR Technical Manual* screening criteria sets the basic threshold for a detailed traffic analysis at 50 vehicles trips per hour related to the proposed action traveling through an intersection. Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact to traffic.

15.2 Transit Analysis

The *2012 CEQR Technical Manual* thresholds for a detailed transit analysis are A) 200 passengers per peak hour related to a subway/rail line or station or B) 50 bus trips in a single direction on a single route. The introduction of the Nissan NV200 as the vehicle for purchase as use for a taxi is not expected to increase transit trips. Therefore, a detailed transit analysis is not required.

15.3 Pedestrian Analysis

The *2012 CEQR Technical Manual* threshold for a detailed pedestrian analysis is 200 pedestrian trips per peak hour. The Proposed Action is limited to the introduction of the Nissan NV200 as the vehicle for purchase for use as a taxi. The introduction of the Nissan NV200 as the vehicle for purchase for use as a taxi is not expected to increase pedestrian trips. Therefore, a detailed transit analysis is not required.

15.4 Parking

The Proposed Action is limited to the introduction of the Nissan NV200 as the vehicle for purchase for use as a taxi. Therefore, the Proposed Action is not expected to have an impact on any parking location.

16.0 AIR QUALITY

16.1 Introduction and Study Area Delineation

This section evaluates the impact of the Proposed Action on ambient air quality. The *2012 CEQR Technical Manual* indicates that an air quality assessment should consider:

- The impact of a proposed action on ambient air quality; and
- Where appropriate, the impact of other air pollution sources on a proposed action, for example when a proposed building would be located in the vicinity of a source of air pollution such as an electric power generation station.

Since the Proposed Action would not add or locate receptors or users near a major source of air pollution, the assessment included in this analysis is limited to the potential impact of the Proposed Action on ambient air quality. In completing an assessment of the impact of a proposed action, the *2012 CEQR Technical Manual* specifies that the impact assessment should evaluate the impact of construction and operation of a proposed action, including the operation-related effects of any on-site stationary sources of air pollution and the effects of any motor vehicles ("mobile sources") that would be generated by a proposed action. Therefore, the assessment included in this section is focused on an assessment of mobile source-related impacts that would result from the proposed ToT vehicles.

An estimate was completed on the change in air pollutant emissions that would occur with the taxi fleet if the future taxi fleet was not comprised of a variety of conventional and hybrid vehicles (the No Action) and was instead comprised of primarily ToT vehicles. The changes in emissions with the ToT vehicles were compared to emissions under the Existing Conditions and Future Conditions without the ToT vehicles to determine whether there would be a net increase in emissions with the ToT. See Section 2 of this EAS Supplemental Document for a description of the methodology used to forecast the projected No-Action taxi fleet mix.

Study Area Delineation

Since the Proposed Action has the potential to affect air quality emissions throughout the city, the study area for the total pollutant emissions from the projected taxi fleet encompasses the entire city.

16.2 Analysis Methodologies

Per the *2012 CEQR Technical Manual*, mobile source-related air quality pollutants may be of concern at a microscale level, due to elevated concentrations that may occur at particular locations in the vicinity of congested intersections. A detailed mobile source-related microscale air quality analysis is conducted for projects that add new vehicles to the roads, change traffic patterns, include parking lots or garages, or add new uses near roadways and parking facilities.

The *2012 CEQR Technical Manual* provides screening threshold values for carbon monoxide (CO) and inhalable fine particulate matter ($PM_{2.5}$) to determine if a detailed mobile source microscale analysis is required to assess the air quality impacts of a proposed project. The screening threshold values are based on the number of motor vehicles a project would add to the roadway network. Since the Proposed Action would not result in an increase in the number of taxi vehicles, a screening assessment was not applicable, and a detailed mobile source-related microscale air quality analysis was not warranted.

The total pollutant emissions from the taxi fleet for CO, inhalable coarse particulate matter (PM_{10}) and $PM_{2.5}$ was performed for the existing and Future Conditions with and without the Proposed Action scenarios. The total pollutant emissions from the taxi fleet was developed using the latest version of the USEPA MOBILE6.2 emissions model (September 24, 2003) with vehicle age distribution and mileage accumulation data for the projected 2020 taxi medallion fleet with and without the ToT.

The U.S. Environmental Protection Agency (USEPA) established a new 1-hour primary National Ambient Air Quality Standards[28] (NAAQS) for nitrogen dioxide (NO_2) on January 22, 2010. Major roadways are estimated to be responsible for the majority of the 1-hour NO_2 exposure. However, a dispersion modeling analysis could not be performed since NO_2 monitoring data is still being collected for locations near roadways. Therefore, a qualitative assessment of the impact of the Proposed Action on the 1-hour NO_2 NAAQS is provided in this chapter.

Provided below is a discussion of the air pollutants of concern, a description of the status of the region's compliance with established NAAQS, and a description of the methodology used to develop the air quality for the total pollutant emissions from the taxi fleet and the results of this assessment.

[28] http://www.epa.gov/air/criteria.html

16.3 Pollutants of Concern

The pollutants of concern for this assessment are those for which NAAQS have been established. Descriptions of the air pollutants for which NAAQS have been established and the status of the New York region regarding the attainment of the NAAQS are provided below.

16.3.1 National Ambient Air Quality Standards

As required by the Clean Air Act (CAA), the USEPA has established primary and secondary NAAQS for six air pollutants (40 CFR 50). The "primary" NAAQS have been established to protect the public health, while the "secondary" NAAQS have been established to protect the public welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the general welfare. These six pollutants for which NAAQS have been established are CO, particulate matter (which includes both PM_{10} and $PM_{2.5}$), lead (Pb), sulfur dioxide (SO_2), ozone (O_3), and NO_2. The NAAQS for these pollutants are provided in Table 14. As shown, NAAQS for SO_2, PM_{10}, $PM_{2.5}$, CO, O_3, and NO_2 are based on short-term averaging times (i.e., 1 hour, 3 hour, 8 hour and 24 hour). NAAQS based on long-term averaging times (i.e., 3 month, annual) are included for Pb, $PM_{2.5}$ and NO_2.

The pollutants for which NAAQS have been established are described below. Estimates were completed of the total CO and PM emissions that would be emitted in the year 2020 from the taxi fleet with and without the ToT. As described above, a screening assessment and detailed microscale analysis of the impact of the Proposed Action on CO and particulate matter (PM_{10} and $PM_{2.5}$) emissions was not deemed necessary since the Proposed Action would not result in an increase in the number of taxi vehicles. Other mobile source-related pollutants, such as O_3 and annual NO_2 are regional in nature, making a project level evaluation inappropriate.

Carbon Monoxide. CO is a colorless and odorless gas that is generated by the incomplete combustion of fossil fuels in motor vehicles and a broad range of industrial and power-generation facilities. CO from the Proposed Action would be generated from the incomplete combustion of fuel used by motor vehicles. An estimate was completed of the total amount of CO that would be emitted from the future taxi fleet in the year 2020. Since the ToT vehicles would emit less CO emissions than the current taxi fleet vehicles, a detailed microscale CO analysis is not warranted.

Ozone. Ozone is a molecule composed of three oxygen atoms. Ozone is not emitted directly from motor vehicles. Instead, it is formed in the lower atmosphere through the reaction of volatile organic compounds (VOCs) and Nitrous Oxides (NO_x) in the presence of sunlight. This reaction occurs comparatively slowly and ordinarily takes place far downwind from the site(s) of the actual emission of these air pollutants. Major sources of VOCs include on-road motor vehicles, solvents, fires, off-road equipment, residential wood combustion, waste disposal, and a broad range of industrial processes. Major sources of NO_x include on-road motor vehicles, electricity generation, off-road equipment, fossil fuel combustion, fires, and industrial processes. As stated above, Ozone is regional in nature, making a project level evaluation inappropriate.

Table 14: National Ambient Air Quality Standards

Pollutant	Primary	Secondary
CO		
1-Hour Average[1]	35 ppm	
8-Hour Average[1]	9 ppm	
Pb		
3 Month Rolling Average[2]	0.15 □g/m^3	0.15 □g/m^3
NO_2		
Annual Average	53 ppb	0.053 ppm
1-hour Average[3]	100 ppb	
O_3[4]		
8-Hour Average (2008 std)	0.075 ppm	0.075 ppm
8-Hour Average (1997 std)	0.08 ppm	0.08 ppm
$PM_{2.5}$		
24-Hour Average[5]	35 □g/m^3	35 □g/m^3
Annual Average[6]	15 □g/m^3	15 □g/m^3
PM_{10}		
24-Hour Average[7]	150 □g/m^3	150 □g/m^3
SO_2		
3-Hour Average[1]		0.5 ppm
1-Hour Average[8],[9]	75 ppb	

Source: EPA National Ambient Air Quality Standards.

Notes:

(1) Not to be exceeded more than once per year.

(2) Not to be exceeded.

(3) New standard promulgated February 9, 2010, effective April 12, 2010. 98th percentile of 1-hour measurements, averaged over 3 years.

(4) Former NYS Standard for ozone of 0.08 parts per million (ppm) was not officially revised via regulatory process to coincide with the Federal standard of 0.12 ppm which is currently being applied by NYS to determine compliance status. Compliance with the Federal 8 hour standards is determined by using the average of the 4th highest daily value during the past three years - which can not exceed 0.084 ppm or 0.075 ppm, effective May 27, 2008.

(5) 98th percentile, averaged over 3 years.

(6) Annual mean, averaged over 3 years.

(7) Not to be exceeded more than once per year on average over 3 years.

(8) 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.

(9) Final rule published June 22, 2010 and effective on August 23, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Particulate Matter, PM_{10} and $PM_{2.5}$. Particulate matter includes a broad range of air pollutants that exist as liquid droplets or solids, with a wide range of sizes and chemical composition. Particulate matter is emitted by both natural and anthropogenic sources. Natural sources include the condensed and reacted forms of natural organic vapors, salt particles resulting from the evaporation of sea spray, wind-borne pollen, fungi, molds, algae, yeasts, rusts, bacteria, and debris from living and decaying plant and animal life, particles eroded from beaches, desert, soil and rock, and particles from volcanic and geothermal eruptions and forest fires. Major anthropogenic sources of particulate matter result from the combustion of fossil fuels and wind blown fugitive emissions, including from vehicular exhaust, power generation, home heating, chemical and manufacturing processes, construction activities, agricultural activities, and mining.

USEPA has established NAAQS for two types of particulate matter, PM_{10} and $PM_{2.5}$. PM_{10} are all particles 10 microns in diameter and smaller and are emitted by a wide variety of stationary and fugitive emissions sources. Particulate matter less than 10 microns in diameter can pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. $PM_{2.5}$ are particles 2.5 microns in diameter and smaller. They can be directly emitted from sources such as forest fires and industrial combustion and process sources, or they can form when gases emitted from power plants, industrial sources and motor vehicles react in the air. Elevated concentrations of particulate matter can be found in the immediate vicinity of roadways due to the resuspension of fugitive dust and emission of particulate matter from motor vehicles, particularly from "heavy duty" vehicles such as large trucks. An estimate was completed of the total amount of PM that would be emitted from the taxi fleet in the year 2020. Since the ToT vehicles would emit the same PM emissions as the current taxi fleet vehicles and the fugitive dust emissions would not increase since the Proposed Action would not result in an increase in the number of motor vehicles on the roadway network, a detailed microscale PM_{10} and $PM_{2.5}$ analysis is not warranted.

Sulfur Dioxide. SO_2 emissions are generated from the combustion of sulfur-containing fuels, including oil and coal, largely from stationary sources such as power plants, steel mills, refineries, pulp and paper mills, and nonferrous smelters. Motor vehicles do not emit significant quantities of sulfur dioxide. Federal rules regarding the sulfur content in fuel for on-road vehicles has resulted in no significant quantities of SO_2 emitted from vehicular sources. Since the Proposed Action consists of the replacement of the existing taxi fleet with ToT vehicles, an evaluation of the SO_2 emissions as a result of the Proposed Action was not deemed to be appropriate.

Nitrogen Dioxide. As described above, NO_x (principally NO_2 and nitrogen oxide (NO)) is one of the principal precursors in the formation of ground-level ozone. NO_2 is emitted directly by combustion sources, including motor vehicles, or is formed in the atmosphere by oxidation of NO. In addition, NO_x reacts in the atmosphere to form nitrate particles, acid aerosols, as well as NO_2, which also cause respiratory problems, and contributes to the formation of acid rain, and atmospheric particles that cause visibility impairment in national parks. As described for O_3, the reactions that form NO_x occur comparatively slowly and ordinarily take place far downwind from the site(s) of actual air pollutant emissions. NO_2, a precursor to ozone, has been mostly of

concern farther downwind from large stationary point sources and not a local concern from mobile sources, therefore the NO_2 analysis typically consist of a stationary source analysis to determine compliance with the annual NO_2 NAAQS. However, as discussed at more length in Section 16.5.2, the USEPA established a new 1-hour primary NAAQS for NO_2 on January 22, 2010. Major roadways are estimated to be responsible for the majority of the 1-hour NO_2 exposure. However, a dispersion modeling analysis could not be performed since NO_2 monitoring data is still being collected for locations near roadways. Therefore, a qualitative assessment of the impact of the Proposed Action on the 1-hour NO_2 NAAQS is provided in this chapter.

Lead. Pb emissions are associated with industrial sources and, in the past, motor vehicles using gasoline containing lead additives. As leaded gasoline has been eliminated from use in motor vehicles in the United States, motor vehicle-related lead emissions have been substantially eliminated, resulting in a significant decline of ambient concentrations of lead. Therefore, an evaluation of the Pb emissions as a result of the Proposed Action was not deemed to be appropriate.

16.3.2 Attainment Status

The CAA requires that each state submit a plan ("State Implementation Plan" or "SIP") to the USEPA demonstrating attainment and maintenance of the NAAQS. Currently the City is designated as being in attainment with the NAAQS for CO, Pb, SO_2, and NO_2, and in "nonattainment" with the NAAQS for 8-hour O_3 and $PM_{2.5}$. While the City is in attainment with the NAAQS for CO, it was formerly in nonattainment status for this pollutant until 2002, when it was re-designated as attainment/maintenance for CO. The attainment/maintenance status requires that the responsible state air quality agency include requirements in a USEPA-approved SIP to assure that the area does not revert to nonattainment for CO.

Carbon Monoxide SIP

In demonstrating attainment and maintenance of compliance with the NAAQS for CO, the New York State Department of Environmental Conservation (NYSDEC), in conjunction with the City, submitted a SIP revision for CO to USEPA. The USEPA approved the control programs and contingency measures to reduce CO emissions to meet the CO NAAQS in the City area. Effective May 20, 2002, USEPA approved the *CO Maintenance Plan* (USEPA 2002) and re-designated the City area as in attainment for CO.

Ozone SIP

On August 9, 2007, the NYSDEC submitted a proposed revision to the ozone SIP for the New York Metro Area (NYMA) demonstrating attainment by June 15, 2013. This final proposed revision incorporates minor changes made in response to comments received from USEPA and the Manufacturers of Emission Controls Association on that proposal. It is also consistent with NYSDEC's request, submitted separately, to have NYMA reclassified from "moderate" to "serious" nonattainment. Serious nonattainment areas are required to demonstrate attainment within nine years of designation, or June 15, 2013.

The NYSDEC made its original recommendation to the USEPA in March 2009 for areas to be designated attainment, nonattainment and unclassifiable for the 2008 NAAQS. The USEPA delayed proposing final designations as required by the CAA by May 2010 in anticipation of its promulgation of another revision to the ozone NAAQS in late 2010. However, in September 2011, the USEPA announced the abandonment of that proposed revision and the plan to move forward with the 2008 NAAQS of 0.075 ppm. Therefore, in October 2011, the NYSDEC submitted a revised designation recommendation to the USEPA which took into account monitoring data through 2010 and recommended that the NYMA Metropolitan Statistical Area (MSA), excluding Putnam County, be designated as a nonattainment area for the 2008 ozone NAAQS. This petition has not been acted on by the USEPA.

Fine Particulate Matter ($PM_{2.5}$) SIP

In 2008, the NYSDEC prepared a revision to the $PM_{2.5}$ SIP for the NYMA demonstrating attainment of the $PM_{2.5}$ NAAQS by 2010. Based on updated air quality monitoring data, the 24-hour $PM_{2.5}$ NAAQS is now being met. Therefore, the NYSDEC petitioned the USEPA on May 5, 2011 to determine that the New York State portion of the NYMA has attained the 24-hour $PM_{2.5}$ NAAQS. This petition has not been acted on by USEPA.

16.4 Impact Assessment Methodology

An estimate was completed of the total amount of CO and PM that would be emitted from the entire taxi fleet based on emissions factors for motor vehicles included in the USEPA MOBILE6.2 emissions model. NYCDEP MOBILE6.2 default input files, which include taxi-specific emissions data, were modified for taxis, as described below, to account for the age and mileage accumulation distribution of the taxi fleet that is projected to be in place in 2020.

16.4.1 Taxi Emissions

The MOBILE6.2 emissions program was used to estimate the emissions for taxi fleet under Future Conditions without and with the Proposed Action. As mentioned above, the NYCDEP MOBILE6.2 default input files includes emissions estimates specific to taxis. These files were modified to account for the age and mileage accumulation distribution of the taxi fleet that would be in place in 2020 with and without the introduction of the ToT. The current City taxi fleet contains 13,237 vehicles, consisting of 53% conventional (non-hybrid) vehicles and 47% hybrid vehicles.

Emissions estimates were completed using emission factors for the following vehicle classifications:

- Light Duty Gasoline Vehicle (LDGV) – including conventional (non-hybrid) and wheelchair-accessible taxis in the Future Conditions without the Proposed Action; and wheelchair-accessible taxis and conventional and wheelchair-accessible ToT vehicles in the Future Conditions with the Proposed Action; and

- Super Ultra Low Emission Vehicle (SULEV) – hybrid taxis.

Since the vehicle distribution in the Future Conditions with and without the Proposed Action will be a mix of these vehicle classifications, a weighted average emission factor was calculated by multiplying the number of vehicles in each vehicle class by the appropriate emission factor for each vehicle class, adding the resulting emissions from each vehicle class and then dividing the total emissions by the overall vehicle volume.

In completing the assessment, it was assumed that the ToT vehicle in 2013, the first year in which the ToT would be available, would be a conventional vehicle. During subsequent years (2014 – 2020), it is assumed that the ToT vehicle would be a microhybrid vehicle,[29,30] which is defined by Nissan, the manufacturer of the ToT, as a gasoline-powered vehicle containing an advanced start-stop system with secondary battery system that can offer up to 10 percent or more reduction in fuel consumption and Carbon Dioxide (CO_2) emissions in City traffic conditions. It was conservatively assumed that the ToT vehicles were considered to be LDGVs (fully conventional vehicles) in completing the impact analysis.

Vehicle Age Distribution

The age distribution of the existing taxi medallions was modified based on TLC vehicle certification data for each of the 13,237 vehicles. The existing fleet of taxis were assumed to be retired in three to seven years, in conformance with vehicle retirement requirements identified in TLC vehicle retirement regulations 67-18 (NYCTLC Rules and Regulations. Chapter 67: Rules for Taxicab Hack-up and Maintenance. Effective April 1, 2011). New replacement taxi vehicles were introduced to the taxi fleet at the times at which the vehicles in the existing taxi fleet were assumed to retire. As vehicles retire, retiring vehicles were replaced based on a forecasted expected share of vehicle type/make/model (See Section 2 and Appendix for explanation of No-Action fleet forecast modeling).

The Future Conditions without and with the Proposed Action include an increase in the size of the vehicle fleet to include 2,000 new wheelchair-accessible taxi medallions.[31] For the purpose of the air quality analysis, the taxi fleet in the Year 2020 Future Conditions without the Proposed Action is assumed be comprised of 15,237 vehicles, consisting of 36% conventional vehicles and 64% hybrid vehicles (this is equivalent to No-Action Scenario 4 [see Chapter 2], the most conservative scenario to use for this analysis since it would compare a No-Action taxi fleet consisting of the largest number of hybrid vehicles (of the four No-Action Scenarios forecasted) to the taxi fleet in the Future with the Proposed Action with relatively few hybrid vehicles).

In the Future Conditions with the Proposed Action, non-wheelchair-accessible, non-alternative fuel medallion, taxi vehicles retiring in 2013 and later were assumed to be replaced by the ToT vehicle (the NV2000). This vehicle could be purchased with or without a wheelchair-accessible

[29] Per the ToT Contract Documents.

[30] A microhybrid vehicle is not a hybrid-electric vehicle similar to a Toyota Prius or a Ford Escape..

[31] In August 2012 a judge ruled that the New York State legislation authorizing the sale of 2,000 new accessible taxi medallions was invalid. The City plans to appeal this ruling. These additional medallions are included in the analysis to evaluate a reasonable worst-case scenario. Since inclusion of the additional 2,000 medallions in the analysis of the impact of the ToT would result in disclosure of equal or greater impacts than without their inclusion, the impact evaluation included in this assessment assumes sale of all 2,000 medallions by the year 2020.

package. When the ToT selling period begins, the ToT vehicle would be phased into taxi fleet as vehicles retire. Wheelchair-accessible vehicles retiring in 2013 and later were assumed to be replaced by ToT vehicles that have been modified to accept passengers with wheelchairs or by one of two other TLC-approved wheelchair-accessible vehicles.

