## BROOKLYN S T R E E T C A R FEASIBILITY STUDY



Presentation to Community Advisory Committee April 14, 2011 – CAC Meeting #3









# Outline

- Study Overview
- Recap of Interim Reports
- Feasibility Analysis
- Short-Term Non-Streetcar Transit Improvements
- Next Steps

### Study Overview Study Purpose

• Determine the feasibility of a streetcar linking Red Hook with surrounding areas

### Goals:

- Identify potential alignments
- Identify unit costs, and potential impacts (e.g. construction, utilities, traffic)
- Determine the feasibility of a streetcar in the Focus Area with connections to the larger Study Area







# Study Overview



# Study Overview

Schedule



### Recap of Interim Reports

Existing Conditions - Focus Area Transit Service

- High percentage of households with no vehicle (81.5%)
- Transit Service
  - B61 bus
    - 11,013 Average Weekday Riders
    - 8 Minute AM Peak Headway
  - Nearby Subway station at Smith/9<sup>th</sup> Street (F, G)
- Transit Issues
  - No subway service within Focus Area
  - Long travel time to Downtown Brooklyn
  - Perceived lack of bus reliability



# Recap of Interim Reports

#### Transit Demand Analysis



### Recap of Interim Reports Case Studies

### SELECTED SYSTEMS



Portland, OR



Seattle, WA



Philadelphia, PA

# Recap of Interim Reports

Case Studies–Key Findings

- Early utility coordination with public/private entities is a key factor
- Integration with existing bus and subway network is critical
- Increased development can occur with complementary incentives (Portland and Seattle); Streetcar alone will not result in additional development (Philadelphia)
- Streetcar ridership can build from first year (Portland and Seattle); Not all streetcar systems yield ridership increases (Philadelphia)
- Streetcar tracks can pose bicycle safety concerns; Design should minimize impacts on bicycle lane network



### Feasibility Analysis Alignment Options



#### **Red Hook Inset**

Smith/9th

Subway

Station (F,G)

SONS

Selected Goals, Objectives, and Evaluation Criteria

Goal/Objective	Evaluation Criteria
Improve Transportation Mobility	
Provide transit accessibility	Population within 1/3-mile of alignment
Provide Economic Opportunity and Enhance the Community Character	
Serve propose/projected development	Future development within 1/3-mile
Maintain Traffic and Delivery Access	
Maintain Curb Access	Minimize changes in linear-feet of access
Minimize Impacts on Built/Natural Environment	
Minimize traffic impacts	Minimizes negative impact on traffic flow
Minimize Streetcar Capital and Operating Costs	
Avoid or minimize utility relocation	Maintain access to utilities

### Feasibility Analysis Optimal Route



Optimal Route: Centre Mall and Lorraine Street

- Centre Mall fewer obstacles than narrow Lorraine Street
- Red Hook Housing Tenant's Associations
  - concerns about
    Centre Mall alignment



Optimal Route: Van Brunt Street / Richards Street

- Two-way Van Brunt Street route reduces total curb conflicts
- Utility and right-of-way width concerns remain



Optimal Route: Borough Hall

 Borough Hall terminal station provides most streamlined connection to Downtown Brooklyn



### Feasibility Analysis Key Issues

- Roadway constraints
- Utilities
- Land use and economic development
- Bicycle interaction



Roadway Constraints



Typical Cross Section: Van Brunt Street at Hamilton Avenue

- Streets as narrow as 38 feet present challenges for streetcars
  - As in Philadelphia, doubleparked or improperly parked cars can cause service delays
  - Lack of space for bicycle travel between track and parking lanes
- Roadway changes may be required
  - Parking bans or sidewalk reductions on Columbia and Van Brunt Streets
  - Reconfiguration of intersections to accommodate streetcar turns

Roadway Constraints

- 82 foot turning radius is streetcar standard; 50 foot radius possible with some vehicles
- Even smallest radius would require parking removal and/or sidewalk reductions at certain constrained intersections
- Streetcar turns may also result in property impacts at certain locations





Typical Cross Section: Atlantic Avenue at Clinton Street

- Known utility obstacles include 48-inch water mains and various private utilities under Atlantic Avenue and Van Brunt Street
- Potential obstacles include sidewalk vaults and Hamilton Avenue subsurface conditions
- Significant utility relocation required along portions of route

Land Use/Economic Development

- A successful Red Hook streetcar project would require changes in City development policy
- Philadelphia: No comprehensive development plan = No streetcar-induced development
- DCP: No planned changes to industrial zones in Red Hook or up-zoning of residential areas