Vehicle Mileage Accumulation Data

Current TLC safety and emissions inspections data of taxi medallions indicates that, on average, a City taxi is driven approximately 70,000 miles per year. Therefore, the total mileage accumulation rate by vehicle age for Existing Conditions, Future Conditions without the Proposed Action and the Future Conditions with the Proposed Action was assumed to be 0.70, since a mileage accumulation rate of 1.0 is defined in MOBILE6.2 as equivalent to 100,000 miles per year.

Ambient Temperature

Per the *2012 CEQR Technical Manual*, MOBILE6.2 Emission estimates were computed using an ambient temperature of 50°F in Manhattan for winter conditions.

16.5 Existing Conditions

The total estimated emissions of CO and PM that are emitted from the taxi fleet under the Existing Conditions are presented in Table 15 below.

Table 15: Total Existing (2011) Fleet Taxi Emissions

	Weighted Average Emissions (grams/vehicle-mile)	Taxi Fleet (vehicles)	Emissions (grams/fleet-mile) [1],[2]	Fleet Emissions (tons/year)[3]
PM_{10}	0.0247	13,237	330	25
$PM_{2.5}$	0.0112		150	11
CO	23.9765		317,380	24,489

Notes:

(1) Emissions were estimated at 2.5 mph, which are more conservative since the slower the speed the higher the NO_x emissions.

(2) The grams per fleet-mile represent the total NO_x emissions for each mile the total taxi fleet travels.

(3) Based on information provided by the TLC, which shows that each taxi vehicle travels approximately 70,000 miles per year.

16.6 Future Conditions without the Proposed Action

Estimated total taxi fleet CO and PM emissions in the Future (2020) without the Proposed Action are presented in Table 16 below.

Table 16: Total Fleet Taxi Emissions in the Future (2020) Conditions without the Proposed Action

	Weighted Average Emissions (grams/vehicle-mile)	Taxi Fleet (vehicles)	Emissions (grams/fleet-mile) (1),(2)	Fleet Emissions (tons/year)(3)
PM_{10}	0.0247	15,237	380	29
$PM_{2.5}$	0.0112		170	13
CO	23.0726		351,560	27,127

Notes:

(1) Emissions were estimated at 2.5 mph, which are more conservative since the slower the speed the higher the NO_x emissions.

(2) The grams per fleet-mile represent the total NO_x emissions for each mile the total taxi fleet travels.

(3) Based on information provided by the TLC, which shows that each taxi vehicle travels approximately 70,000 miles per year.

16.7 Future Conditions with the Proposed Action

The total fleet taxi emissions per mile predicted in the Future with the Proposed Action are presented in Table 17. Total taxi fleet emissions per mile in the Future with the Proposed Action are compared to the total fleet taxi emissions per mile during the Future Conditions without the Proposed Action in Table 18. As shown in Table 18, the Proposed Action would not result in an increase in PM_{10} and $PM_{2.5}$ emissions compared to emissions levels without the Proposed Action. The ToT project would result in a decrease of approximately 1,710 tons/year of CO emissions compared to the Future Conditions without the Proposed Action, assuming each vehicle would travel 70,000 miles/year.

Table 17: Total Fleet Taxi Emissions in the Future Conditions with the Proposed Action

	Weighted Average Emissions (grams/vehicle-mile)	Taxi Fleet (vehicles)	Emissions (grams/fleet-mile) (1),(2)	Fleet Emissions (tons/year)(3)
PM_{10}	0.0247	15,237	380	29
$PM_{2.5}$	0.0112		170	13
CO	21.6186		329,400	25,417

Notes:

(1) Emissions were estimated at 2.5 mph, which are more conservative since the slower the speed the higher the NO_x emissions.

(2) The grams per fleet-mile represent the total NO_x emissions for each mile the total taxi fleet travels.

(3) Based on information provided by the TLC, which shows that each taxi vehicle travels approximately 70,000 miles per year.

Table18: Total Fleet Taxi Emissions (tons/year)

	2011 Existing	2020 Future Conditions without the Proposed Action	2020 Future Conditions with the Proposed Action	Existing vs. Future Conditions with the Proposed Action	Future Conditions without the Proposed Action vs. Future Conditions with the Proposed Action
PM_{10}	25	29	29	4	0
$PM_{2.5}$	11	13	13	2	0
CO	24,489	27,127	25,417	928	(1,710)

Based on these results, the Proposed Action would not have a significant adverse impact on air pollutant emissions.

16.8 Impact of the Proposed Action on 1-hour NO2

Nitrogen oxides (NO_x) is a general term for two air pollutants, nitrogen oxide (NO) and nitrogen dioxide (NO_2), that are produced during the combustion of fuels in stationary and mobile sources of air emissions. NO_x and volatile organic compounds, react in the atmosphere in the presence of sunlight to form photochemical smog, which includes ozone and other oxidants that have been shown to cause serious adverse health effects. Most (typically 90% or more) of the NO_x emitted as a result of combustion is in the form of NO and, once emitted, reacts in the atmosphere with oxygen and hydrocarbons to form ozone and NO_2.

In 1972, the USEPA established a primary (health based) NAAQS for NO_2, as the principal indicator pollutant for NO_x, at 53 parts per billion (ppb), based on an annual arithmetic average. On January 22, 2010, the USEPA established a new additional 1-hour primary NAAQS for NO_2 of 100 ppb based on the 3-year average of the 98th percentile of the daily maximum 1-hour average concentrations. The new standard became effective on April 12, 2010.

The USEPA is in the process of identifying areas that they intend to designate as "nonattainment" based on recorded exceedances of the 1-hour NO_2 NAAQS. It is USEPA's further intention to designate other areas of the country as "attainment" where monitoring data indicates compliance, or as "unclassifiable" where there is insufficient monitoring data to determine whether the 1-hour NO_2 NAAQS is being attained. Existing ambient air quality monitoring networks for NO_2 are focused on estimating the general population exposure annual concentrations of NO_2 against the 53 ppb annual arithmetic NAAQS for NO_2. These networks, including the City air quality monitoring network, do not include monitors near major roadways that could measure localized concentrations of NO_2. It is critical to measure NO_2 levels near roadways since mobile sources of NO_2 are responsible for the significant portion of the public's exposure to 1-hour NO_2. Regulations promulgated by the USEPA (75 CFR 6479, February 9, 2010) require that states site NO_2 monitors near roadways, and that such monitors be in service by January 1, 2013. Since the new 1-hour NO_2 NAAQS is based on the 3-year average of the 98th percentile of the daily maximum 1-hour average concentrations of NO_2, sufficient air quality data from the new network will not be available to determine compliance with the new 1-hour

NO_2 NAAQS until after 2015, three years after the initiation of monitoring for 1-hour NO_2 near roadways.

Consistent with guidance in the *2012 CEQR Technical Manual*, it is premature to conduct a detailed quantitative assessment of the impact of NO_2 emissions from the Proposed Action on ambient levels of NO_2, given the lack of 1-hour NO_2 ambient air quality data for the City to accurately estimate background levels of NO_2 near roadways. Also, because the conversion of NO_x to NO_2 in the atmosphere can vary substantially over short distances, a detailed quantitative assessment of the impact of NO_x emissions from the Proposed Action on 1-hour ambient levels

of NO_2 would not provide for a meaningful ability to predict exceedances of the one-hour standard. As a consequence, the assessment of the impact of the Proposed Action on NO_2 was limited to:

- summarizing the available existing 1-hour NO_2 monitoring data at monitoring stations in the City;
- assessing the monitoring data to determine whether there is an existing exceedance of the 1-hour NO_2 standard; and
- qualitatively evaluating the potential effects of the Proposed Action on ambient levels of NO_2, based on available monitoring data and the proximity of existing monitors to traffic corridors.

Ambient air quality in the City is monitored by the NYSDEC as part of the federally- mandated National Air Monitoring Stations Network and the State and Local Air Monitoring Stations Network. The NYSDEC continually measures levels of pollutants in the air, including gaseous criteria pollutants (ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide) and particulate matter. Of the over 80 ambient air quality monitoring stations operated in New York State by NYSDEC, not all of which measure every pollutant, only two ambient air quality monitoring stations measure NO_2 in the City. As stated above, ambient monitoring of NO_2 performed at these monitoring stations is used to estimate the general population exposure annual concentrations of NO_2 against the 53 ppb annual arithmetic NAAQS for NO_2. These monitoring stations are not near major roadways. The two sites that measure NO_2 are at the NY Botanical Garden Pfizer Lab in the Bronx and at Queens College in Queens). Ambient one-hour NO_2 concentrations based on the 98th percentile of daily maximum 1-hour concentrations for the last three years recorded at these two stations are provided in Table 19 below. As shown in Table 19, background concentrations of 1-hour NO_2 were well below the NAAQS standard of 100 ppb for NO_2.

Table 19: 98th Percentile Daily Maximum One-Hour Average NO2 Concentrations (in ppb)

Station	Location	2009	2010	2011	3-Year Average
Botanical Gardens	Bronx	66.0	70.0	60.7	65
Queens College 2	Queens	67.0	69.0	66.3	67

Source: Data provided via e-mail from Russ Twaddell, NYSDEC Bureau of Air Quality Surveillance.

Total annual NO_x emissions were calculated using USEPA's MOBILE6.2 mobile source emission factor model for the following scenarios:

- The existing taxi fleet of 13,237 conventional, wheelchair-accessible and hybrid taxis in 2011;
- Future Conditions without the Proposed Action (taxi fleet of 15,237 conventional, wheelchair-accessible and hybrid taxis) in 2020; and
- Future Conditions with the Proposed Action (taxi fleet of 15,237 wheelchair-accessible, ToT conventional and ToT wheelchair-accessible taxis) in 2020.

As shown on Table 20, the existing taxi fleet of 13,237 vehicles in 2011 is estimated to produce approximately 426 tons of NO_x per year, and the taxi fleet of 15,237 vehicles (which conservatively includes 2,000 additional taxi medallions that the City is seeking authorization to sell by appealing a court ruling invalidating the law authorizing the sale of these medallions) in the 2020 Future Condition without the Proposed Action is predicted to produce approximately 401 tons of NO_x per year, 25 tons of NO_x per year less than existing levels. The reduction in emissions in the 2020 Future Condition without the Proposed Action compared to existing levels is due to the lower NO_x emission rate of the 2020 taxi fleet under Future Conditions without the Proposed Action (0.341 grams per vehicle mile, or 5,200 grams per fleet-mile) compared to the NO_x emission rate of the existing (2011) taxi fleet (0.417 grams per vehicle mile, or 5,520 grams per fleet-mile). The future fleet of 15,237 vehicles in 2020 that would be in place with the Proposed Action would produce approximately 423 tons of NO_x per year, which is an increase of 22 tons of NO_x per year when compared to the estimated NO_x emissions for the Future Conditions without the Proposed Action. The increase in emissions in the 2020 Future Condition with the Proposed Action compared to 2020 Future Conditions without the Proposed Action levels is due to the higher NO_x emission rate of the 2020 taxi fleet under Future Conditions with the Proposed Action (0.360 grams per vehicle mile, or 5,480 grams per fleet-mile) compared to the NO_x emission rate of the 2020 taxi fleet under Future Conditions without the Proposed Action (0.341 grams per vehicle mile, or 5,200 grams per fleet-mile).

Table 20: NO_x Emissions of the Existing and Future (2020) Taxi Fleet

Analysis Condition	Weighted Average NO_x Emissions (grams/vehicle-mile)	Taxi Fleet (vehicles)	NO_x Emissions (grams/fleet-mile) [1],[2]	Fleet NO_x Emissions (tons/year)[3]
2011 Existing Conditions	0.417[4]	13,237	5,520	426
2020 Future Conditions without the Proposed Action	0.341[5]	15,237	5,200	401
2020 Future Conditions with the Proposed Action	0.359[6]	15,237	5,480	423
Change from Existing to Future Conditions without the Proposed Action				**(25)**
Change from Future Conditions without the Proposed Action to Future Conditions with the Proposed Action				**22**

Notes for Table 20:

(1) Emissions were estimated at 5 mph, which are more conservative since the slower the speed the higher the NO_x emissions.

(2) The grams per fleet-mile represent the total NO_x emissions for each mile the total taxi fleet travels.

(3) Based on TLC Safety and Emissions data, which show that the average taxi vehicle travels approximately 70,000 miles per year.

(4) Weighted emission factor for Existing Conditions is based on an emission factor for conventional and wheelchair-accessible taxis of 0.505 multiplied by the 8,486 conventional and wheelchair-accessible taxis, plus the emission factor for hybrid taxis of 0.26 multiplied by 4,751 hybrid taxis, divided by a total of 13,237 taxis in the Existing Conditions.

(5) Weighted emission factor for Future Conditions without the Proposed Action based on an emission factor for conventional and wheelchair-accessible taxis of 0.298 multiplied by the 5,534 conventional and wheelchair-accessible taxis, plus the emission factor for hybrid taxis of 0.366 multiplied by 9,703 hybrid taxis, divided by the total 15,237 taxis in the Future Conditions without the Proposed Action.

(6) Weighted emission factor for Future Conditions with the Proposed Action based on an emission factor for wheelchair-accessible taxis of 0.317 multiplied by the 1,528 wheelchair-accessible taxis, plus the emission factor for hybrid taxis of 0.187 multiplied by 273 hybrid taxis, plus the conventional ToT taxi emission factor of 0.371 multiplied by the 12,735 conventional ToT taxis, plus the wheelchair-accessible ToT taxi emission factor of 0.31 multiplied by 701 wheelchair-accessible ToT taxis, divided by the total 15,237 taxis in the Future Conditions with the Proposed Action.

As shown in Table 20 above, total NO_x emissions from the taxi fleet are expected to decrease by less than one percent[32] between the existing and the 2020 Future Conditions with the Proposed Action. Assuming a similar decrease in the monitored background ambient concentrations of 1-hour NO_2 (65 ppb at the Botanical Gardens and 67 ppb at the Queens College stations), it is not expected that the 1-hour NO_2 NAAQS of 100 ppb would be exceeded due to the Proposed Action. Since the taxi vehicles represents approximately 54 percent of the total vehicles at this intersection, the increase in localized NO_x emissions from taxis at roadways would not be expected to increase more than six (6) percent[33], based on the difference between 2020 Future Conditions with and without the Proposed Action. As such, the proposed ToT is not expected to result in a significant adverse impact on NO_x and NO_2 concentrations in the City. Overall NO_2 emissions from the total motor vehicle fleet in the City are also expected to decrease as a consequence of the replacement of the existing motor fleet with newer vehicles with lower NO_x emission rates, as required under USEPA emissions standards applicable to new gasoline and diesel-fueled highway vehicles.

16.9 Identification of Significant Adverse Environmental Impacts

As shown in Table 18 and Table 20, the results of the air quality anlaysis indicate that the Proposed Action would not result in a significant adverse impact on PM_{10}, $PM_{2.5}$, CO, NO_x and NO_2 concentrations in the City since the Proposed Action would not result in an increase in PM_{10}

[32] Decrease of less than one percent in NO_x emissions for the taxi fleet calculated based on the following calculation: concentration in 2020 Future Conditions with the Proposed Action (423 tons/year) minus Existing Conditions concentration (426 tons/year) divided by the concentration in the Existing Conditions (426 tons/year).

[33] Increase of less than six (6) percent in NO_x emissions for the taxi fleet calculated based on the following calculation: concentration in 2020 Future Conditions with the Proposed Action (423 tons/year) minus concentration in 2020 Future Conditions without the Proposed Action (401 tons/year) divided by the concentration in the 2020 Future Conditions without the Proposed Action (401 tons/year).

and $PM_{2.5}$ emissions and would result in a decrease in CO, NO_x and presumably NO_2 emissions. Therefore, the proposed ToT program would not result in a significant adverse impact to air quality.

17.0 GREENHOUSE GAS EMISSIONS

17.1 Introduction and Study Area Delineation

Provided in this chapter is an assessment of the impact of the Proposed Action on greenhouse gas (GHG) emissions. The assessment conforms to guidance included in the *2012 CEQR Technical Manual*, including an assessment of the consistency of the Proposed Action with the City's citywide GHG reduction goal that was developed for planning purposes as part of PlaNYC.

As indicated in the *2012 CEQR Technical Manual*, a GHG consistency assessment is typically performed for the following types of projects:

- City capital projects
- Projects that may require:
  - additional power generation; or
  - new regulations or other actions that would fundamentally change the City's solid waste management system.
- Projects that would result in the development of 350,000 square feet or greater.

The Proposed Action would result in the replacement of the existing taxi fleet with the ToT and would not require any construction activities or include any on-site development. The Proposed Action is neither a City capital project nor a new development, would not require additional power generation, or include new regulations or other actions that would fundamentally change the City's solid waste management system. Therefore, it is unlikely to produce GHG emissions that may result in inconsistencies with the City's GHG reduction goal to a degree considered significant. Nonetheless, this chapter includes an estimate of the GHG emissions that would be generated with the Proposed Action, and an assessment of the Proposed Action's consistency with the City's citywide GHG reduction goal.

17.2 Analysis Methodologies

As indicated in the *2012 CEQR Technical Manual*, the global climate is changing due to increases in GHG emissions. Effects on the environment due to climate change include increases in temperature, rising sea levels, changes in levels of precipitations, more severe storms, and a broad range of other effects. To address these concerns locally, the City passed the City Climate Protection Act (Local Law 22 of the Administrative Code) in 2008 as part of PlaNYC, with the purpose of reducing citywide 2005 GHG emissions by 30 percent by 2030.

The impact of the Proposed Action on GHG emissions is assessed on the basis of the total amount of emissions of the following six GHGs regulated under the Kyoto Protocol (an international agreement adopted in 1997 that is linked to the United Nations Framework Convention on Climate Change): CO_2, nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons

(HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The common anthropogenic sources of each of the six gases include:

- CO_2: fossil fuel combustion, forest clearing, cement production
- N_2O: landfills, production and distribution of natural gas and petroleum, anaerobic digestion, rice cultivation, fossil fuel combustion
- CH_4: fossil fuel combustion, fertilizers, nylon production, manure
- HFCs: refrigeration gases, aluminum smelting, semiconductor manufacturing
- PFCs: aluminum production, semiconductor manufacturing
- SF_6: electrical transmissions and distribution systems, circuit breakers, magnesium production

As detailed in Table 21, the global warming potential of these GHGs vary from one another. Recognizing this difference in global warming potential, the estimate of GHG emissions is provided on the basis of equivalent tons of CO_2 , the most common of the anthropogenic GHGs. The total equivalent tons of CO_2 (CO_{2e}) is calculated by multiplying the estimated tons of each GHG by the Global Warming Potential of each GHG compared to that of CO_2.

Table 21: Global Warming Potential

Greenhouse Gas	Global Warming Potential
CO_2 - Carbon Dioxide	1
CH_4 - Methane	21
N_2O - Nitrous Oxide	310
HFCs - Hydrofluorocarbons	140 – 11,700
PFCs - Perfluorocarbons	6,500 – 9,200
SF_6 - Sulfur Hexafluoride	23,900

Source: *2012 CEQR Technical Manual*

As indicated in the *2012 CEQR Technical Manual,* a GHG impact assessment consists of estimation of the direct and indirect emission of GHGs from operations, mobile sources and construction activities from a Proposed Action, and an assessment of the consistency of the project with the City's citywide 30% GHG reduction goal from 2005 levels. As indicated in the *2012 CEQR Technical Manual,* direct GHG emissions from a Proposed Action include:

- GHG emissions from both on- and off-site generation of electricity required to operate the Proposed Action;
- GHG emissions from on-site industrial processes and boilers;
- Fugitive GHG emissions generated during construction of a project, including emissions from the operation of construction vehicles and equipment, and emissions resulting from the manufacture or transportation of construction materials used for the project; and

- Mobile source emissions that are produced by fleet vehicles owned or leased, and operated as part of the Proposed Action.

Indirect GHG emissions include emissions from the generation of electricity and/or steam from off-site facilities.

Since the Proposed Action would not include any construction activities or include any on-site operations, an assessment of operation and construction emissions was not warranted, and the GHG impact assessment was limited to:

- Estimation of the amount of GHGs that would be emitted by the taxi fleet in 2020, the first year in which the entire taxi fleet would be replaced with the ToT with the Proposed Action, and

- Assessment of the consistency of the Proposed Action with the City's citywide GHG reduction goal.

The GHG emissions from the Proposed Action were estimated using the following steps:

- Estimation of the number of taxi vehicular trips and average length of trip with the Proposed Action;

- Calculation of the Vehicle Miles Traveled (VMT) by the taxi fleet with the Proposed Action; and

- Estimation of the GHG emissions with the Proposed Action as tons/year of CO_{2e} using the mobile GHG emissions calculator, provided in the *2012 CEQR Technical Manual.*

The following assumptions were applied in completing the estimation of tons of CO_{2e} with the Proposed Action:

- All taxi vehicles, including conventional and hybrid wheelchair-accessible and non-wheelchair-accessible vehicles and wheelchair-accessible and non-wheelchair-accessible ToT vehicles, were classified as taxis when using the *2012 CEQR Technical Manual* mobile GHG emissions calculator.

- Since the majority of the taxi medallion travel occurs in the borough of Manhattan, GHG emissions were calculated assuming the total VMTs for the taxi fleet was traveled in Manhattan.

- The percentages of daily VMT presented in Table 18-6 of the *2012 CEQR Technical Manual* were used for Manhattan. Since the majority of taxi travel does not typically occur on freeways, the 30% VMT assigned to freeways was distributed to local roads.

- On average, a City taxi is driven approximately 70,000 miles per year.

In conformance with the *2012 CEQR Technical Manual*, the consistency with the City's overall GHG reduction goal presented in PlaNYC 2030 was based on an assessment of the consistency of the Proposed Action with the following goals:

- Pursue transit-oriented development;
- Generate clean, renewable power through replacement of inefficient power plants with state-of-the-art technology and expanding the use of clean distributed generation;
- Construct new resource- and energy-efficient buildings (including the use of sustainable construction materials and practices) and improve the efficiency of existing buildings; and
- Encourage sustainable transportation through improving public transit, improving the efficiency of private vehicles, and decreasing the carbon intensity of fuels.

17.3 Existing Conditions

As summarized in Table 22, the 13,237 taxis in the existing taxi fleet are estimated to emit approximately 784,430 tons of CO_2e per year.

Table 22: Estimated GHG Emissions from Taxis

Condition	Estimated Annual Distance Traveled (VMT)	Estimated CO_2e Tons
Existing	926,590,000	784,430
Future Without the Proposed Action	1,066,590,000	902,950
Future With the Proposed Action	1,066,590,000	902,950

17.4 Future Conditions without the Proposed Action

In the Future Conditions without the Proposed Action, it was assumed that the number of taxis in the taxi fleet would increase from 13,237 vehicles to 15,237 vehicles.[34] Therefore, the taxi fleet in the Future Conditions without the Proposed Action would increase the GHG emissions from taxis by approximately 118,520 tons per year to a total of approximately 902,950 tons of CO_2e per year (see Table 22).

[34] June 2011 New York State legislation authorized the City to sell 2,000 additional taxi medallions. In August 2012 a judge ruled that this law is invalid. The City plans to appeal this decision, and the 2,000 additional medallions are included in this analysis as part of a reasonable worst-case scenario since impacts of ToT with these medallions would be greater than or equal to those without the additional medallions.

17.5 Future Conditions with the Proposed Action

In the Future Conditions with the Proposed Action, the number of taxis in the taxi fleet would not change from the Future Conditions without the Proposed Action. All but 769 of the 15,237 taxis in the Future Conditions with the Proposed Action would consist of non-wheelchair-accessible ToT taxis and wheelchair-accessible taxi vehicles consisting of either ToT, MV-1 or Toyota Sienna vehicles (see Section 1.1 for discussion of which medallions would be required to be used with which vehicles). Since the *2012 CEQR Technical Manual* mobile GHG emissions calculator does not distinguish between different types of taxis, the taxi fleet in the under the Proposed Action is also estimated to result in 902,950 tons of CO_2e per year (see Table 22). However, beginning in the second year that the ToT is available (2014), the ToT would include an advanced start-stop system with secondary battery system that can offer up to 10% or more reduction in fuel consumption and CO_2 emissions in the City traffic conditions.[35] However, the estimate of the number of tons of GHG emissions provided in Table 22 does not reflect this expected decrease since the reduction in the other five GHGs (CH_4, N_2O, HFCs, PFCs and SF_6) that would occur with the more fuel efficient engine was not available.

As stated above, and in conformance with the *2012 CEQR Technical Manual*, the consistency with the City's overall GHG reduction goal presented in PlaNYC 2030 was based on an assessment of the consistency of the Proposed Action with the following goals:

- Pursue transit-oriented development;
- Generate clean, renewable power through replacement of inefficient power plants with state-of-the-art technology and expanding the use of clean distributed generation;
- Construct new resource- and energy-efficient buildings (including the use of sustainable construction materials and practices) and improve the efficiency of existing buildings; and
- Encourage sustainable transportation through improving public transit, improving the efficiency of private vehicles, and decreasing the carbon intensity of fuels.

The Proposed Action does not involve any site alternation or construction activities, and would not result in any new development. However, the Proposed Action does encourage sustainable transportation through enhancement of the taxi fleet, a major mode of public transportation in the City. The implementation of the Proposed Action would improve the public transportation system by providing a uniformly safe, comfortable, economic, durable, and environmentally-friendly taxi that is more easily accessible to passengers, and with modern amenities and features that improve conditions for both taxi drivers and passengers. Therefore, the Proposed Action would be consistent with PlaNYC 2030 and would not significantly hinder City Policy with respect to GHG emissions from mobile sources.

[35] Nissan-TLC ToT contract documents.

Based on this assessment, the Proposed Action would not result in a significant adverse impact on greenhouse gas emissions.

17.6 Identification of Significant Adverse Environmental Impacts

As shown in Table 22, the proposed ToT would not result in an increase of CO_2e emissions, compared to the Future Conditions without the Proposed Action. The additional 118,520 tons of CO_2e between the Existing Conditions and the Future Conditions without the Proposed Action are due exclusively to the increase in the number of taxi medallions that would occur if the City gains authorization to sell an additional 2,000 taxi medallions, an initiative entirely separate from the replacement of the existing taxi fleet with the ToT. GHG emissions in the Future Conditions without and with the Proposed Action would be approximately eight percent of the estimated 11.7 million tons of GHG emissions generated from the on-road vehicles in the City and less than two percent of the total 58.3 millions tons of total GHG emissions generated in the City, based on an a 2005 emissions inventory.[36]

18.0 NOISE

The Proposed Action is limited to the introduction of the Nissan NV200 as the vehicle for purchase for use as a taxi and does not introduce additional vehicles to the city roadways. The *2012 CEQR Technical Manual* screening criteria sets the basic threshold for a detailed noise analysis based on whether the project-related vehicles would cause a doubling of noise passenger car equivalents (PCEs). Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, a detailed analysis is not required to determine if the Proposed Action would result in a significant adverse impact to noise.

19.0 PUBLIC HEALTH

The Proposed Action would not result in significant unmitigated adverse impacts in water quality, hazardous materials, or noise. In conformance with the *2012 CEQR Technical Manual*, a public health assessment would be prepared if the detailed air quality analysis indicates the potential for significant adverse impacts. Since the project is not anticipated to have significant adverse air quality impacts, a public health assessment is not warranted.

20.0 NEIGHBORHOOD CHARACTER

The Proposed Action would not result in significant unmitigated adverse impacts in Land Use, Zoning, and Public Policy; Socioeconomic Conditions; Open Space; Historic and Cultural Resources; Urban Design and Visual Resources; Shadows; or Noise. Therefore, in conformance with the *2012 CEQR Technical Manual*, no neighborhood character assessment is warranted.

[36] Source: Inventory of New York City's Greenhouse Gas Emissions, April 2007, Mayor's Office of Operations, Office of Long Term Planning and Sustainability. http://www.nyc.gov/html/om/fspdf/ccp_report041007.pdf

21.0 CONSTRUCTION IMPACTS

The Proposed Action would not involve new construction or in-ground disturbance. Therefore, in conformance with *2012 CEQR Technical Manual* screening criteria, a detailed assessment of construction impacts is not warranted.

APPENDIX A
TECHNICAL MEMORANDUM

APPENDIX A: TECHNICAL MEMORANDUM

1. INTRODUCTION

In 2007, New York City (City) officials convened a group of stakeholders including representatives of taxi drivers, medallion owners and passengers to create a set of goals for the next City taxi – a project called the Taxi of Tomorrow (ToT). Auto manufacturers and designers were asked to submit proposals for a purpose-built vehicle to serve as the City taxi. In May 2011, the Nissan NV200 was selected as the ToT as a result of a competitive process.

This Memorandum provides an assessment of the socioeconomic impacts that would be expected from the replacement of the existing fleet of taxi vehicles with the ToT. The 2012 New York City Environmental Quality Review (*CEQR) Technical Manual* (Mayor's Office of Environmental Coordination) indicates that actions under review may "directly displace residents or businesses or may indirectly displace them by altering one or more of the underlying forces that shape socioeconomic conditions in an area." The *2012 CEQR Technical Manual* further indicates that, "usually, economic changes alone need not be assessed; however, in some cases their inclusion in a CEQR review may be appropriate, particularly if a major industry would be affected or if an objective of a project is to create economic change." Since the taxi industry represents a major industry of importance to the City, an assessment of the potential effect of the replacement in the future of the existing fleet of taxi vehicles with the ToT was completed to determine if the proposed action would result in:

Direct displacement of residents or businesses. The *2012 CEQR Technical Manual* defines "direct displacement" as "the involuntary displacement of residents or businesses from a site or sites directly affected by a proposed project". The *2012 CEQR Technical Manual* states further that "for projects covering a large geographic area, such as an area-wide rezoning, the precise location and type of development may not be known because it is not possible to determine with certainty the future projects or private property owners, whose displacement decisions are tied to the terms of private contracts and lease terms between tenants and landlords existing at the time of redevelopment." In this case, the *2012 CEQR Technical Manual* indicates that sites should be analyzed to illustrate a conservative assessment of the potential effects of the proposed action on sites considered likely to be redeveloped, and examined to determine whether existing businesses and residents on those sites may be displaced. The ToT would not involve any construction and would not directly displace any resident or businesses.

- **Indirect displacement of residents or businesses.** The *2012 CEQR Technical Manual* defines "indirect displacement" (also known as "secondary displacement") as "the involuntary displacement of residents, businesses or employees that results from a change in socioeconomic conditions created by the proposed project." Examples of actions that may have the potential to result in indirect displacement given in the *2012 CEQR Technical Manual* include the displacement of lower-income residents due to rising rents caused by a new concentration of higher-income housing introduced by the proposed project, and a similar turnover of industrial uses to higher-paying commercial tenants spurred by the introduction of an office project in the area. The assessment of indirect displacement usually identifies the size and type of groups of residents, businesses, or

employees that may be affected by a proposed action. The ToT would not result in a new concentration of higher income housing or the turnover of industrial uses to higher paying commercial tenants and as a consequence, would not indirectly displace any residents or businesses.

- **Effects on a major industry or commercial operation in the City**. In this case, the *2012 CEQR Technical Manual* indicates that "a project may not displace, but may affect the operation of a specific industry." Examples of such actions given in the *2012 CEQR Technical Manual* include "a citywide regulatory change that would adversely affect the economic and operational conditions of certain types of businesses or processes (that) may affect socioeconomic conditions in a neighborhood in two ways: (1) if a substantial number of residents or workers depend on the goods or services provided by the affected businesses; or (2) if it would result in the loss or substantial diminishment of a particularly important product or service within the City." The introduction of the ToT could potentially result in an adverse effect on the yellow taxi industry and industries that provide direct services to the yellow taxi industry. All of these industries are of importance to the City.

Circumstances are identified in the *2012 CEQR Technical Manual* that would typically require a socioeconomic assessment. These "thresholds" include projects that would:

- Directly displace more than 500 residents
- Directly displace more than 100 employees
- Directly displace a business that is unusually important because its products or services are uniquely dependent on its location; based on its type or location, it is the subject of other regulations or publicly adopted plans aimed at its preservation; or it serves a population uniquely dependent on its services in its present location
- Result in a substantial new development that is markedly different from existing uses, development and activities within the neighborhood. Residential development of 200 units or less or commercial development of 200,000 square feet or less would typically not result in significant socioeconomic impacts.
- Add to, or create, a retail concentration that may draw a substantial amount of sales from existing businesses within a study area to the extent that certain categories of business close and vacancies in the area increase, thus resulting in a potential for disinvestment on local retail streets. Projects resulting in less than 200,000 square feet of regional-serving retail in a study area or less than 200,000 square feet of local-serving or regional-serving retail on a single development site would not typically result in socioeconomic impacts.
- Be expected to affect conditions within a specific industry as described above.

The replacement of the existing fleet of taxis in the future with the ToT would not directly displace more than 500 residents, 100 employees, or a business that is unusually important because its products or services are uniquely dependent on its location, nor would it result in substantial new development that is markedly different from existing uses, development and

activities within any neighborhood. Further it would not add to, or create a retail concentration that would draw a substantial amount of sales from existing businesses to the extent that certain categories of business close and vacancies in the area increase. As a consequence, the assessment of potential socioeconomic impacts included in this memorandum is limited to the potential impacts on the taxi industry in the City. As detailed below, these include the potential effect of the introduction of the ToT on the value of a taxi medallion and the potential effect of the introduction of the ToT on the automotive body, interior and glass repair industry, which includes businesses that currently hack up vehicles for use as taxis, and the potential effect on the outdoor exterior advertising industry, which includes businesses that currently supply roof-top advertising on taxis.

1. **Effect of the Introduction of the ToT on the Value of a Taxi Medallion.** The taxi medallion is a financial asset, since the holder of a medallion accrues a stream of net revenues, whether through actually driving the taxi or leasing the medallion to a driver. The revenue stream from owning a medallion principally defines its value. The introduction of the ToT could have an effect on future net revenues by possibly changing costs associated with operating a taxi and, in the process, the net revenues[1] that determine medallion value.

2. **The Effect of the Introduction of the ToT on the Automotive Body, Interior and Glass Repair Industry, which Includes Businesses that Hack Up Vehicles for Use as Taxis.** The existing fleet of taxis does not come fully "hacked-up" for use as a taxi and must be modified for use as a taxi by local businesses prior to receiving a taxi license from the TLC. Taxi hack-up requirements are established under Chapter 67 ("Rules for Taxicab Hack-up and Maintenance") of the TLC Rules and Regulations. Unlike the existing fleet, the ToT would be delivered fully hacked-up for use as a taxi in conformance with TLC requirements except for the incorporation of a taxi meter and the components of the Taxicab Technology Passenger Enhancements Project (T-PEP) (i.e., rear screen, driver monitor, and credit card reader). As a consequence, the businesses that currently hack-up vehicles for use as a taxi may be adversely affected by the introduction of the ToT.

3. **The Effect of the Introduction of the ToT on the Outdoor Exterior Advertising Industry, which includes businesses that supply roof-top advertising to taxis.** The TLC currently permits exterior rooflight advertising on taxis in the City. Businesses that provide exterior rooflight advertising represent a subset of the larger outdoor advertising industry. Advertising is provided by businesses within the overall outdoor advertising industry. Since the TLC may not be allow exterior rooflight advertising on ToT vehicles (at least in its current form), an estimate was completed of the potential loss in revenue to the industry that would occur with implementation of the ToT.

[1] Net revenues are calculated by subtracting the purchase costs of new taxis acquired at regular intervals (dictated by the vehicle retirement requirements established in Taxi and Limousine Commission (TLC) Regulations (2011 TLC Rule Book, Chapter 67)), and the cost of operating a taxi vehicle (dominated by the cost of fuel) from the anticipated fare revenues over the "life" of the license. The license is assumed to be an asset that would be valid in perpetuity.

The possible sale of 2000 additional medallions by the TLC is included in the analysis. The estimates of the impact on the value of a medallion as a result of the introduction of the ToT include the addition of 2,000 additional taxi medallions that were authorized by New York State Legislation (New York State Senate Bill S5825-2011 and New York State Assembly Bill A8496-2011). The sale of 2,000 additional taxi medallions would be a separate action that would be subject to separate environmental review under CEQR (the review was filed as Taxi Medallion Increase, 12TLC026Y). The legislation allowing for the sale of the medallions has undergone recent legal challenge. On August 17, 2012 the New York State Supreme Court ruled that the legislation was invalid, and permanently enjoined the sale of the new medallions. The City has stated its intention to appeal the ruling, and if the order is overturned on appeal, TLC expects to proceed with the auction of up to 2,000 new medallions. Since inclusion of the additional 2,000 medallions in the analysis of the impact of the ToT would result in equal or greater impacts than without their inclusion, the impact evaluation included in this assessment assumes sale of all 2,000 medallions by the year 2020, the analysis year by which the entire existing taxi fleet subject to ToT requirements would be fully replaced with the ToT (this does not include owners of alternate fuel medallions who will be allowed to drive hybrid vehicles or others exempt from ToT. See Chapter 1 of the EAS Supplementary Document.). While TLC's agreement with Nissan does not extend to the sale of additional medallions, since all 2,000 will be wheelchair-accessible vehicles the analysis assumes these are a mix of wheelchair-accessible vehicles including the wheelchair-accessible version of the ToT. The additional taxis that were authorized under the legislation but have been permanently enjoined by the court order were included as part of the "No-action" baseline as well as with the introduction of the ToT. It is projected that all 2,000 medallions would be sold by 2020, the analysis year in which it is projected that the entirety of the existing taxi fleet that is subject to ToT would be replaced with ToT vehicles.

2. SUMMARY OF FINDINGS

The 13,237 yellow medallion taxis are authorized to pick up passengers by street hail *anywhere* in the City. Liveries and other for hire vehicles can pick up passengers only by prearrangement except for the new class of vehicle called Street Hail Livery (SHL).[2] Under rules passed by TLC, SHLs can pick up street hails in areas not well-served by yellow taxis, such as boroughs outside of Manhattan (except for the airports) and northern Manhattan. According to recent GPS data (TLC T-PEP data 2011) collected by TLC, 97% of all yellow taxi street hail pickups are in Manhattan or at LaGuardia Airport or John F. Kennedy International Airport (JFK). Excluding northern Manhattan (north of 110th street on the west side and north of 96th street on the east side), nearly 95% of yellow taxi street hails are in the Manhattan core and the airports.

[2] Legislation that authorizes the Street Hail Livery program also provides for the sale of additional 2,000 medallions. The legislation allowing for the sale of the medallions has undergone recent legal challenge. On August 17, 2012 the New York State Supreme Court ruled that the legislation was invalid. The City has stated its intention to challenge the ruling.

Taxis are a vital part of the City economy. In 2012, the 13,237 yellow medallion taxis provided approximately 500,000 trips to patrons on an average day. An over $2 billion industry,[3] which includes drivers, owners, brokers, mechanics, agents, and supportive businesses, taxis are critical to the day-to-day functioning of the City, and meet the critical transportation needs of the residents, businesses and visitors to the City.

2.1 Value of a Taxi Medallion

The value of a medallion when it was first traded after World War II averaged $2,500. A medallion currently sells at over $700,000 for an individual medallion and approximately $1 million for a corporate (also known as mini-fleet) medallion. The value of a medallion is derived from fares and tips received by medallion owners who drive the taxi or from leasing the right to drive a taxi to others. For owner-operators, income from the ownership of a medallion is derived from fares and tips and often leasing to a second-shift driver. For lease drivers, income is derived after deducting lease fees and fuel from fare and tip revenue received from passengers.

On July 12, 2012, TLC approved the following revisions to its rules governing fares charged in taxis and street hail livery vehicles, and the caps that can be charged by an owner of a taxi to a driver, effective September 4, 2012.

Currently, taxi fares are based on an initial charge of $2.50, and a "unit fare" which was increased to $0.50 per each additional "unit" from $0.40 per"unit." A unit fare is:

- One-fifth of a mile, when the taxi is traveling at 12 miles an hour or more; or
- 60 seconds when not in motion or traveling at less than 12 miles per hour

In addition there is a night surcharge of $.50 between the hours of 8:00 PM and 6:00 AM, and a peak hour weekday surcharge of $1.00, Monday through Friday between the hours of 4:00 PM and 8:00 PM. Tips from passengers average between approximately 15 and 20 percent of the fare. Riders are also charged a New York State MTA Tax of $.50 per ride.
The fare of a trip between Manhattan and JFK was increased from a flat fare of $45.00 plus any intervening tolls to a flat fare of $52.00 plus any intervening tolls.
There are also established fares for trips to Westchester and Nassau Counties, and Newark Airport. Westchester and Nassau County fares are calculated based on the amount shown on the taximeter (which is calculated at the standard city rate within the City and at twice the metered rate for the portion of the trip in Westchester or Nassau County) and all necessary tolls to and from the destination. Fares for a trip to Newark Airport are calculated based on the amount shown on the taximeter plus a surcharge of $17.50 (increased from $15.00) and all necessary tolls to and from the destination.