# Feasibility Issues

**Street Operations** 

- Several intersections would require an additional phase to accommodate exclusive streetcar movements
- Accommodating existing bicycle routes would require parking removal (e.g. Columbia Street)
- Potential bicycle safety concerns
  - Narrow tires can get caught in track gap
  - Station bulb-outs present obstacles

#### Portland Streetcar Station Stop and Signage



### Feasibility Analysis Benefits

- A 12% increase in Red Hook transit ridership under current conditions; greater increase expected if paired with future development
- While Streetcar speeds would be similar to bus, higher capacity and smoother ride could increase passenger comfort
- Economic development benefits could be realized if City policy were to change in the future

### Feasibility Analysis Costs: Capital (in Millions)



### Feasibility Analysis Costs: Operating Costs

 Annual Streetcar Operating and Maintenance (O&M) Costs
 \$6.2 Million - \$7.2 Million

City	O&M Costs per Vehicle Revenue Mile	Annual O&M Costs
Tampa	\$31.95	\$2.4 Million
New Orleans	\$24.00	\$10 Million
Seattle	\$39.35	\$2.4 Million
New York (projected)	\$41.66	\$6.2 Million - \$7.2 Million

Source: National Transit Database (2009)

### Feasibility Analysis Summary of Findings

- Streetcar could be engineered along chosen alignment
- Chosen alignment still provides formidable implementation and operational challenges
- Estimated \$176 million in capital costs would result in 12% increase in transit ridership
- Current City development/land use policy in Red Hook is not complementary to streetcar as an economic development driver



Task	Result	Implication
Routing Options	Optimal route identified	Streetcar could be engineered in Study Area
Issue Identification	Significant issues include roadway constraints, utility relocations, compatibility with development approach, and bicycle safety	Even optimal route raises community impact, safety, and operational concerns

Task	Result	Implication
Benefits	12% projected gain in transit utilization, higher capacity vehicles, more comfortable ride	Streetcar will attract some new riders, but travel time and reliability gains over existing bus service not expected
Cost Calculation	Capital: \$176 million; Operation: \$6.2-\$7.2 million per year	Will be difficult to fund in constrained fiscal environment; Cost effectiveness questionable

### Feasibility Analysis Policy Decision

# Based on these considerations, NYCDOT is not supportive of a streetcar within the Study Area at this time

The following neighborhood factors would improve attractiveness of streetcar in New York City:

- Wider streets that better accommodate streetcar side by side with other street users
- Zoning and development policies (higher density, mixed-use) that can work in concert with streetcar to facilitate growth and create new riders

### Short-Term Improvements

DOT staff, in coordination with MTA-NYCT, has begun to investigate short-term alternatives to Streetcar that could provide enhanced transit access to Red Hook:

- New intersection at Mill Street and Hamilton Avenue
- Changes to NYCT B61 Bus Route
- Enhanced pedestrian environment connecting Red Hook to Smith/9<sup>th</sup> Street subway station



### Short-Term Improvements Mill Street Intersection

A traffic evaluation of the full intersection and vehicularpedestrian crossing at Mill Street and Hamilton Avenue will study the following:

- Mill/Garnet Streets become Eastbound connection (between Clinton Street / Smith Street) to subway station
- Reverse Mill Street between Hamilton Avenue and Court Street
- Signalize where necessary/warranted



### Short-Term Improvements Mill Street Intersection

### **BENEFITS**:

- Creates additional pedestrian connection to Red Hook
- Provides eastbound egress from neighborhood paired with westbound W. 9<sup>th</sup> Street
- Allows more direct bus connection between Red Hook Houses and Smith/9<sup>th</sup> Streets Subway
- Simplifies bike lane network

# Short-Term Improvements

Mill Street Intersection



### Short-Term Improvements B61 Bus Changes

- Potential service adjustments
- Additional stop shelters at Van Brunt Street / Hamilton Avenue and Columbia Street / Warren Street
- Upgrade existing shelters at Lorraine Street / Hicks Street and Lorraine Street / Henry Street



# Short-Term Improvements

Enhanced Pedestrian Environment

- Install pedestrian refuge on Clinton Street and Centre Mall
- Urban Art Project under Gowanus Expressway at W. 9<sup>th</sup> Street crossing



### Short-Term Improvements Urban Art Project

#### Lower East Side, Manhattan





#### West Farms Square, Bronx



# Questions?

# Comments?

## Next Steps

- Post Operations Memo and Feasibility Report on study website
- Receive public comments
- Hold public meeting in early May



• Produce Final Report