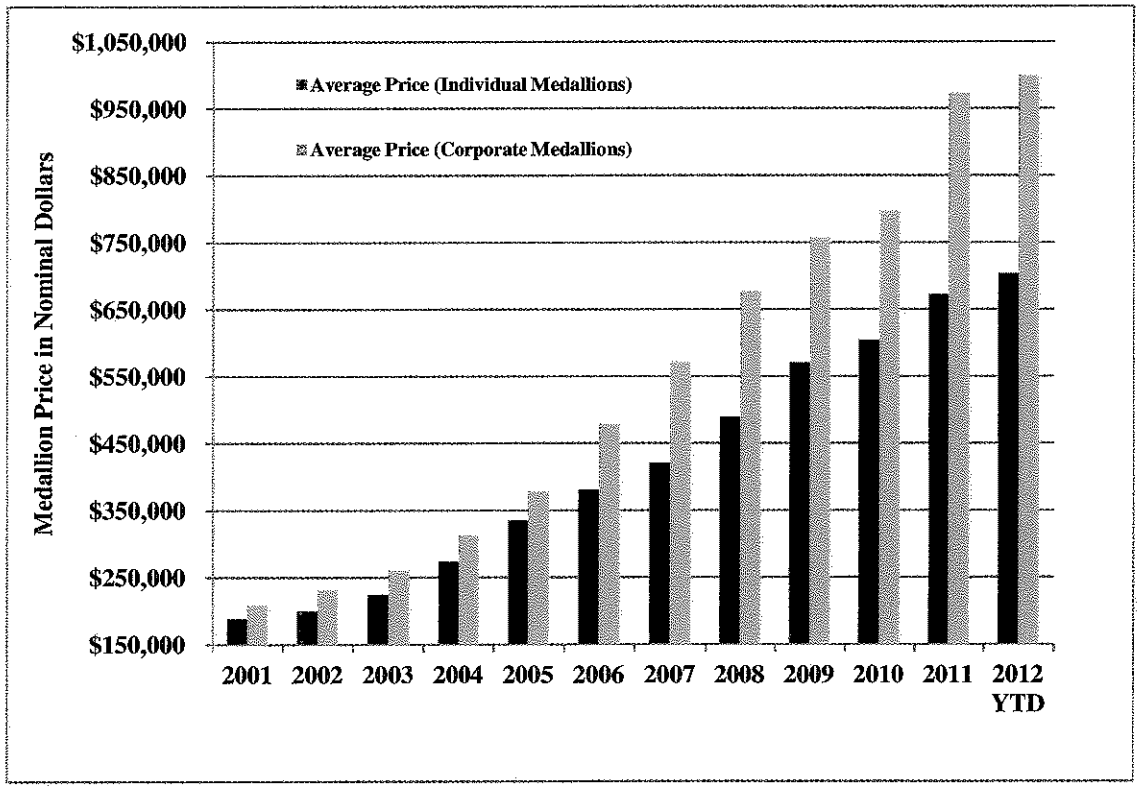
Factors that affect the value of a medallion include taxi fares, interest rates, the demand for taxi service, the availability of taxi medallion financing, the market for the medallion, the availability of drivers, and anticipated return on the investment to acquire a medallion. Historical nominal

[3] Estimates assume 178 million annual fleet trips based on TLC data and average revenue per trip of $12 correct as May 2012.

prices of individual and corporate medallions are shown in Figure 1. Nominal prices of medallions have increased significantly over the past decade with the annual average price of independent medallion increasing 272% between 2001 to 2012 while the annual average price of corporate medallions has increased approximately 380% over the same period. As shown in Figure 1, the average price of an individual medallion (approximately $703,630) as of July 2012 was approximately 70% of the average price of a corporate medallion (approximately $1,000,000).

The potential impact of the ToT on the financial value of a medallion would be expected to be through a potential impact on costs associated with purchasing (capital cost) and operating (fuel economy) the new taxi. These could then impact projected net revenues for medallion owners and, as a consequence, the medallion's value. Provided below is a description of the approach to quantifying the potential impact of ToT on costs and, using standard techniques, the potential impact on a medallion's asset value.

Figure 1: Medallion Price (Nominal Dollars) for the Period 2001-2012[4]



Source: TLC (July 2012)

[4] Medallion transfers that take place at levels significantly below the market price (e.g., between family members) are excluded from reported medallion transfer prices. In addition, stock sales are not included in the analysis. 2012 year to date prices use data available as of July 2012

2.1.1 Method Used to Estimate Impact on the Value of a Taxi Medallion

As detailed in Section 3 of this memorandum, the value of a medallion is assumed to be a function of the anticipated net stream of revenues that would accrue through ownership of a medallion. The change in the value of a medallion can then be estimated as follows[5]:

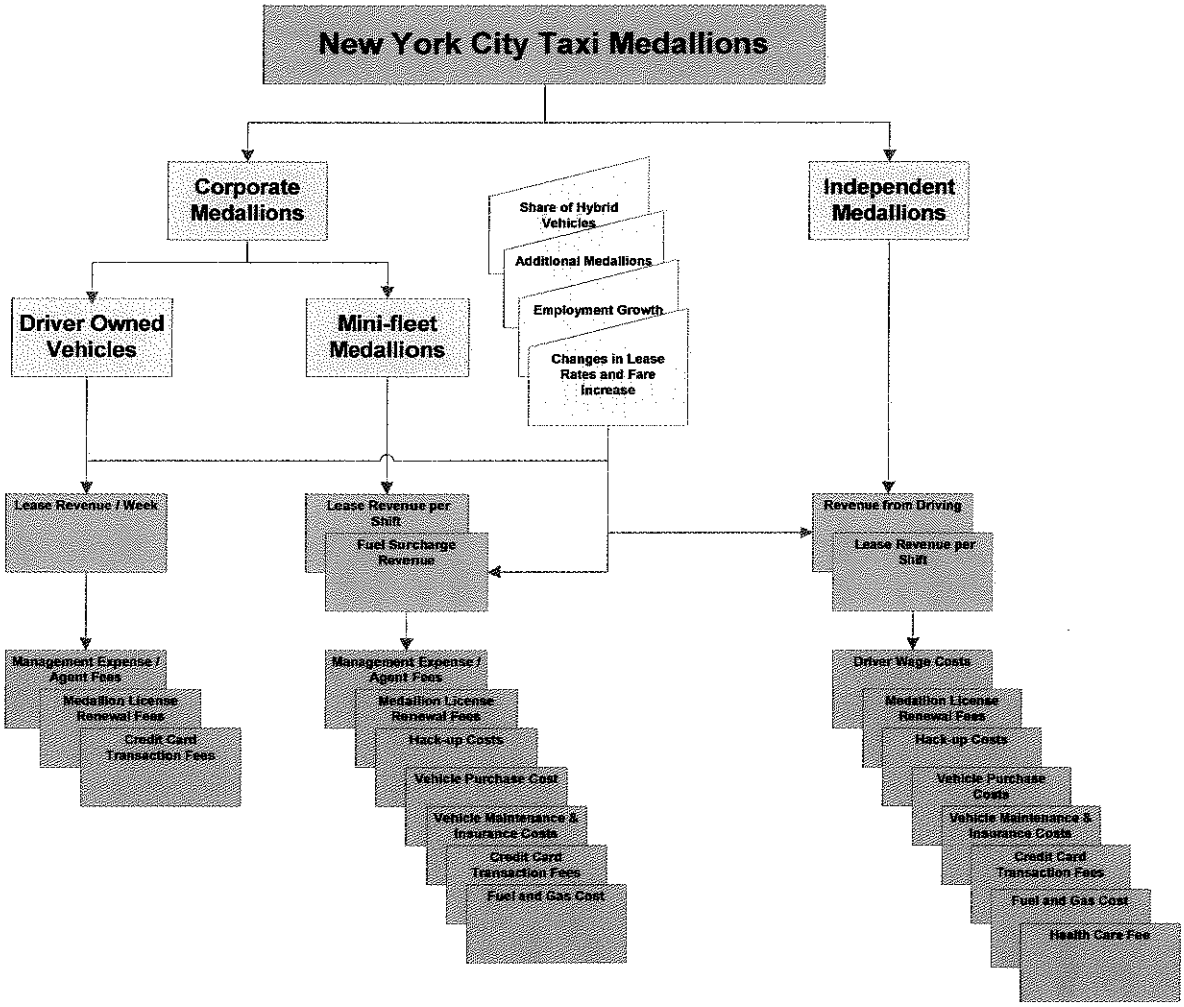
Change in medallion price ($) = Change in annual net revenue ($) / discount rate (1)

As indicated in equation (1), net revenue is discounted (using a *discount rate*) to reflect the net present value of money (i.e., the "opportunity cost" of using capital to fund the purchase of a medallion). As shown in the formula, the higher the discount rate the lower the present value of a medallion.

Figure 2 illustrates the different ownership structures of taxi medallions and how they were reflected in the medallion valuation analysis. The model considers separately individual medallions and corporate (i.e., mini-fleet) medallions.

[5] Investment Valuation: Tools and Techniques for the Determining the value of Any Asset Aswath Domodaran 2012

Figure 2: Approach to Valuing Taxi Medallions[6]



[6] For presentation purposes vehicle depreciation expense, medallion asset amortization, salvage revenues from old vehicles and taxes are not shown in the figure above but are included in the calculation. Some independent medallions are operated as fleets or DOVs (e.g., those without an owner must drive requirement), but for purposes of this analysis independent medallions are modeled as operated by owner-drivers.

As shown in the figure above, corporate medallions were assumed to operate either as driver-owned vehicles (DOVs)[7] or as fleets. DOVs lease the medallion only from the medallion owner on a weekly basis. Vehicles used as taxis are typically owned by the driver, who is therefore responsible for the miscellaneous costs associated with the ownership of the vehicle. Typically, agents manage medallions on behalf of the owner.[8] Since medallion owners do not own the vehicle (in the case of DOVs), the cost of vehicle ownership and operating costs are not relevant for medallions operating under this ownership structure. As of September 2012, medallion owners are nevertheless responsible for paying for credit card transaction fees for transactions that use credit cards.

Taxi fleet operators either own multiple mini-fleet medallions themselves or manage them for their owners. Fleet operators generally own the taxi vehicles and lease both the vehicles and the medallions to taxi drivers on a per-shift basis. Drivers collect and keep fares and tips from customers, pay the lease fees which are regulated by the TLC (lease rates vary from $115 per shift to $139 per shift for conventional vehicles and $118 per shift to $141 for hybrid vehicles) and pay for gasoline out of their fare income.[9] Fleet operators are therefore responsible for any expenses related to the vehicle such as initial hack-up, insurance, maintenance and repair costs as well as vehicle purchase costs. Beginning in September 2012, fleet operators are also responsible for paying credit card processing fees to T-PEP providers for transactions that take place with credit cards. Additionally, fleet operators have the option to provide the driver with a full fuel tank and charge additional fees (see Section 2.1.3 of this memorandum for details). Managing fleets requires personnel and other overhead costs, which are included as management expense agent fees (management fees on a per medallion basis are assumed to be equal to those paid by DOV medallion owners).

Most independent medallion owners are owner-drivers and own the medallion as well as the vehicle and pay for vehicle purchase costs as well as operating costs (such as fuel) and other costs such as insurance of the vehicle, vehicle maintenance and vehicle repair costs. Many independent medallion owners are required to personally drive a minimum of 180 (9-hour) shifts a year. The cost of the labor of independent medallion owners needs to be taken account when valuing a medallion. As per new TLC fare rules passed in July 2012, $0.06 of the fare earned on each trip will be dedicated to a health and disability fund for taxi drivers.[10] This $0.06 per trip reduction in fare revenues for owner-drivers is being taken into account when valuing a medallion. Many owner-operators lease their medallions for a second shift to other drivers. While leasing to a second driver brings additional revenue, it can increase insurance and

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[7] This is a simplifying assumption. TLC estimates that about a third of medallions are operated by owner-drivers, a third operate as fleets and another third are operated as DOVs. About 58% of all medallions are classified as corporate and 45% of those corporate medallions are assumed to operate as DOVs while the remainder are assumed to operate as fleets.

[8] For simplicity it is assumed that owners pay a fee to an agent. In actuality lease fees are collected by the agent and the agent pays a fixed fee to the owner as payment for the privilege of leasing the medallion.

[9] Beginning in September 2012, fleet operators will be permitted to charge a set lease cap surcharge in exchange for providing drivers with fuel.

[10] The fund is not yet created and the $0.06 will not be deducted from trip revenue until the fund has been created. This analysis assumes that the fund is set up and the $0.06 is being deducted from trips because TLC believes the fund will be created in the foreseeable future.

maintenance costs. Beginning in September 2012, medallion owners are also responsible for paying credit card transaction fees.

The financial valuation evaluates impacts on independent and corporate medallions by modeling impacts based on the three operation models (owner-driver, fleet and DOVs) described above. The analysis assumes different discount rates (which reflect the opportunity cost of capital) for corporate medallion owners and independent medallion owners because they are likely to face different financing costs. Corporate owners own multiple medallions (some operate vehicle fleets) and are likely to have greater collateral and higher credit ratings to support any loans that they might receive. Therefore, they are likely to experience lower financing costs than independent medallion owners do, many of whom borrow to finance the purchase of a single medallion. Assumptions used in the valuation are discussed in further detail in Section 2.1.3 of this memorandum.

Revenues with and without the introduction of the ToT were estimated as part of the analysis. As part of the rules package being acted on by the Commission for Taxi of Tomorrow, medallion owners whose medallions are operated under the DOV model will be able to charge higher lease rates (equal to those permitted to be charged by owners whose medallions are operated with hybrid vehicles) for leasing the ToT vehicles. Fleet operators will continue to be able to charge special higher rates for hybrid vehicles, but only the lower conventional vehicle rates for the ToT. Since the ToT is a conventional vehicle, with the introduction of the ToT, the fleet operators who in the absence of ToT would have been operating hybrid vehicles will forego some lease income. However, to offset the inability to charge hybrid-level lease caps, as part of the new rules that would implement ToT, the gasoline surcharge fleet operators can add to the lease cap in exchange for providing fuel will increase by $3 per daily shift and an equivalent amount for weekly leases (see Section 2.1.3 of this memorandum).

The primary impacts of introducing the ToT on the value of a medallion were estimated based on the change in costs of purchasing new ToT vehicles (fixed capital cost) and operating cost of the ToT (mainly fuel). Changes in these costs would directly affect net revenues for medallion owners and, as a consequence, the value of a medallion.

Equation (1) shown above is a general formula presenting the overall approach to valuing a medallion. More specifically, the medallions are valued according to the formula given in equation (2) and the revenues and costs with the ToT and without the ToT are forecasted. Forecasts for revenues and costs were made for the period 2012 to 2027. The discounted net cash flows are calculated such that the calculated medallion value with the ToT is compared to the medallion value without the ToT.

The valuation starts in the year 2020 since that is the first full year when all medallions subject to ToT will have retired and been replaced by ToT. The final analysis year 2027 is the first year full year when tax depreciation from the sale of additional medallions would expire (included in the Future with the ToT and without the ToT). The growth rate of future revenues (term g in equation (2)) accounts for the growth in fare revenues expected for independent medallions. The last term in equation (2) takes into account the value of the medallion for the period beyond 2027 as the medallion would continue to provide cash flows beyond 2027 (see attachment for details).

$$\text{Medallion Value} = \frac{\text{Net Revenue}_{2020}}{(1+r)^0} + \ldots + \frac{\text{Net Revenue}_{2027}}{(1+r)^7} + \frac{\text{Net Revenue}_{2027}(1+g)}{(r-g)} \frac{1}{(1+r)^7} \quad (2)$$

In addition, four scenarios for the vehicle fleet forecast were investigated (described in Section 2.1.2 below), the average future revenues and costs were estimated on the basis of a number of assumptions regarding revenue earned per trip and the average number of trips per taxi that would occur in the Future with and without the Proposed Action (see Section 2.1.3 for details).

2.1.2 Method used to Develop Forecasts of the Vehicle Fleet

A first step in assessing the impact on the value of a medallion and employment impacts on the automotive body, interior and glass repair industry, which includes businesses that hack up vehicles for use as taxis, and the outdoor advertising industry, which includes businesses that provide roof-top advertising on taxis, due to introduction of the ToT is to develop forecasts of the vehicle fleet with and without the ToT.

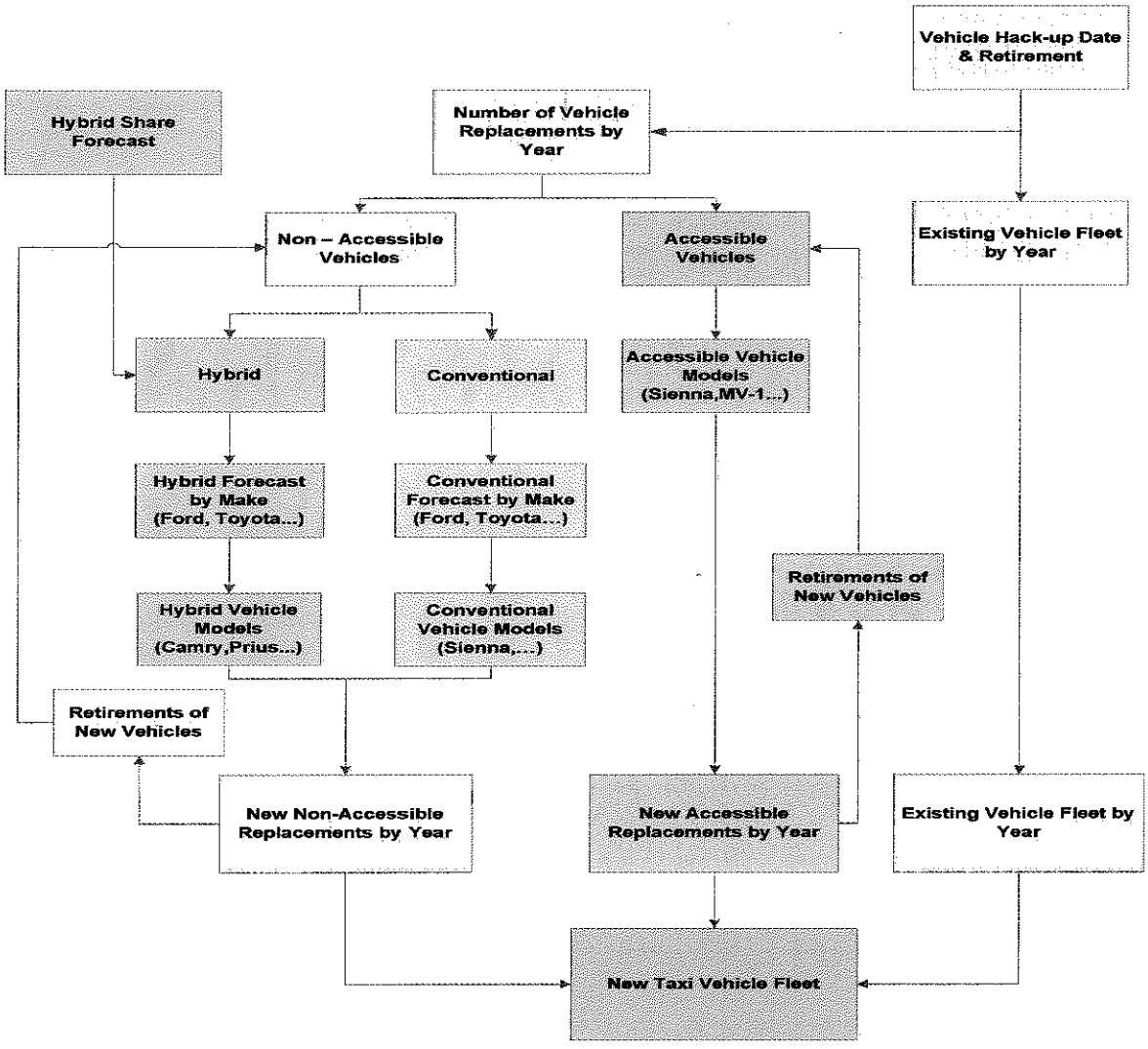
Figure 3 shows the multistep approach used to develop the taxi fleet forecasts without the ToT. Using data on the existing vehicle fleet and the expected retirement dates of existing vehicles in service, projections were made for each year for the number of vehicles expected to retire and be replaced with new vehicles. Future retirement assumptions for hybrid vehicles, conventional vehicles and wheelchair-accessible vehicles were developed using data from TLC which recorded the last hack-up date and the future expected retirement date for all taxi vehicles. Vehicle retirements were calculated annually between 2011 and 2020. In Figure 3, this is shown as the existing vehicle fleet forecast by year. As vehicles were retired from the fleet, they were replaced by new vehicles. Wheelchair-accessible vehicles were replaced with wheelchair-accessible vehicles while non-wheelchair-accessible vehicles were replaced with non-wheelchair-accessible vehicles. Non-wheelchair-accessible vehicles were further categorized into either hybrid or conventional.

An important component of the analysis consisted of forecasting the future share of hybrid vehicles in the fleet. Based on historical data on the share of hybrid vehicles in the taxi fleet, a statistical relationship was developed between changes in gas prices and the proportion of hybrid vehicles. Additional technical details on this model are presented in Attachment 1.

Once the proportion of hybrid and conventional vehicles was determined, another set of models were used to forecast the relative share that each manufacturer would have of each vehicle type (conventional or hybrid). The models were based on historical data on fleet composition from TLC administrative records. Thus, the share of hybrids likely to be Toyota or the share of conventional vehicles likely to be Ford was determined next. Finally, the share of hybrid Toyota vehicles, for example, was assigned to different models (by the same manufacturer) based on the recommended sale price (such that the shares were inversely proportional to the sale price). Thus, the most expensive Toyota hybrids received the lowest share of Toyota vehicles while the cheapest received the largest share.

A similar process was used to develop vehicle fleet forecasts with the ToT. Retirements of the existing fleet were projected on an annual basis based on TLC data on each vehicle's retirement cycle. From 2013 onwards all vehicle replacements (except those medallions required to be alternative fuel vehicles, wheelchair-accessible vehicles, or otherwise exempt from ToT) were replaced with the ToT. Wheelchair-accessible vehicles were replaced by a mix of wheelchair-accessible vehicles currently permitted by TLC to be used as taxi vehicles, including the wheelchair-accessible version of the ToT vehicle. The respective shares of these wheelchair-accessible vehicles were distributed such that those with the highest price received the lowest share (i.e., shares were inversely proportional to the manufacturers' recommended sale prices).

Figure 3: Structure and Logic Diagram for Forecasting the Vehicle Fleet without the ToT



To recognize the potential range of fuel costs that could occur in the future, the projected share of hybrids, and the lifecycles of different taxi vehicles, the value of a medallion was estimated on the basis of four scenarios[11] for the Future without the ToT (shown below). For the Future with the ToT (and since the ToT is a conventional vehicle) the ToT lifecycle was assumed to be similar to the lifecycle assumed for conventional vehicles in each of the scenarios.

- **Scenario 1** assumes that hybrid vehicles would have a life-cycle of 6 years, conventional vehicles a life-cycle of 5 years and wheelchair-accessible vehicles a life-cycle of 5 years. Gas prices were assumed to follow the Year 2011 "Reference Case Scenario" from the United States (US) Energy Information Administration (Annual Energy Outlook 2011, EIA). In addition, a mean estimate for a declining trend growth rate was used to account for factors other than fuel price (see attachment for details).

- **Scenario 2** is the same as Scenario 1 except that gas prices were assumed to follow the Year 2011 "High Price Scenario" from the EIA. In addition, a high estimate for a declining trend growth rate was assumed.

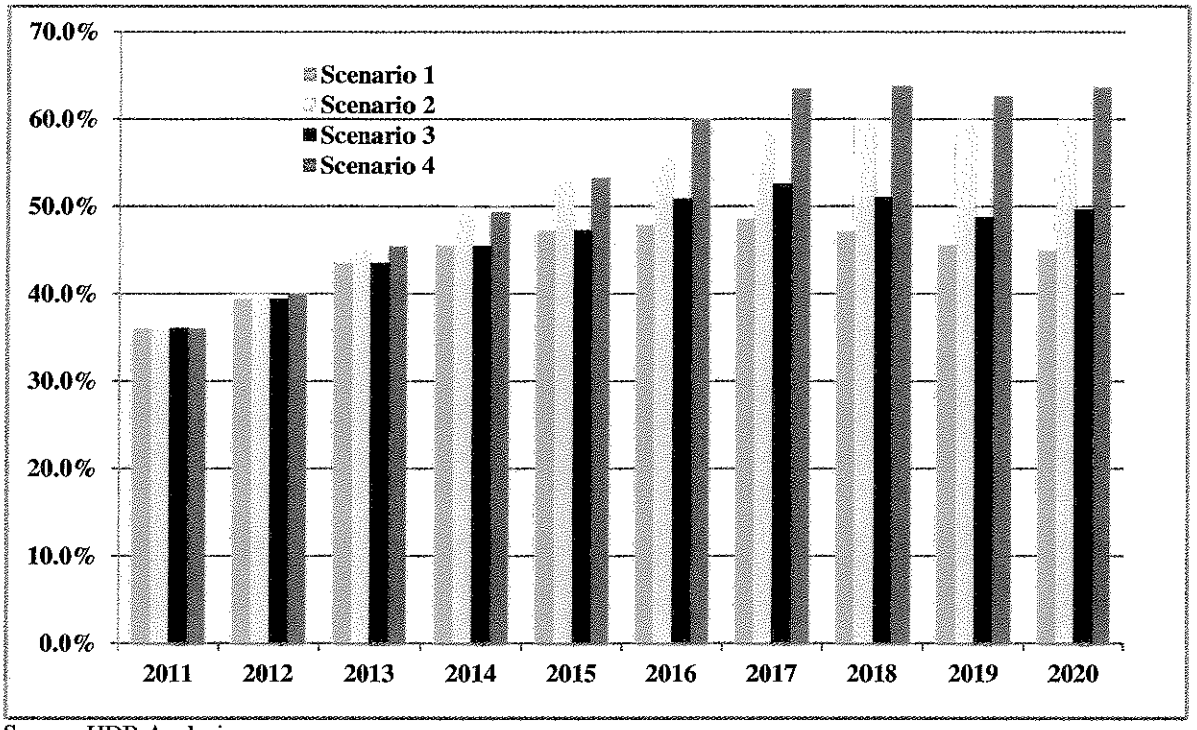
- **Scenario 3** is the same as Scenario 1, except that it was assumed that conventional vehicles would have a life-cycle of 4 years instead of 5 years, since, based on TLC hack-up and retirement data, the average vehicle life-cycle of a conventional vehicle is 4.6 years, which is approximately midway between 4 and 5 years.

- **Scenario 4** is the same as Scenario 2, except that it was assumed that conventional vehicles would have a life-cycle of 4 years.

The proportion of hybrid vehicles for the vehicle fleet without the ToT under all four scenarios is shown in Figure 4. As can be seen in the figure, the highest proportion of hybrid vehicles is expected under Scenario 4, primarily because this scenario assumes a faster growth rate in the adoption of hybrid vehicles and conventional vehicles are modeled as retiring sooner.

[11] Based on TLC vehicle hack-up date and expected retirement date data, the overall vehicle fleet average life-cycle is 5.2 years. Conventional vehicles have an expected lifecycle of 4.6 years, while hybrid vehicles have an expected lifecycle of 6.2 years. Wheelchair-accessible vehicles have an expected lifecycle of 5.2 years.

Figure 4: Projected Proportion of Hybrid Vehicles without the ToT



Source: HDR Analysis

2.1.3 Assumptions Used to Calculate the Impact on the Value of a Medallion

The financial analysis estimates the impact of ToT on the value of a medallion taking into account the three different medallion ownership structures. For simplicity it was assumed that corporate medallions consisted primarily of DOVs (these drivers lease the medallion only and cover their own vehicle expenses) and fleet operators. As shown in Table 1, TLC estimates that about 55 percent of the corporate medallions operate under a fleet model while the rest operate as DOVs. The primary source of revenue for corporate medallions that lease to DOVs consists of weekly lease revenues. Corporate medallions that are operated under the fleet model generally lease on a per-shift basis (12 hours per shift) and their revenues are comprised primarily of lease revenues as well.

The analysis calculated impacts on independent medallions separately. Independent medallion owners (most of whom operate under the owner-operator model) collect revenues from fares as well as lease revenues if they lease their vehicles for a second shift.

Table1: Assumed Breakdown of Corporate Medallions

Metric	Assumed Value	Source	Unit
% of Corporate Medallions operated as fleets	55%	TLC	%
% of Corporate Medallions operated as DOVs	45%	TLC	%

Table 2 shows an overview of important trip assumptions used in the analysis. The average taxi according to TLC data is driven about 70,000 miles in any given year. According to T-PEP data, the taxi fleet completes about 178 million trips in an average year. The City taxis are utilized 95.6% - that is, on average, only about 4.4% of the taxi fleet does not operate at all in any given 24-hour period. Approximately 76% of the taxi fleet is double-shifted, or in other words, is driven two shifts (each of which generally spans 12-hours) in the average 24-hour period. The number of annual shifts for the average taxi was estimated at 616 shifts using double-shifting assumptions, utilization assumptions and number of days in a year. The average number of miles that a taxi travels during a shift was calculated using mileage assumptions and the number of shifts operated in a given year, about 114 miles per shift. Finally the average number of trips per shift for the average medallion is estimated to be about 22 using total fleetwide trips and the number of annual shifts that an average taxi operates.

Table 2: Trip Assumptions

Metric	Assumed Value	Source	Unit
Taxi Annual Mileage	70,000	TLC Safety and Emissions Inspection Data	Miles
Total Annual Fleet Trips	178 Million	TLC Trip Data	Trips
Total Taxis	13,237	TLC Medallion Count	Medallions
Average Trips / Taxi	13,447	Calculated	Annual Trips
Average Miles Driven Per Shift	114	Calculated	Miles per Shift
Average Trips Per Shift	22	Calculated	Trips per Shift
Average Taxi Utilization Rate	95.6%	TLC T-PEP Data (Jan 2009 – Dec 2011)	%
Fleet Average Double-shifted Taxis	76.3%	TLC T-PEP Data	%
Fleet Average Shifts / Day	1.8	Calculated	Shifts / Day
Fleet Average Annual Shifts	616	Calculated	Shifts / Year

As discussed above, revenue assumptions and costs were modeled separately for the three different ownership structures of medallions. Lease revenue assumptions for fleet-operated medallions are presented in Table 3. The lease rate for a 12-hour day shift for a conventional vehicle is capped at $115 per day. The maximum lease rate for a 12-hour night shift for conventional vehicles varies from $125 to $139 depending on the day of the week. An average rate of $132 per night shift was used for conventional vehicles. For hybrid vehicles, lease rates are capped at $118 per day and nightly rates vary from $128 to $141 per shift. An average

nightly lease rate of $134 was used. Using the average rates for a nightly shift and for a daily shift (along with an assumption on the percent of hybrids in the fleet), a weighted average lease rate of $124 per shift was calculated. In the Future with the ToT, the number of hybrids in the fleet would decline (since those will be replaced with the ToT) which would have a modest impact on the weighted average lease rate (which would decline by $1).

Table 3: Lease Revenue Assumptions for Fleet-Operated Medallions

Metric	Assumed Value	Source	Unit
12-hour day Shift, Conventional Lease Rate	$115	TLC 2012 Rule book	Dollars / shift
Average 12-hour night shift, Conventional Lease Rate	$132	Calculated	Dollars / shift
12-hour day Shift, Hybrid Lease Rate	$118	TLC 2012 Rule book	Dollars / shift
Average 12-hour night shift, Hybrid Lease Rate	$134	Calculated	Dollars / shift
% of Hybrids without ToT	30%	Estimate based on information provided to TLC by Taxi Industry Representatives[12]	%
Weighted Average Lease Rate	$124	Calculated	Dollars / shift

Lease revenue assumptions for DOVs are presented in Table 4. Currently lease rates for DOVs that only lease the medallion are $1,114 per week for hybrid vehicles and $1,072 per week for conventional vehicles. In the Future with the ToT, medallion owners leasing to DOV's who own ToT vehicles will be able to charge a maximum of $1,114 per week while owners of other conventional vehicles would be charged a maximum of $1,072 per week. With ToT vehicles becoming an increasing part of the operating fleet, the weighted average rate approaches the hybrid and ToT lease rate of $1,072 per week.

Table 4: Lease Revenue Assumptions for DOVs

Metric	Assumed Value	Source	Unit
Weekly Lease Rate without ToT	$1,114	TLC Medallion Only Hybrid Lease Rate	Dollars / Week
Weekly Lease Rate without ToT	$1,072	TLC Medallion Only Conventional Lease Rate	Dollars / Week
Weekly Lease Rate with ToT	$1,114	TLC Medallion Only Hybrid & ToT Lease Rate	Dollars / Week
Weekly Lease Rate with ToT	$1,072	TLC Medallion Only Conventional Lease Rate	Dollars / Week

[12] Three of the major taxi industry groups, the Committee for Taxi Safety, the Metropolitcan Taxicab Board of Trade and the Greater New York Taxi Association provided TLC with estimates on the shares of their DOV- and fleet-operated affiliated medallions were operated using a hybrid or conventional vehicle. They provided this information in July 2012.

As discussed earlier, fare revenues typically do not accrue to the medallion owner. Nevertheless, in the case of independent medallion owners (many of whom are required to drive at least 180 shifts per year), fare revenues do accrue to the medallion owner. Fare revenue assumptions used to calculate impacts on independent medallion owners are shown in Table 5. Based on T-PEP data, the average fare including tips (but excluding taxes and tolls) during June 2011 to May 2012 was $12.35 per trip. Credit card tips per trip were based on T-PEP data from TLC. No data is readily available on the cash tipping rate. The estimate of the cash tipping rate (13%) is based on Schaller's analysis of fleet driver and owner income[13].

Table 5: Fare Revenue Assumptions for Independent Medallions

Metric	Assumed Value	Source	Unit
Weighted Fare (incl. tip) / Trip	$12.35	TLC Fare Data (June 11 - May 12)	2011 Dollars
Weighted Fare (incl. tip) / Trip after Fare Increase	$14.44	Calculated	2011 Dollars
Cash Tip %	13.0%	New York Taxi Medallion System, Schaller et al, Table 3	%
Credit Fare %	45.4%	TLC Fare Data (June 11 - May 12)	%
Cash Fare %	54.6%	TLC Fare Data (June 11 - May 12)	%
Average Fare Increase Assumption	17%	TLC	%
Estimated Fare Elasticity	-0.25	HDR Taxi Medallion Analysis	

TLC estimates that recently passed fare increases will result in a 17 percent increase[14] in the average fare. This increase implies that the average fare would increase to about $14.4 per trip (inclusive of tip). The percentage of credit card transactions and cash transactions were used to estimate tips accruing to the driver. Increasing prices would be expected to impact the demand for taxi trips and analysis conducted by HDR[15] for the taxi medallion sale (a separate CEQR analysis) as well as findings by other researchers[16] suggest that a 10 percent increase in fares would result in a 2.5 percent reduction in the number of trips per shift.

Estimated lease rates for second shift drivers of independent medallions are shown in Table 6. According to TLC, second shift drivers for independent medallions work on an informal basis where lease rates are believed to follow weekly long-term lease rates. Since a second shift driver would typically only be able to lease for the second shift, we assume that their lease rate would

[13] http://www.schallerconsult.com/taxi/taxi2.htm#promise

[14] TLC Statement of Basis and Purposed for Proposed Rules http://www.nyc.gov/html/tlc/downloads/pdf/taxi_fare_rules_passed.pdf

[15] http://www.nyc.gov/html/tlc/downloads/pdf/taxi_draft_scope_of_work.pdf

[16] Fare elasticity findings have been corroborated by research done by others, such as Schaller (1999), *Transportation* 26:283-297 "Elasticities for taxicab fares and service availability"

be equivalent to the "DOV weekly all-in lease rate"[17] divided by two. Assuming an average work week of six days for the second shift driver, a per-shift lease rate for second shift drivers is calculated.

Table 6: Independent Medallion Lease Assumptions for Second Shift Drivers

Metric	Assumed Value	Source	Unit
Weekly Long-Term Lease Rate without ToT	$1,389	Hybrid Independent Lease Rate	Dollars / Week
Weekly Long-Term Lease Rate without ToT	$1,347	Conventional Independent Lease Rate	Dollars / Week
Weekly Long-Term Lease Rate with ToT	$1,389	Hybrid, ToT & Wheelchair-accessible Independent Lease Rate	Dollars / Week
Weekly Long-Term Lease Rate without ToT	$1,347	Non ToT Conventional Independent Lease Rate	Dollars / Week
% Weekly Lease Rate for Second Shift Drivers	50%	TLC	%
Average Long-Term Second Shift Driver Work Week	6		Days / Week

Total revenues earned by taxi medallions are affected by double-shifting assumptions (percent of the fleet operating 2 shifts a day) as shown in Table 7. There are various methods for querying T-PEP data to obtain an estimate of how much double-shifting takes place fleet-wide (e.g., basing it on the number of hours in which actual trips are logged, or basing it on the number of distinct drivers that log into the system in a day); however, estimating double-shifting rates in aggregate is uncertain. In addition, TLC does not definitively know which medallions are run as fleets and which are run as DOVs, and estimates used in the analysis are TLC's best determination based on information from licensing records and provided by taxi industry representatives. The range of double-shifting estimates shown in Table 7 reflects TLC's best estimate for each group in the analysis. Generally, the lower the double-shifting assumption, the higher the impact on the value of a medallion due to the introduction of the ToT, since net cash flows will be lower (while most costs remain fixed although vehicle maintenance and insurance costs are assumed to increase with greater double shifting). Since CEQR guidance require reasonable worst-case assumptions be used to estimate impacts, this analysis uses the low range of these estimates.

[17] Listed in TLC rules as "Standard Medallion Lease Cap including Long Term Vehicle Lease/Conditional Purchase."

Table 7: Double-shifting Estimates by Medallion Operating Structure

Medallion	Low End of Range	High End of Range	Source
Owner-driver (assumed Independent)	40%	53%	Estimated based on TLC T-PEP Data 2012
DOVs (assumed Corporate)	69%	82%	Estimated based on TLC T-PEP Data 2012
Fleet (assumed Corporate)	81%	92%	Estimated based on TLC T-PEP Data 2012

Taxi utilization assumptions and shifts per year assumptions for corporate fleet medallions are presented in Table 8. The double-shifting assumption of 81 percent implies about 1.8 shifts per day on average. Combining the utilization rate with days per year and shifts per day gives the total annual shifts per year.

Table 8: Taxi Utilization Assumptions for Corporate Medallions

Metric	Assumed Value	Source	Unit
Days / Year	365		Days
Corporate Utilization Rate	98.8%	TLC T-PEP Data	% rate
Corporate Fleet Double-shifted Taxis	81%	TLC	% rate
Corporate Fleet Shifts per day	1.8	Calculated	Shifts / day
Corporate Fleet Revenue Shifts Per Year	653	Calculated	Shifts / Year

Utilization assumptions for DOV's are presented in Table 9. The double-shifting assumption of 69 percent results in an estimate of about 1.7 shifts per day for the average DOV vehicle. Days per year assumptions are combined along with average fleet utilization assumptions to calculate about 590 shifts per year for the average DOV vehicle.

Table 9: Utilization Assumptions for DOVs

Metric	Assumed Value	Source	Unit
Days / Year	365		Days
DOV double-shift rate	69%	TLC estimates based on T-PEP data March 2012	%
Fleet Average Taxi Utilization Rate	95.6%	TLC T-PEP Data	
DOV shifts per day	1.7	Calculated	Shifts / day
DOV shifts per year	590	Calculated	

As shown in Table 10 below, average shifts per day for independent medallions were calculated assuming that 40 percent of independent medallions are double-shifted. This means that the average independent medallion is operated for about 1.4 shifts per day. Assuming an independent utilization rate of 95.1 percent based on TLC data and the calculated independent shifts per day results in 486 annual shifts per independent medallion. Assuming an independent owner works 5 days a week for 52 weeks a year results in 260[18] independent owner shifts – these are those shifts that will be driven by the independent driver himself. The difference between total shifts per independent medallion and independent owner shifts were assumed to be leased shifts.

Table 10: Taxi Utilization Assumptions for Independent Medallions

Metric	Assumed Value	Source	Unit
Days / Year	365		Days
Independent Taxi Utilization Rate	95.1%	TLC T-PEP Data	%
Independent Double-shifted Taxis	40%	TLC T-PEP Data 2012	%
Independent Shifts per day	1.4	Calculated	Shifts / day
Total Independent Shifts	486	Calculated	Shifts / Year
Owner Driver Shifts	260	Based on 5 work days, 52 weeks a year	Shifts / Year
Independent Leased Shifts	226	Calculated as the difference between Total and Owner Driver Shifts	Shifts / Year

Recently passed TLC rules require medallion owners to pay the credit card fee arising from credit card transactions. Total average fare on credit cards is higher than the average fare per transaction for a variety of reasons, including higher base fares and possibly higher tipping. Fares shown are inclusive of taxes and tolls since credit card fees are determined based on the final fare amount and not just the base fare. As a result of the fare increase, average fare on credit cards is expected to increase from $14.5 per trip to $16.85. T-PEP vendors charge medallion

[18] T-PEP data suggests that many taxi drivers work more than 5 days a week, but they are likely not to work every week of the year.

owners typically 70 percent of the 5 percent credit card fees or 3.5 percent per transaction. Based on the average number of transactions per shift and the total number of shifts for each type of medallion (which varies by medallion type as discussed above), credit card fees are calculated. The calculated fees vary by medallion type since the total numbers of shifts vary by medallion type. Credit card fee assumptions are provided in Table 11.

The share of transactions paid by credit cards has been increasing over the past few years, increasing from 41.1 percent of monthly transactions in January of 2011 to about 46.7 percent in January of 2012, and reaching about 47.3 percent in May 2012. Compared to last year, the percent of credit card transactions has been growing at approximately 5 percent in 2012 (correct as of May, 2012). The adoption rate of any product typically follows an S-shaped curve and tends to decline after a period of initial increases.

Table 11: Credit Card Fee Assumptions

Metric	Assumed Value	Source	Unit
Total (Cash + Credit Card) Trips / Shift	22	Calculated	
Credit Fare (incl. tip, tolls and tax) / Trip	$14.51	TLC Fare Data (June 11 - May 12)	2011 Dollars
Credit Fare (incl. tip, tolls and tax) / Trip after fare increase	$16.85	Calculated	2011 Dollars
% Credit Card Fees on Transaction	3.5%	TLC	%
Annual Increase in percent of Credit Card Transactions	2.5%	HDR Assumption	%

The credit card transactions will eventually stop growing and an average growth rate is assumed for the entire period at 2.5 percent per year (i.e., credit card transactions as a percent of total transactions are assumed to grow every year by 2.5 percent). Since the same credit card assumptions are used in both scenarios (with and without the ToT), they do not have a significant impact on the results.

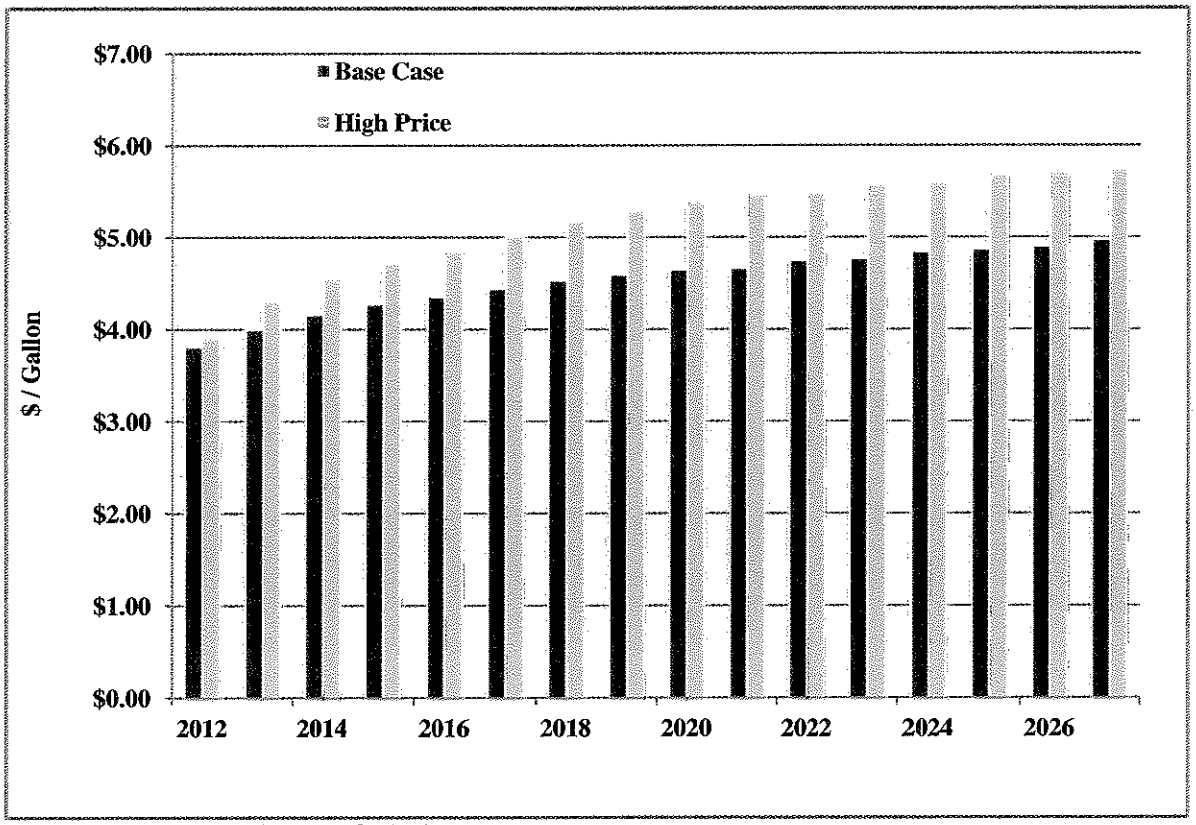
Table 12 below presents estimates of vehicle operating costs. Insurance, maintenance and repair costs are estimated on a per-mile basis. Thus, taxi vehicles that operated a greater number of shifts pay more in maintenance and repair costs, as well as for vehicle insurance.

Table 12: Vehicle Cost Assumptions

Metric	Assumed Value	Source	Unit
Maintenance and Repair	$0.049	FHWA Complete Car Cost Guide	Dollars / Mile
Insurance	$0.19	FHWA Complete Car Cost Guide	Dollars / Mile
Gas Price	$3.85	Energy Information Agency, New York City 2012 Price Forecast	Dollars / Gallon
Average Miles Driven Per Shift	114	Calculated	Miles per Shift

Fuel prices per gallon were based on Energy Information Agency (EIA) data and developed using the EIA 2011 fuel price forecast shown in Figure 5. Fuel prices presented are in real 2011 dollars. They are expected to reach almost $5 per gallon in 2027 in the reference case scenario, and about $5.74 dollars per gallon in the high-price scenario.

Figure 5: Fuel Price Forecast in 2011 Real Dollars



Source: EIA 2011 Annual Energy Outlook

Fuel costs were calculated on a per-shift basis and multiplied by the number of shifts for the different types of medallions. Thus, medallions that operate a higher number of shifts typically have higher fuel costs. The analysis takes into account the fuel efficiencies of the vehicles.

Consistent with mandated US vehicle fuel efficiency standards, it is assumed that future taxis would be more fuel efficient than current models. Fuel economy assumptions for the vehicle fleet in the Future without the ToT are summarized in Table 13.

Table 13: Estimated Fuel Economy 2011-2020 (Miles per Gallon)

	Fuel Economy Matrix									
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Impala	19.0	20.7	21.2	21.6	22.4	23.2	23.2	23.2	23.2	23.2
Crown Victoria	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Taurus	18.0	19.6	20.0	20.5	21.2	22.0	22.0	22.0	22.0	22.0
Transit Connect	21.0	22.9	23.4	23.9	24.7	25.7	25.7	25.7	25.7	25.7
Odyssey (Minivan)	19.0	20.7	21.2	21.6	22.4	23.2	23.2	23.2	23.2	23.2
Sienna (Minivan)	19.0	20.7	21.2	21.6	22.4	23.2	23.2	23.2	23.2	23.2
Malibu (Hybrid)	26.0	28.4	28.9	29.6	30.6	31.8	31.8	31.8	31.8	31.8
Escape (Hybrid)	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
RX 400H (Hybrid)	32.0	34.9	35.6	36.4	37.6	39.1	39.1	39.1	39.1	39.1
Mariner (Hybrid)	32.0	34.9	35.6	36.4	37.6	39.1	39.1	39.1	39.1	39.1
Altima (Hybrid)	33.0	36.0	36.7	37.6	38.8	40.4	40.4	40.4	40.4	40.4
Camry (Hybrid)	31.0	33.8	34.5	35.3	36.5	37.9	37.9	37.9	37.9	37.9
Highlander (Hybrid)	28.0	30.6	31.2	31.9	32.9	34.3	34.3	34.3	34.3	34.3
Prius (Hybrid)	51.0	55.6	56.8	58.0	60.0	62.4	62.4	62.4	62.4	62.4
Jetta	30.0	32.7	33.4	34.1	35.3	36.7	36.7	36.7	36.7	36.7
Caravan (Wheelchair-accessible)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Sienna (Minivan) (Wheelchair-accessible)	19.0	20.7	21.2	21.6	22.4	23.2	23.2	23.2	23.2	23.2
VPG Autos MV-1	N/A	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
NV200 (TOT)	N/A	N/A	24.0	24.0	28.0	28.0	28.0	28.0	28.0	28.0
NV200 Wheelchair-accessible (TOT)	N/A	N/A	23.0	23.0	27.0	27.0	27.0	27.0	27.0	27.0

Source: 2011 EPA fuel efficiency, Ricardo / TLC Analysis, HDR Analysis

In completing this analysis, it was assumed that the fuel efficiency of a taxi would improve by approximately 9 percent between the 2011 and 2012, and at an average rate of approximately 2.9 percent per year between 2013 and 2016, after which it was assumed that there would not be any additional improvements in efficiency[19]. These assumptions were based on the National Highway Traffic Safety Administration (NHTSA) methodology of determining target fuel efficiency for a vehicle based on its footprint[20]. The methodology used by the NHTSA is such that fuel targets are modeled using logistic or S-shaped curves. Thus, the fuel efficiencies improve significantly year on year initially when the fuel efficiency is significantly short of the target and as the fuel efficiency approaches the target changes in the rate are slower. The fuel efficiency rates assumed for the ToT are based on the fuel efficiency standards proposed by Nissan for ToT vehicles.

Recently announced TLC rules allow medallion owners to charge additional lease fees (a gas surcharge)in exchange for providing fuel (an expense traditionally borne by the driver). TLC anticipates that corporate medallions operated under the fleets model will likely take advantage of this option. Based on the number of shifts that corporate fleets were operated, fleet revenues were increased for every shift operated according to the schedule shown in Table 14. Therefore, if the fuel price index is between $2.50 and $2.99, medallion owners can charge $16 in the Future without the ToT and $19 with the ToT.

Table 14: Fuel Surcharge per Shift for Corporate Medallions

Fuel Price Index	Future without the ToT	Future With the ToT
$2.49 or less	$13	$16
$2.50 to $2.99	$16	$19
$3.00 to $3.49	$18	$21
$3.50 to $3.99	$21	$24
$4.00 to $4.49	$23	$26
$4.50 to $4.99	$26	$29
$5.00 or more	$28	$31

Source: TLC Rule Book

A major component of operating costs for independent medallion owners is the cost of drivers' income. These were treated as costs and quantified as wage income and subtracted from total revenues. These assumptions are presented in Table 15 below. According the Bureau of Labor Statistics, average hourly incomes of taxi drivers were $13.85 per hour. As discussed above, independent medallions operate about 486 shifts per year. Given a 12-hour shift, which includes breaks and travel to and from the garage or other vehicle swap points, actual work hours are

[19] Current negotiated mandated standards are applicable until 2016. Standards beyond 2016 are now being negotiated.

[20] Improvements in fuel efficiency were averaged for vehicles between footprints of 45 - 55 square feet. The analysis uses NHTSA recommended constrained logistic curves. Further details can be found in "Corporate Average Fuel Economy for MY 2011 Passenger Cars and Light Trucks", Final Regulatory Impact Analysis, March 2009.

assumed to be 8 hours per shift. After applying the hourly wage assumption to working hours, wage costs per shift were estimated at $111 per shift. Based on the estimated 260 shifts per year, total annual wage costs per taxi were approximately $28,800 per year[21].

Table 15: Wage Cost Assumptions for Independent Medallions

Metric	Assumed Value	Source	Unit
Taxi Driver Wages $ / Hr	$13.85	Bureau of Labor Statistics, New York MSA 2010 inflated to 2011	Dollars / Hr
Hours / Shift	12.0	TLC	Hours
Working Hours / Shift	8.0	Mean working hours for US taxi drivers, Bureau of Labor Statistics	
Wage Cost per Shift	$110.8	Calculated	Dollars / Shift
Independent Owner Shifts / Taxi	260	Calculated	Shifts Per Year
Implied Driver Wage	$28,800	Calculated	Dollars

TLC regulations have established a health care fund for drivers. It is funded through a $0.06 per trip charge to be deducted from fare revenues and will go into place once the fund has been created. This charge would impact all drivers, but for medallion valuation purposes it would only impact independent owner-drivers as it would reduce revenues received from fares (other medallions owners generate revenues from leasing, not fares). Table 16 shows the assumptions used to quantify the impact of the health care fee. Using the calculated total trips per shift and the number of independent owner shifts per year, the health care fees for a Future with the ToT and a Future without the ToT were calculated.

Table 16: Health Care Fees for Independent Medallions

Metric	Assumed Value	Source	Unit
Health Care Fees per Trip	$0.06	TLC	$ per Trip
Total Trips / Shift	22	Calculated	
Independent Owner Shifts / Taxi	260	Calculated	Shifts Per Year

[21] These wage costs are included for valuation purposes only as compensation for the owner's time driving the vehicles. In the case of an owner-operator, the owner-operator does not actually pay himself a wage. However, for purposes of medallion valuation, we conceptualize him as doing so in order to properly model the costs and revenues that drive medallion values.

The evolution of the taxi fleet was forecasted on an annual basis through the year 2020. As vehicles came up for retirement, they were removed from the fleet and new vehicles were added (retirement schedules were based on actual hack-up dates and projected retirement dates in current TLC administrative records). As vehicles were replaced, the cost of newly purchased vehicles was accounted for as fixed capital investment. After 2013, these consist primarily of TOT purchases (NV200) priced at $29,700[22] for non-wheelchair-accessible vehicles and for wheelchair-accessible vehicles these consist of a combination of Toyota Siennas, MV-1 by VPG Autos and wheelchair-accessible TOT (NV200). The purchase prices of new taxi vehicles are shown below in Table 17. As vehicles are retired and replaced, new vehicles are purchased and are added to fixed capital investment costs.

Table 17: Assumed Purchase Price of Vehicles

Vehicle Type	Make	Vehicle	MSRP in 2011 dollars	Hack-up Cost	Total Cost
Conventional	CV	Impala	$24,495	$2,647	$27,142
Conventional	FD	Crown Victoria	$29,255	$2,647	$31,902
Conventional	FD	Taurus	$25,555	$2,647	$28,202
Conventional	FD	Transit Connect	$21,290	$2,647	$23,937
Conventional	TY	Sienna (Minivan)	$25,606	$2,647	$28,253
Conventional	HON	Odyssey (Minivan)	$28,075	$2,647	$30,722
Hybrid	CV	Malibu (Hybrid)	$21,975	$2,647	$24,622
Hybrid	FD	Escape (Hybrid)	$30,570	$2,647	$33,217
Hybrid	LX	RX 400H (Hybrid)*	$44,735	$2,647	$47,382
Hybrid	MR	Mariner (Hybrid)	$30,115	$2,647	$32,762
Hybrid	NA	Altima (Hybrid)	$26,800	$2,647	$29,447
Hybrid	TY	Camry (Hybrid)	$27,050	$2,647	$29,697
Hybrid	TY	Highlander (Hybrid)	$38,140	$2,647	$40,787
Hybrid	TY	Prius (Hybrid)	$23,520	$2,647	$26,167
Hybrid	VW	Jetta	$22,995	$2,647	$25,642
Wheelchair-accessible	DG	Caravan (Wheelchair-accessible)	$28,795	$2,647	$31,442
Wheelchair-accessible	TY	Sienna (Minivan) (Wheelchair-accessible)	$25,606	$2,647	$38,647
Wheelchair-accessible	VPG Autos	MV-1	$41,950	$2,647	$44,597
Conventional	NA	ToT[23]	$28,668	$633	$29,301
Wheelchair-accessible	NA	ToT	$42,181	$633	$42,814

Source: Various Manufacturer websites

[22] For comparison purposes this was converted to 2011 dollars accounting for inflation.

[23] The MSRP for the ToT will be $29,700 in 2013 and has been converted to 2011 dollars for comparison purposes. The difference between the conventional and wheelchair-accessible models is not expected to exceed $14,000 in 2013.

An important factor in the analysis is the selection of a discount rate for the valuation of the medallions. One potential value is the cost of borrowing required to purchase a medallion. The best available information on the cost of borrowing is the average interest rate charged by Medallion Financial, the principal lender to taxi medallion owners whose portfolio of City Taxi medallion loans had an average interest rate of 4.43 percent (SEC 10-Q Filing, June 2012)[24] . This interest rate is a nominal interest and takes into account inflation expectations. During 2009-2011, average inflation for urban areas in the US not considering volatile food and fuel prices was 1.4 percent per year. This yields a real discount rate of approximately 3.0 percent per annum. This analysis calculates an observed market discount rate such that discounted cash flows equal the observed market price of corporate and independent medallions. The weighted average (of corporate and independent medallions) calculated discount rates are 4.4 percent, which is relatively close to the 3.0 percent estimate discussed above.

Table 18 presents additional assumptions used to calculate the financial value of the medallion. Tax rates were assumed to be 40 percent, based on corporate tax rates applicable in the US. Accounting for intangibles, which include taxi medallions, allows for amortization of medallions over a period of 15 years. Thus, taxes were reduced to reflect this amortization. An assumption of 5 years was used for vehicle depreciation. Vehicle depreciation is a non-cash expense which reduces the taxes that medallion owners have to pay. Vehicle salvage costs of $3,100 were assumed and hack-up costs after 2013 were assumed to be $633. Based on discussions with TLC, agents pay medallion-owners a fee and keep revenues from leasing; the net difference or agent "fees" are approximately $1,068 per month[25]. These management fees were included for corporate medallions (both mini-fleets and DOVs). TLC charges a small annual fee for taxi meter inspections and other miscellaneous charges. These fees were also included. The analysis also takes into account vehicle hack-up costs and the salvage value of vehicles as they are sold once they are retired from service in the City.

[24] Based on Medallion Financial's June 2012 10-Q filing with the SEC in Consolidated Schedule of Investments (http://www.sec.gov/Archives/edgar/data/1000209/000119312512338045/d390523dex991.htm).

[25] A medallion agent pays the medallion owner about $3,388 per month for the privilege of leasing out that owner's medallion to a DOV driver. Most DOV drivers pay $1,114 per week for leasing the medallion, or about $4,456 per month. The agent's profit or fee can be conceptualized as the difference between how much he pays the medallion owner and how much the DOV driver pays him. This is about $1,068 per month.

Table 18: Additional Valuation Assumptions

Metric	Assumed Value	Source	Unit
Corporate Medallion Discount Rate	3.1%	Calculated	%
Independent Medallion Discount Rate	6.1%	Calculated	%
Tax Rate	40%	KPMG Corporate and Indirect Tax Survey 2010	%
Average Depreciable Life of Vehicle	5	Calculated average based on projected vehicle retirement and hack-up date[26]	Years
Average Vehicle Salvage Value	$3,100	TLC Safety and Emissions Estimate	Dollars
Hack-up Cost	$633	Hack-up Costs after introduction of ToT in 2013	Dollars
Medallion Asset Amortization	15	US Tax code, 26 C.F.R. § 1.197-2 Amortization of goodwill and certain other intangibles.	Years
Medallion License Renewal Fees	$825	TLC	Dollars / Year
Management Expense	$1,068	TLC Estimate	Dollars / Month

Economic growth assumptions are also incorporated into the analysis and are shown in Table 19. Based on a regression model, the impact of additional trips due to growth in employment was estimated. The estimates suggest that a 10% increase in total employment in the City results in a 7% increase in taxi trips. The New York State Department of Labor forecasts employment growth for the City at 0.4% per year. This employment growth translates into an annual growth in taxi trips of 0.3%. This increase in taxi trips is incorporated for both scenarios similarly (with the introduction of ToT and without the introduction of ToT).

Table 19: Economic Growth Assumptions

Metric	Assumed Value	Source	Unit
Employment Growth in New York City	0.4%	NY State Department of Labor, 2008 – 2018 Long Term Employment Forecast	%
Elasticity of Trip growth with Respect to New York City Employment Growth	0.743	Regression Based Estimate 2009-2011	

Source: HDR Analysis, New York State Department of Labor

Finally, this analysis was conducted in real terms using real discount rates and not in nominal terms. Implicitly, therefore, the analysis assumes that costs will rise with general inflation, while fares and lease rates will rise sufficiently over the period of analysis to keep revenues and fares constant in real terms.

[26] According to vehicle hack-up and retirement data received from the TLC, the current average retirement of a vehicle is 5.2 years.

2.1.4 Additional Long term Assumptions

As discussed above, revenues and costs were estimated for the three different taxi operation models (corporate fleets, DOVs and independents) for the period 2012 to 2027. Based on the assumptions above, revenues were calculated for the entire period starting from 2012. Costs, including vehicle purchase costs, vehicle replacements, and fuel costs, were developed in detail based on projections of the vehicle fleet up to 2020 (the first full year when all vehicles eligible to convert to ToT would have converted). After 2020, the following assumptions were made to forecast revenues and costs:

- Revenues for the period beyond 2020 were calculated in the same way as those prior to 2020 (using the assumptions described above);
- Vehicle purchase (replacement) costs were based on the average costs incurred during the period 2013 – 2020 (the roll-out period for the ToT);
- Vehicle hack-up costs and the salvage values of vehicles were based on the average costs incurred during the period 2013 – 2020 (the roll-out period for the ToT);
- Fuel efficiencies and vehicle fleet characteristics were assumed to stay constant beyond 2020. Increases in fuel costs beyond 2020 were determined by the real increases in the price of fuel based on the EIA 2011 fuel price forecast for the period 2012 to 2027 (as presented above);
- Vehicle maintenance and repair costs, insurance costs, credit card fees, health care fees were calculated using the same assumptions as before 2020; and
- The annual depreciation incurred on the purchases of new vehicles was assumed to be equal to the average annual replacement rates of additional vehicles.

2.1.5 Impacts of Taxi of Tomorrow on the Value of a Taxi Medallion

The medallion is an asset that is assumed to confer upon its holder a stream of cash flows into the future beyond the final analysis year of 2027. Expected cash flows were modeled explicitly for the period 2012 through 2027. Since the medallion confers a right to future revenues from the operation of taxis in the City, the net cash flows should be viewed as income to the holder for an indefinite period in the future (the "terminal value" of the asset). Discounted cash flows for beyond 2027 are added to the discounted cash flows per medallion presented in above to estimate the value of a medallion (see attachment for details). As discussed above, the estimates of the value of a medallion incorporate the effect of changes in fuel expenses, hack-up costs, salvage value of the vehicles, and the purchase price of the vehicles.

Table 20 shows the estimated present value of corporate medallions based on Future Conditions with the ToT and without the ToT for the four different fleet forecast scenarios previously outlined. All fleet forecast scenarios show that the impact on the value of a medallion would vary from an increase of 0.7 percent to a decline of 1.8 percent. For scenarios 3 and 4, the shorter lifecycle assumption for conventional vehicles increases the impact of the introduction of the TOT, for example in the case of scenario 2, reducing the expected life cycle for conventional vehicles increases the impact of the ToT from a decrease of 0.9% to a decrease of 1.8%.

Table 20: Impact of the ToT on the Value of a Corporate Taxi Medallion

Scenario	Impact in Percent
Scenario 1	0.7%
Scenario 2	-0.9%
Scenario 3	-0.1%
Scenario 4	-1.8%

Source: HDR Analysis

Table 21 shows the impact of the TOT on the value of an independent medallion. The value of an independent medallion is expected to decline by 0.1% to 2.6%.

Table 21: Impact of the ToT on the Value of an Independent Taxi Medallion

Year	Impact in Percent
Scenario 1	-0.1%
Scenario 2	-1.3%
Scenario 3	-1.2%
Scenario 4	-2.6%

Source: HDR Analysis

Impacts due to the ToT are limited to costs, as revenues under all four scenarios are higher with the ToT than without the ToT because of the lease cap and gas surcharge adjustments that would be put into place as the ToT is implemented. The cost of operating a taxi vehicle (primarily fuel costs) with the ToT on average is slightly more than the cost of operating the taxi fleet without the ToT. The cost of operating a taxi vehicle is driven by two factors: the purchase price of the vehicle and the assumed lifecycle of the vehicle (i.e., how often the owner must replace it). On average, with the ToT program, the purchase price does not impact operating costs but vehicle retirement cycles do somewhat. The taxi fleet without the Proposed Action has a significant proportion of hybrids, which TLC regulations permit to have longer lifecycles (averaging approximately 6 years) compared to ToT and other conventional vehicles (averaging between 4 and 5 years).

Not considering the different lifecycles of all vehicles, the fleet with the ToT is only marginally more expensive, $300 to $400 on per year on average, a difference that is more than offset by the reduction in hack-up costs that will accompany the ToT. Assuming longer lifecycles for hybrid vehicles equal to 6 years increases the overall fleet acquisition costs, for the fleet with the ToT, by about $300 to $400 (annually) after accounting for hack-up costs, while assuming shorter lifecycles for ToT and conventional vehicles equal to 4 years (Scenarios 3 & 4) increases overall average annual fleet acquisition costs by approximately $700 after accounting for hack-up costs for the fleet with the ToT.

Another factor adversely affecting the net revenues earned by medallion owners who operate their medallions under the fleet model is that under the "high gas price scenarios", the net revenue obtained from the fuel surcharge would be higher without the ToT as compared to with ToT. Overall the fuel efficiency of the taxi fleet with the ToT would be less than the fuel efficiency of the taxi fleet that would be in place in the Future without the ToT. Assuming base case gas prices, fuel costs per shift, with the ToT are about $1 higher in 2020, while assuming higher gas prices, fuel costs with the ToT are $2.80 to $3.27 per shift higher. With the ToT, corporate medallions operated as fleets would therefore benefit from the fuel surcharge about $1,000 more on average annual basis (compared to the future without the ToT) given base case fuel prices. Thus, while the fuel costs, with the ToT, will be higher per shift even assuming base case fuel prices, the additional $3 per shift in fuel surcharges allowed for ToT vehicles would be more than sufficient to compensate for the difference. However, with higher fuel prices, these medallions would not be able to add significant net cash-flows through the fuel surcharge over and above what fleet medallion owners would make in the future without the ToT.

For independent medallions, revenue are slightly higher with the ToT than without the ToT because they would likely charge the higher long term lease rates for second shift drivers that would align with those that go into effect for DOVs with ToT. Fuel costs are an important factor driving the small negative impacts of ToT on independent medallions because fuel costs for an owner-driver would average about $250-$850 more per year with the ToT than without it (depending on future fuel price assumptions). Owner-operators would face increases in vehicle purchase expenses that are similar to those that would be faced by vehicle purchasers under other models of operation. That is, vehicle ownership costs are, on average, higher because some owners would have to replace their ToT vehicles more often than they would have been required by TLC regulations to replace their hybrid vehicles.

Table 22 presents revenues and costs for owners who lease their medallions only to DOVs. As discussed above, lease rates per week under current conditions were assumed to be capped at $1,114 dollars per week for hybrid vehicles and $1,072 per week for conventional vehicles. The number of weeks in a year the taxis are leased was based on corporate utilization rates and 52 weeks per year. Management expenses and license renewal fees were also included. As discussed above, medallion purchases can be amortized over a period of 15 years and medallion amortization expenses were included in the analysis. Cash flows and discounted cash flows were projected to year 2027 (the first year after the medallion purchase has been completely amortized) and a terminal value (the value of the asset such that it confers cash flows indefinitely into the future) of the asset was calculated (see additional technical details in Attachment 1).

Table 22: Revenues and Costs for Lease Medallions (DOVs) in 2020

Revenues and Costs	In the Future without the ToT	In the Future with the ToT
Hybrid / ToT Lease Rate Per Week	$1,114	$1,114
Conventional Lease Rate Per Week[27]	$1,072	$1,072
Hybrid Percent	100%	n/a[28]
Percent of Vehicles Not ToT or Hybrids or Wheelchair-Accessible Vehicles	n/a[29]	0%
Weighted Average Lease Rate	$1,114	$1,114
Revenue Weeks Per Year	51.38	51.38
Total Revenue	$57,233	$57,233
Less Annual Management Expense	$1,068	$1,068
Less License Renewal Fees	$825	$825
Less Credit Card Fees	$4,890	$4,890
Net Operating Income	$38,702	$38,702
Medallion Amortization Expense[30]	$62,398	$62,398
Less Tax[31]	-	-
Total Cash Flow	$38,702	$38,702
Discounted Cash Flow	$38,702	$38,702

Revenues and costs for medallions being operated under the fleet model are shown in Table 23. Lease revenues were calculated on a daily basis. The number of days in a year that the medallion is leased was based on the taxi utilization rate for corporate medallions. Hack-up costs were calculated on a fleet basis and then calculated on an average medallion basis based on the total number of medallions outstanding. Similarly, fixed capital investment includes the cost of all vehicles purchased, divided by the number of outstanding medallions. Vehicle maintenance costs, insurance costs, annual management expenses as well as license renewal fees were included as costs. Depreciation expenses for vehicles as well as medallion amortization expenses were included in the analysis. Cash flows and discounted cash flows were projected to year 2027 (the first year after the medallion purchase has been completely amortized) and a terminal value of the asset was calculated.

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[27] According to TLC most drivers who lease medallions only (DOVs) pay the hybrid lease rate because they generally operate hybrid vehicles

[28] These percentages are used to calculate the weighted average lease rate. For the future without the ToT this includes the percent of hybrid vehicles and conventional vehicles and their respective lease rates. In the future with the ToT the weighted average lease rate is calculated differently

[29] These percentages are used to calculate the weighted average lease rate. For the future with the ToT this includes the percent of hybrid, accessible and ToT vehicles allowed to charge the higher lease rate while all other vehicles will charge the lower lease rate.

[30] Medallion purchase is assumed to capitalized and then expensed on a 15 year schedule based on the classification of taxi medallion as a section 197 intangible.

[31] Taxes are calculated as Operating Income less Medallion Amortization expense multiplied by the tax rate. Since operating income is less than amortization expense there are no taxes due

Table 23: Revenues and Costs for Mini-fleet Medallions in 2020[32]

Revenues and Costs	In the Future without the ToT	In the Future with the ToT
Average Hybrid Lease Revenue Per Shift	$126	$126
Average Conventional Lease Revenue Per Shift	$123	$123
Hybrid Percent	30%	2%
Weighted Average Lease Revenue / shift	$124.2	$123.4
Revenue Shifts Per Year	653	653
Fuel Surcharge Revenue Per Year	$18,284	$20,243
Total Revenue	$99,382	$100,826
Less Average Hack-up Cost per Medallion	$479	$131
Plus Average Salvage Value per Medallion	$561	$640
Less Maintenance & Repair Costs per Medallion	$3,661	$3,661
Less Insurance Costs per Medallion	$14,121	$14,121
Less Annual Management Expense per Medallion	$12,816	$12,816
Less License Renewal Fees	$825	$825
Less Credit Card Fees	$5,412	$5,412
Less Fuel Expenses	$13,000	$15,138
Operating Income	$49,629	$49,363,
Vehicle Depreciation Expense[33]	$5,136	$5,439
Medallion Amortization Expense[34]	$70,032	$68,495
Less Tax[35]	-	-
Less Fixed Capital Investment[36]	$5,084	$6,159
Cash Flow	$44,454	$43,204
Discounted Cash Flow	$44,454	$43,204

Tabled 24 presents revenues and costs for independent medallions in year 2020, which include revenues from leasing as well as driving. Revenues from driving are based on 260 shifts driven by the driver using average fare of $12 per trip and about 22 trips per shift. Fuel costs are based on 260 shifts driven by the owner. Hack-up costs, fixed capital investment were calculated for the whole fleet and then averaged on a per medallion basis. Taxi driver wages were included as compensation for labor for owner-drivers based on an assumption of $13.8 dollars an hour and

[32] Assumes Vehicle Fleet Forecast Scenario 4

[33] Vehicle purchase is depreciated using an assumption of 5 years based on average fleet life calculated hack-up date and projected vehicle replacement

[34] Medallion purchase is assumed to capitalized and then expensed on a 15 year schedule based on the classification of taxi medallion as a section 197 intangible.

[35] Taxes are calculated as Operating Income less Medallion Amortization expense multiplied by the tax rate. Since operating income is less than amortization expense there are no taxes due.

[36] These are the purchase costs of new vehicles, which impact cash flows but are excluded from tax and income calculations

260 shifts per year. Vehicle depreciation expense and medallion amortization expense were included. Taxes are slightly higher with the ToT, as taxable income (net of depreciation and amortization) is higher as since amortization (as a section 197 intangible) is lower with the ToT. Cash flows and discounted cash flows were projected to year 2027 (the first year after the medallion purchase has been completely amortized) and a terminal value of the asset was calculated (see additional technical details in Attachment 1).

Table 24: Revenues and Costs for Independent Medallions in 2020[37]

Revenues and Costs	In the Future without the ToT	In the Future with the ToT
Revenue from Driving	$80,609	$80,609
Hybrid Lease Revenue Per Shift[38]	$116	$116
Conventional Lease Revenue Per Shift	$112	$112
Hybrid Percent	64%	n/a[39]
Percent of Vehicles Not ToT, Hybrids or Wheelchair-accessible Vehicles	n/a[40]	0%
Weighted Average Lease Revenue / shift	$114.5	$115.8
Lease Revenue Shifts	226	226
Lease Revenue	$25,860	$26,115
Total Revenue	$106,477	$107,764
Less Average Fuel Costs per Medallion	$5,176	$6,027
Less Average Hack-up Cost per Medallion	$479	$131
Less Taxi Driver Wages	$28,800	$28,800
Plus Average Salvage Value	$561	$640
Less Average Maintenance & Repair Costs	$2,725	$2,725
Less Average Insurance Costs	$10,509	$10,509
Less Medallion License Renewal Fees	$825	$825
Less Credit Card Fees	$4,027	$4,027
Less Health Care Fees	$335	$335
Net Operating Income	$54,163	$54,026
Vehicle Depreciation Expense[41]	$5,136	$5,136
Medallion Amortization Expense[42]	$46,903	$45,774

[37] Assumes Vehicle Forecast Scenario 4

[38] These rates are different than those shown for Fleet medallions since as discussed in Section 2.1.3 these are based on the weekly long term (typically DOV) lease rates.

[39] These percentages are used to calculate the weighted average lease rate. For the future without the ToT this includes the percent of hybrid vehicles and conventional vehicles and their respective lease rates. In the future with the ToT the weighted average lease rate is calculated differently

[40] These percentages are used to calculate the weighted average lease rate. For the future with the ToT this includes the percent of hybrid, accessible and ToT vehicles allowed to charge the higher lease rate while all other vehicles will charge the lower lease rate.

[41] Vehicle purchase is depreciated using an assumption of 5 years based on average fleet life calculated based hack-up date and projected vehicle replacement

[42] Medallion purchase is assumed to capitalized and then expensed on a 15 year schedule based on the classification of taxi medallion as a section 197 intangible.

Table 24: Revenues and Costs for Independent Medallions in 2020 (Continued)

Revenues and Costs	In the Future without the ToT	In the Future with the ToT
Less Taxes[43]	$849	$1,126
Less Fixed Capital Investment[44]	$5,084	$6,159
Total Cash Flow Per Medallion	$48,229	$46,742
Discounted Cash Flow	$48,229	$46,742

Given the significant growth in medallion values that has occurred in recent years,[45] a reduction of a maximum of 1.8% in value of a corporate taxi medallion or a reduction of a maximum of 2.6% in the value of an independent taxi medallion would not result in a significant adverse effect on the yellow taxi industry according to CEQR standards. That is, due to the health of the taxi market, as reflected by recent growth in medallion values, a reduction in medallion value of the magnitude projected by this analysis would not substantially impair the ability of the taxi industry to continue operating in the City.

2.2 Impact on the Automotive Body, Interior and Glass Repair Businesses, which Includes Businesses that Hack-Up Taxis

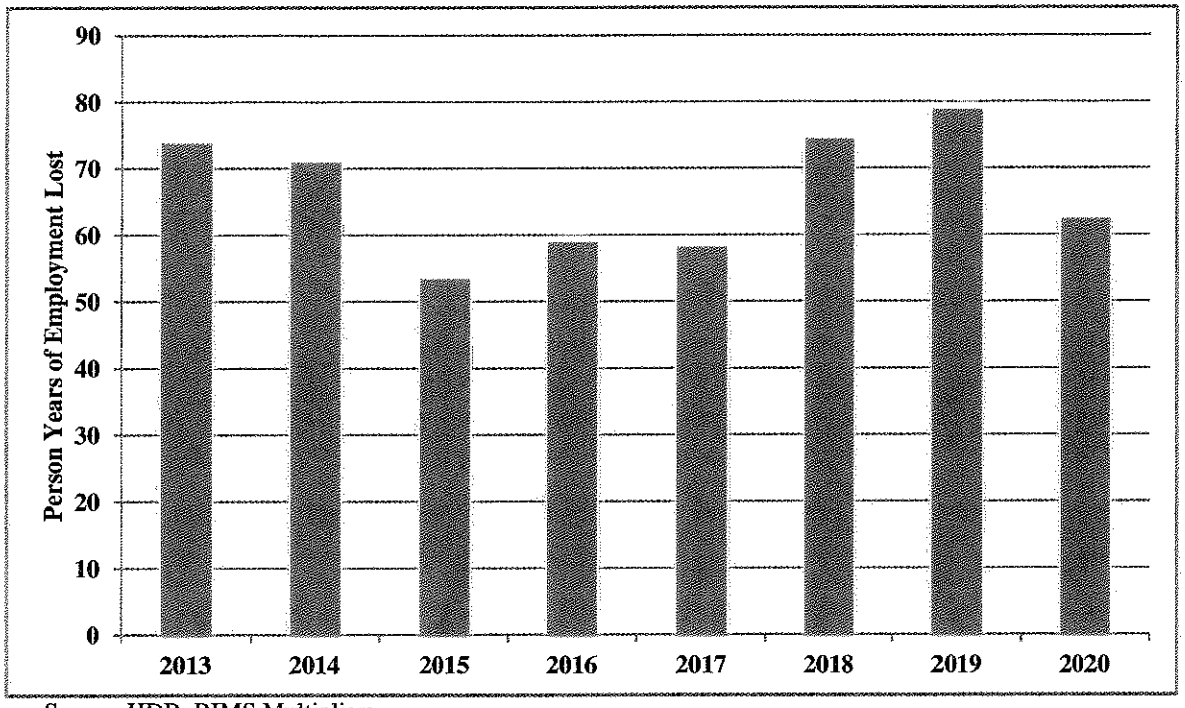
The introduction of the ToT would decrease hack-up costs from approximately $2,650 to $600 (based on surveys of providers of hack-up services and ToT contract documents) since hack-up in the Future with the ToT would be limited to taxi meters and T-PEP. The results of the assessment indicate that the introduction of the ToT would result in a net decrease in revenue for the automotive body, interior and glass repair business varying from $4.6 million to $6.7 million a year (details on the methodology are presented below and in the appendix). The employment impacts measured on the basis of person-years of employment lost would vary from year to year depending on the number of vehicles that would be hacked-up in a year during their life-cycle and timing of retirement of vehicles in the taxi fleet. As a consequence, the impact of the introduction of the ToT on the automotive body, interior and glass repair businesses, which include businesses that hack-up of vehicles for use as taxis, would be an employment loss between 54 and 79 person-years depending on the year (See Figure 6).

[43] Taxes are calculated as Operating Income less Medallion Amortization expense multiplied by the tax rate. Since operating income is less than amortization expense there are no taxes due.

[44] These are the purchase costs of new vehicles, which impact cash flows but are excluded from tax and income calculations.

[45] Medallion values have skyrocketed in recent years. According to records maintained by TLC, in 2001 the average sale price of an independent medallion was $188,958 and the average sale price of a corporate medallion was $209,458. The average independent medallion sale price thus far in 2012 was over $700,000. The average corporate medallion sale price thus far in 2012 was $1,000,000.

Figure 6: Person Years of Employment Lost by the Automotive Body, Interior and Glass Repair Business as a Consequence of the Introduction of the ToT



Source: HDR, RIMS Multipliers

Approximately thirty-one businesses in all five boroughs of the City are licensed to install meters in taxis (according to TLC, List of Meter Shops in New York). These thirty-one businesses can also be involved in the hacking-up of vehicles for use as taxis, although other automotive body, interior and glass repair businesses can also provide non-meter related hack-up services. As a consequence, the study area used in the assessment of potential impacts on the automotive body, interior and glass repair businesses included New York, Kings, Queens, Bronx and Richmond counties. The *2012 CEQR Technical Manual* identifies two criteria for the assessment of potential impacts of a proposed action on a specific industry of importance to the City:

- Would the proposed action result in a significant adverse effect on business conditions in any industry or any category of businesses within or outside the study area?
- Would the proposed action indirectly substantially reduce employment or impair the economic viability in the industry or category of business?

As summarized in Table 25, the Automotive Body, Interior and Glass Repair industry employs approximately 2,250 people in the City, of which over half are employed in Kings and Queens Counties.

Table 25: Employment in Automotive Body, Interior and Glass Repair

Area	Industry	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bronx County, New York	NAICS 81112 Automotive body, interior, and glass repair	511	482	451	446	449	451	459	485	443	422	396
Kings County, New York	NAICS 81112 Automotive body, interior, and glass repair	810	804	755	709	695	679	710	717	687	659	706
New York County, New York	NAICS 81112 Automotive body, interior, and glass repair	202	158	139	126	137	154	168	159	141	142	138
Queens County, New York	NAICS 81112 Automotive body, interior, and glass repair	852	804	778	755	725	728	753	747	689	657	686
Richmond County, New York	NAICS 81112 Automotive body, interior, and glass repair	224	213	209	220	191	252	266	282	314	316	313
	Total Employment	**2,599**	**2,461**	**2,332**	**2,256**	**2,197**	**2,264**	**2,356**	**2,390**	**2,274**	**2,196**	**2,239**

Source: Bureau of Labor Statistics

Wages and earnings for the Automotive Body, Interior and Glass Repair industry are shown in Table 26. Total earnings for the industry in the City area were estimated at $74.4 million dollars and grew about 3.6% compared to earnings in 2009.

As detailed in Table 27, the current vehicle fleet requires approximately $2,650 per vehicle in hack-up services for the installation of partitions, meters, painting and other requirements (based on TLC estimates received from hack-up shops). The estimated expenditures for hack-up services in the Future with and without the ToT are based on the estimated costs for American, Oldecar and Community garages to complete hack-up services. With the introduction of the ToT, vehicles would be delivered to the City market with nearly all required modifications to the vehicle needed for its use as a taxi pre-installed, except for the meter and the T-PEP system.

Table 26: Wages and Earnings in Automotive Body, Interior and Glass Repair Industry (thousands of dollars)

Area	Industry	2009	2010	2011[46]
Bronx County, New York	NAICS 81112 Automotive body, interior, and glass repair	13,113	11,980	11,699
Kings County, New York	NAICS 81112 Automotive body, interior, and glass repair	19,346	18,845	20,754
New York County, New York	NAICS 81112 Automotive body, interior, and glass repair	5,221	5,933	5,021
Queens County, New York	NAICS 81112 Automotive body, interior, and glass repair	22,287	22,653	24,253
Richmond County, New York	NAICS 81112 Automotive body, interior, and glass repair	11,843	12,351	12,628
Total Wages and Earnings		**71,810**	**71,762**	**74,355**

Source: Bureau of Labor Statistics

Table 27: Estimated Hack-up Costs of Current Taxi Fleet

Existing Equipment	American	Oldecar	Community	Average
Trouble lights	$70	$89	$105	$88
Meter	$450	$460	$463	$458
Roof light wiring	$60	$75	-	$68
Markings	$50	$48		$49
T-PEP	$200	$150	-	$175
Painting	-	$1,200	-	$1,200
Roof light	$125	$140	$233	$166
Partition	$370	$535	$425	$443
Camera	$685	$700	-	$693
Total in the Future with the ToT (T-PEP + Meter)				$633
Total in the Future without the ToT[47]				$2,647

Source: Based on quotes received from American, Oldecar and Community hack-up service providers, as told to TLC Chief of Safety and Emissions, April 2011.

[46] 2011 wages are preliminary

[47] Current regulations require that a camera or a partition be installed be installed, but not both. Camera installation is relatively rare (most owner have a partition, but not a camera) and thus has been excluded from the calculation of total hack-up cost.

Vehicle hack-up costs would decrease approximately 76% per vehicle in the Future with the ToT since the costs of installation of T-PEP and meter only account for 24% of current vehicle hack-up costs. As only T-PEP and meter would be installed locally, expenditures required to prepare the ToT for use in the City would be only $630 per vehicle.

The information outlined above, along with data from the Regional Input-Output Modeling System (RIMS II) was used to estimate the impacts on the automotive body, interior and glass repair industry, which includes the hack-up industry. RIMS II allows for the estimation of the economic multiplier effect of changes in the economic activity of a given class of business within a defined region. A description of RIMS is provided in Attachment 1 to this memorandum.

Table 28 summarizes the impact of the introduction of the ToT on the direct revenues, earnings and employment of the automotive body, interior and glass repair industry. The ToT is expected to be implemented in 2013 and expenditures related to hack-up are expected to decline from 2013 onwards. Average change in expenditure is calculated using the four fleet forecast scenarios - which assume different lifecycle of vehicles (see section 2.1.2 for description of the fleet forecast scenarios) – which impact the timing of hack-ups. Average changes in expenditures related to hack-ups therefore reflect change in expenditure per hack-up as well as the expected timing of hack-ups. The results of the analysis indicate that the decline in revenue in the industry would vary between $4.57 million and $6.74 million per year in the Future with the introduction of the ToT. Declines in earnings are not projected to exceed an average of $1.82 million per year and the decline in the level of employment within the industry is not projected to exceed 79 per years of employment.

The estimated impacts in terms of lost employment represent 3.5% of the employment of the automotive body, interior and glass repair industry and less than 2.5% of earnings of automotive body , interior and glass repair industry.

Table 28: Economic Impact of ToT on the Hack-up Industry

Condition	Metric	2013	2014	2015	2016	2017	2018	2019	2020	Worst Case Annual Impact
Future without the ToT	**Expenditure per Hack-up in $**	2,647	2,647	2,647	2,647	2,647	2,647	2,647	2,647	
Future with the ToT	**Expenditure per Hack-up in $**	633	633	633	633	633	633	633	633	-
Average Change in Exp.	**Change Exp. in $ in thousands**	**(6,311)**	**(6,066)**	**(4,573)**	**(5,039)**	**(4,979)**	**(6,366)**	**(6,739)**	**(5,342)**	**$(6,739)**
Earnings:	**Direct Impact in $ in thousands**	**(1,704)**	**(1,638)**	**(1,235)**	**(1,360)**	**(1,344)**	**(1,719)**	**(1,820)**	**(1,443)**	**$(1,820)**
Employment:	**Direct Impact in Person Years**	**74**	**72**	**54**	**60**	**59**	**75**	**79**	**63**	**79.0**

Source: HDR Analysis

2.3 Impact on the Outdoor Advertising Industry, Which Includes Businesses that Supply Roof-Top Advertising to Taxi Cabs

The TLC currently permits exterior rooflight advertising on taxis in the City. Businesses that provide exterior rooflight advertising represent a subset of the larger outdoor advertising industry. Advertising is provided by businesses within the overall outdoor advertising industry. Since the TLC may not be allow exterior rooflight advertising on ToT vehicles (at least in its current form), an estimate was completed of the potential loss in revenue to the industry that would occur with implementation of the ToT. Revenue that would be generated by the industry with and without the ToT were compared to determine whether the ToT would result in a significant adverse impact on the industry.

According to TLC administrative records, 9,205 (approximately 70%) of today's taxis have rooflight advertising. Roof-light advertising, identified by the North American Industry Classification System as a subset of the outdoor advertising industry, is the only form of exterior advertising currently permitted on taxis. Exterior advertising on taxis, which currently takes the form of roof-light advertising, accounts for approximately $21 million per year in gross revenues and, according to TLC administrative records, over 99% of all taxi exterior advertising is currently managed through a single firm, VeriFone Media, a subsidiary of Verifone Systems, which had net revenues of approximately $1.3 billion according to Verifone Systems, Inc. 2011 10-K report. Since the ToT would limit or change the nature of the use of roof-light advertising, an assessment of its impact on the outdoor advertising industry was included in the socioeconomic conditions impact analysis.

Revenue to businesses that provide taxi exterior advertising in the Future without the ToT would remain approximately the same as under Existing Conditions since the exterior advertising industry would have the same ability to provide rooflight advertising to the taxi fleet under the Future Conditions Without the ToT that it does today.

The current form of exterior/outdoor advertising (rooftop lights) may not be permitted on ToT vehicles. However, TLC is currently considering alternative forms of exterior advertising that will be permitted on the ToT vehicles. Permitted exterior advertising could include decal advertisements on the left and right sides of the vehicle underneath the rear window, decal advertisements under the window of the sliding door and/or on the rear of the vehicle, or some type of "shark fin," which is a narrow advertising board mounted on the roof the vehicle. Based on figures provided by the industry and TLC's intention to allow exterior advertising in some form on the ToT, it is conservatively estimated that the amount of revenue that would be generated for the outdoor advertising industry from advertisements on the ToT could be reduced by as much as 50% as compared to what would be generated by offering rooflight advertising in its current form.

3. CONCLUSIONS

Based on the results of this assessment, including assessments of the impact on the value of a taxi medallion, the impacts on the automotive body, interior and glass repair industry, and the impacts on the outdoor advertising industry, replacement of the existing fleet of taxis in the Future with the ToT would not result in a significant adverse socioeconomic impact as defined in the *2012 CEQR Technical Manual.*

With respect to the impact on the value of a medallion, there would be a slight net decrease of a maximum of 1.8% in the value of a corporate medallion and a decrease of a maximum of 2.6% in the value of an independent medallion. Given the significant growth in medallion values that has occurred in recent years,[48] these predicted reductions in the value of an independent taxi medallion would not result in a significant adverse effect on the yellow taxi industry. That is, due to the health of the taxi market as reflected by recent growth in medallion values, a reduction in medallion value of the magnitude projected by this analysis would not substantially impair the ability of the taxi industry to continue operating in the City.

Regarding the impact on the automotive body, interior and glass repair industry, there would be a loss in revenue to the industry is not expected to exceed approximately $6.7 million a year after the ToT is introduced. This translates into a loss that is not expected to exceed 79 of person-years of employment in the industry. This estimate assumes that the decline in revenue in this industry due to the ToT would not be replaced by increased revenue from other activities by businesses that currently hack-up vehicles for use as taxis. The estimated impacts in terms of lost employment represent 3.5% of the employment of the automotive body, interior and glass repair industry and less than 2.5% of earnings of automotive body, interior and glass repair industry. This is not a significant adverse impact per CEQR standards because it would not substantially impair the ability of the automotive body, interior and glass repair industry to continue operating in the City. Although the *2012 CEQR Technical Manual* does not define a particular impact threshold for what is determined "significant" by CEQR standards as it pertains to impacts on specific industries, even the worst-case impacts projected here are well under the 5% threshold used as a standard elsewhere the *2012 CEQR Technical Manual.*

Regarding the impact on the outdoor advertising industry, although the current form of exterior/outdoor advertising (rooftop lights) may not be permitted on ToT vehicles, TLC is currently considering alternative forms of exterior advertising that will be permitted on the ToT vehicles. Permitted exterior advertising could include decal advertisements on the left and right sides of the vehicle underneath the rear window, decal advertisements under the window of the sliding door and/or on the rear of the vehicle, or some type of "shark fin," which is a narrow advertising board mounted on the roof the vehicle. Based on figures provided by the industry and TLC's intention to allow exterior advertising in some form on the ToT, it is conservatively estimated that the amount of revenue that would be generated by businesses in the outdoor advertising industry that currently provide roof-top advertising to taxis could be reduced by as

[48] Medallion values have skyrocketed in recent years. According to records maintained by TLC, in 2001 the average sale price of an independent medallion was $188,958 and the average sale price of a corporate medallion was $209,458. The average independent medallion sale price thus far in 2012 was over $700,000. The average corporate medallion sale price thus far in 2012 was $1,000,000.

much as 50% as compared to what would be generated by offering roof-light advertising in its current form. However, this would represent a small portion of the overall revenues of the outdoor advertising industry and not represent a significant adverse impact on that industry.

ATTACHMENT 1

APPROACH FOR CALCULATING DISCOUNTED CASH FLOWS FOR TAXI MEDALLIONS

Attachment 1:
Approach for Calculating Discounted Cash Flows for Taxi Medallions

An important variable to forecast as part of the future fleet characteristics is the number of hybrid vehicles expected to be in the fleet without the introduction of the ToT. During March 2009 and August 2011 the percentage of the fleet that was comprised of hybrid vehicles increased from 15.7% to 38.0%, nearly doubling in two years. TLC provided HDR with monthly data on vehicle fleet composition during March 2009 – August 2011. An econometric model was developed that estimated the historical relationship between the share of hybrid vehicles that comprised the fleet, gas prices and how the adoption of the hybrid fleet has evolved over time.

Table A1 shows the relationship between the hybrid vehicle share, gas price and a trend over time. Coefficients have expected signs. Because hybrid vehicles are more fuel efficient than conventional vehicles, increases in gas prices are associated with increases in the share of hybrid vehicles holding other factors constant. The analysis incorporates a trend growth rate in the share of hybrids, which is captured by the constant. This trend is estimated to decline over time, which is captured by the coefficient on the monthly trend.

Table A1: Hybrid Vehicle Share Model

Dependent Variable: Log Growth Rate of Hybrid Share				
Method: Least Squares				
Sample (adjusted): 2009M04 2011M08				
Included observations: 21 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Constant	0.05	0.0	6.0	0.000
Log Growth Rate of Real Gas Price	0.23	0.1	2.5	0.023
Monthly Trend	-0.001	0.0	-1.589	0.129
R-squared	0.35			
Adjusted R-squared	0.27			
S.E. of regression	0.02			
Durbin-Watson stat	1.70			
F-statistic	4.79			
Prob(F-statistic)	0.02			

As discussed above, four vehicle fleet forecast scenarios were developed that incorporated future "high" and "baseline" future gas price scenarios from the EIA. The four vehicle forecast scenarios also incorporate different assumptions about the trend growth rate. In the base trend growth scenario (Scenario 1), the trend growth is set to equal the constant coefficient

estimate (0.05), and is declining over time based on the monthly trend coefficient. In the higher trend growth scenario (Vehicle Forecast Scenario 2), the trend growth is set to equal the constant coefficient estimate plus two times the standard error of the constant. The trend is assumed to decline over time based on the monthly trend. For both the base case growth scenario and the higher growth scenario the monthly trend increases over time until it neutralizes the constant growth rate, and for forecasts beyond this horizon changes in the share of hybrid vehicles are driven only by the gas price.

The forecasting exercise of the future vehicle fleet both with the ToT and without the ToT proceeded in 3 distinct steps:

Using the econometric model, an overall share of hybrid vehicles that would be part of the vehicle fleet in the Future without the ToT was developed. Two additional separate econometric models were used (calibrated based on historical data) to develop the share of vehicles from each manufacturer that should be expected to be purchased (for a purchaser looking for either a hybrid or conventional vehicle). For example, one model was used to develop the share of Ford vehicles that would be part of the hybrid fleet versus Toyota vehicles that would be part of the hybrid fleet. Similarly another model was used to develop the share of conventional vehicles that should be expected to be purchased from particular manufacturers (the number of vehicles that would be Toyotas, Fords etc). Using the manufacturer retail price, a share was assigned to each particular model from that manufacturer.

Using data on the current vehicle fleet and the expected retirement dates of current vehicles in service, projections were made for each year for the number of total vehicles that were expected to retire and replaced with new vehicles. Future retirement assumptions for hybrid vehicles, conventional vehicles and wheelchair-accessible vehicles were made using data from TLC which recorded the last hack-up date and the future expected retirement date for all the taxi vehicles. Expected vehicle retirements were calculated for every year till 2020.

Finally, revenue and cost assumptions, including investment and operating costs, were made using the methodology outlined in detail below.

The method used to estimate the discounted cash flows of a taxi medallion is summarized in the following equations for both corporate and individual medallions:

1. Initial Outlay (FClnv) = Vehicle Purchase Price Plus Hack-Up Cost

2. Annual after tax operating costs ("Cash flow" or CF) = (S – C – D)*(1-T) + D where

   S ("Sales") = revenue (fare) per mile

   C= Operating costs, including fuel costs + maintenance cost + insurance + labor cost

   D = Depreciation on the purchase of the vehicle. (Depreciation is a non-cash expense that is added to cash flow, resulting in a lower tax expense)

3. Terminal year after tax cash flow = Salvage Value (Sal) at retirement year less Taxes due on the difference between the salvage value at termination and book value (Salvage value is assumed to be equal to book value at the terminal year)

4. Estimated cash flow discounted at the Cost of Capital: The cost of capital is assumed to be 3.2% for corporate medallions and 5.8% for independent medallions, the discount rate is calculated such that the valuation reflects 2011 average observed market prices of medallions (both corporate and individual) assuming Lease Rate Scenario 1.

An average of cash flows for the period 2017-2020 is taken and forecasted to 2027 and divided by the discount rate. This is called the terminal value of the asset and gives the valuation of owning the asset indefinitely into the future. This terminal value is then also discounted back to present day value. Discounted cash flows for the analysis horizon are added to this discounted terminal value to give the economic value of the medallion.

Attachment 1: Description of Input-Output Models

An input-output model contains detailed data on earnings and labor used to produce specific goods and services, and is a suitable tool to analyze impacts of various policy changes on an industry. Since such a model was used in this analysis, a brief description of its workings is provided.

The primary measure of an industry's importance to the region is the total output generated from each dollar of its product or service sold. If an industry in a given county sells $1 million of its goods (whether the sale is outside the county is irrelevant), there is a direct infusion of $1 million into the county, which is called the direct effect (the direct effect is also called the final demand for the goods). However, suppliers to that industry based in the county have also been called upon to increase their production to meet the needs of the industry to produce the $1 million in goods, and suppliers of these same suppliers must also increase production to meet their increased needs. When all these indirect effect are added to the direct effect (the $1 million in sales), an estimate of the total (direct and indirect) output effect is obtained.

However, the total economic effect of the $1 million in sales extends further beyond the output effect. As all the production of output outlined above requires labor, this means that total wages and salaries paid have increased, both in the industry directly receiving the additional expenditure as well as all the affected supplying industries. These wages and salaries would in turn be spent in part on goods and services produced locally. This final effect on the regional economy through the spending of wages and salaries is known as the *induced effect*. By keeping track of how much labor is required to meet the direct, indirect and induced effects, the input output model also estimates the *employment* generated throughout the regional economy from the increased activity[49].

[49]In the input-output model, the estimate of increased employment would always be in terms of the employment required for a given level of production, usually referred to as *person-years* of employment. These estimates should never be interpreted as specifying *permanent jobs.*

The input-output model functions in the following way: An increase in final demand is "fed into" the model, and the model produces a calculation of the total effect (direct, indirect and induced) on the regional economy in terms of output, income and jobs.

FigureA-1: The Input - Output Model

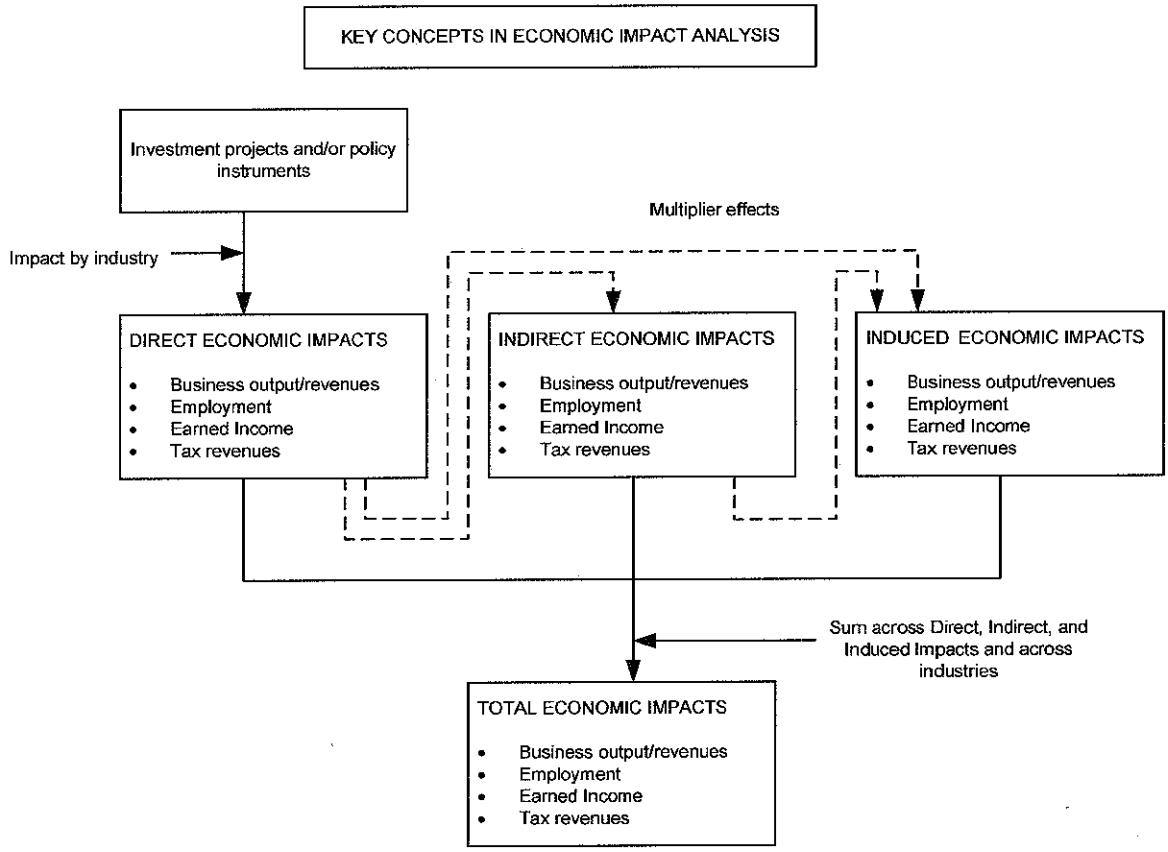


Table A2 shows the input–output multipliers from RIMS II model for the City for the automotive repair and maintenance industry, which includes the hack-up providers. The multipliers suggest that a $1 reduction in output for the hack-up industry results in $1.58 reduction in overall demand in the regional economy. Similarly, a $ 1 reduction in output results in a $0.38 reduction in earnings while a $1 million reduction in output results in the loss of 14.6 jobs City-wide. Using an input model the direct impacts that occur in the industry can be singled out. In particular, worker earnings are estimated to be reduced $0.27 per $1 in output and employment in the automotive repair industry reduces by 11.7 jobs in the automotive repair sector due to a $1 million reduction in automotive industry output.

Table A2: Input - Output Multipliers for Automotive Repair in New York City

8111A0 Automotive Repair and Maintenance, Except Car Washes	
Output Multiplier: City-Wide Effect per $1 in Final Demand	1.58
Earnings Multiplier: City-Wide Effect per $1 in Final Demand	0.38
Employment Multiplier: City-Wide Effect per $1 in Final Demand	14.57
Earnings Multiplier: Industry Impact per $1 in Industry Output	0.27
Employment Multiplier: Industry Impact per $1 Million in Industry Output	11.71