

CUNY -NYCCT

ECON 2505: Environmental Economic

**“Sustainable Industrial Park”
(Brooklyn Navy Yard)**



Presenters: Nyan Lynn Oo, Yineng Liang, Alpha Diallo

Brooklyn Navy Yard - History

- Established in 1801 by President John Adams
- Name of the yard changed by time from “United States Navy Yard – New York Naval Shipyard - Brooklyn Navy Yard”
- Built hundreds of various type of ships in the yard (Wooden Sailing Vessels ~ Modern Steam Engine Steel Vessels)
- Historical ships – USS Enterprise, USS Arizona, USS Missouri and many more...
- During WWII, employed approximately 70,000 workers – it was peak time of the yard.
- In 1966, the yard decommissioned by Secretary of Defense Robert McNamara.
- NYC reopen it as an industrial park in 1969
- City transferred to BNYDC (NPO) in 1981.
- Since then, 300 Acres former shipyard growth over time and become headquarter of more than 330 businesses and over 6,400 employees.



Brooklyn Navy Yard – Commitment to Sustainability

- Since 2007, the yard became one of the national model sustainable industrial park.
- It benefits both local community by creating green jobs and also the environment by reducing carbon footprint and manufacturing products by energy efficiently / environmental friendly ways.

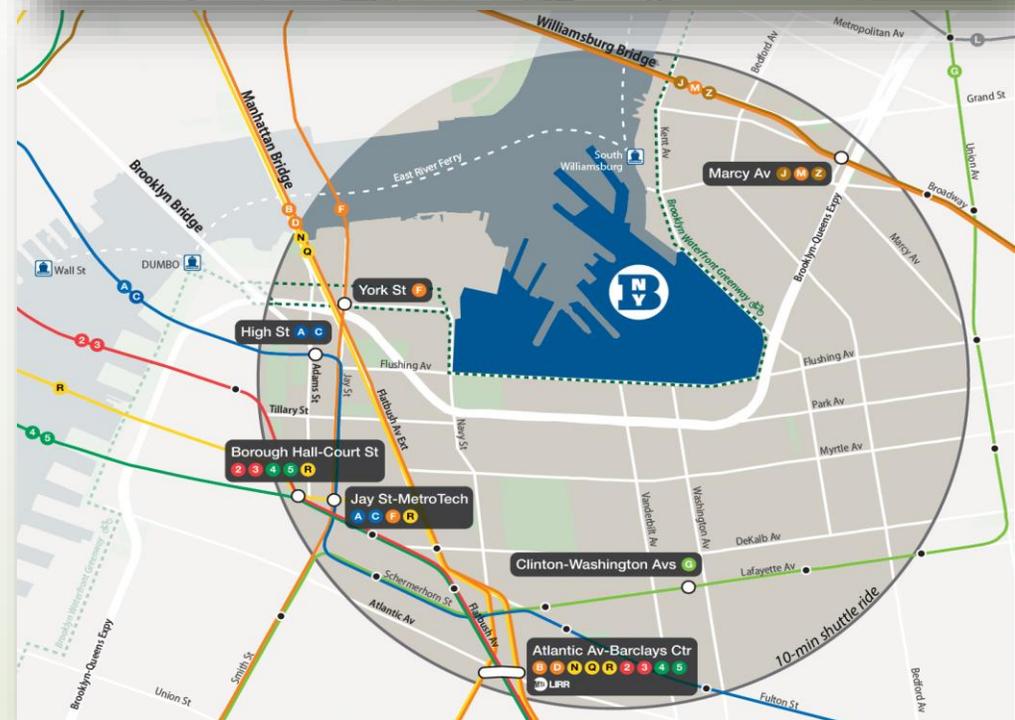
Sustainability Initiatives

- ❖ Reusing Existing Navy-built buildings for their original industrial intent.
- ❖ Require all new buildings and full renovate buildings in the yard must meet minimum of USGBC's LEED Silver Certifications.
- ❖ Supporting alternative uses for building rooftops including the installation of the largest rooftop farm in NYC.
- ❖ Using green technologies for renovations and maintenance, i.e. Installing Energy Star roofs, energy efficient windows and LED lightings and also implementing a new steam control, monitoring and distribution system.
- ❖ To access additional energy to meet the Yard's growth, BNYDC is committed to using clean and renewable energy through on-site cogeneration and a massive solar panel and roof mounted wind turbines installation on existing roofs.



Brooklyn Navy Yard – Commitment to Sustainability

- ❖ Undertaking a major water / sewer project to upgrade the Yard's aging infrastructure and improve water conservation; rebuilding the road system with improved storm water management systems, expanded landscaping with water-loving plants, and permeable asphalt.
- ❖ Using Eco-friendly products (Office/Toilet/Kitchen Products)
- ❖ Installed Solar-powered trash compactors and 90 solar and wind-powered street lamps throughout the yard
- ❖ All tenants must dispose waste properly – separate organic/recyclable/hazardous wastes. Also, encourage to reuse of construction waste and wood pallets that can be integrated into the various commercial products of Navy Yard tenants.
- ❖ installing bike lanes and racks to encourage greater bicycle use.
- ❖ Use of hybrid and low-emission vehicles for the Yard's fleet – converted shuttle buses and vans to hybrids and low diesel fuel emission vehicles.
- ❖ Increase its shuttle service to subways, encouraging the use of mass public transit – to mitigate carbon emissions, traffic and parking spaces issues.
- ❖ In addition, BNYDC is in negotiations with a yellow-grease biodiesel operator who will build a plant that will convert yellow grease from the City's restaurants into 5 million gallons of clean biodiesel that can be used by trucks and maritime vessels operating in the Navy Yard.



Building 92 – Brooklyn Navy Yard Center

- The former Marine Commandant's residence
- designed in 1857
- Decommissioned in 1966
- Restoration in 2009
- Renovation Cost: \$ 25.6 million
- Size: 4-story (33,825 ft²)
- Architect: Beyer Blinder Belle Architects & Planners LLP and Workshop.
- Constructor: Plaza Construction



Building 92 – Brooklyn Navy Yard Center

- Multi Use Building
- Employment Center of the yard – place local job seeker throughout the yard
- Rooftop Café and event spaces
- Leasable space for job training and workshop programs
- Multi media classrooms for school groups
- Home of the first major exhibition to tell the story of the Yard



BNYC92 LEED Platinum

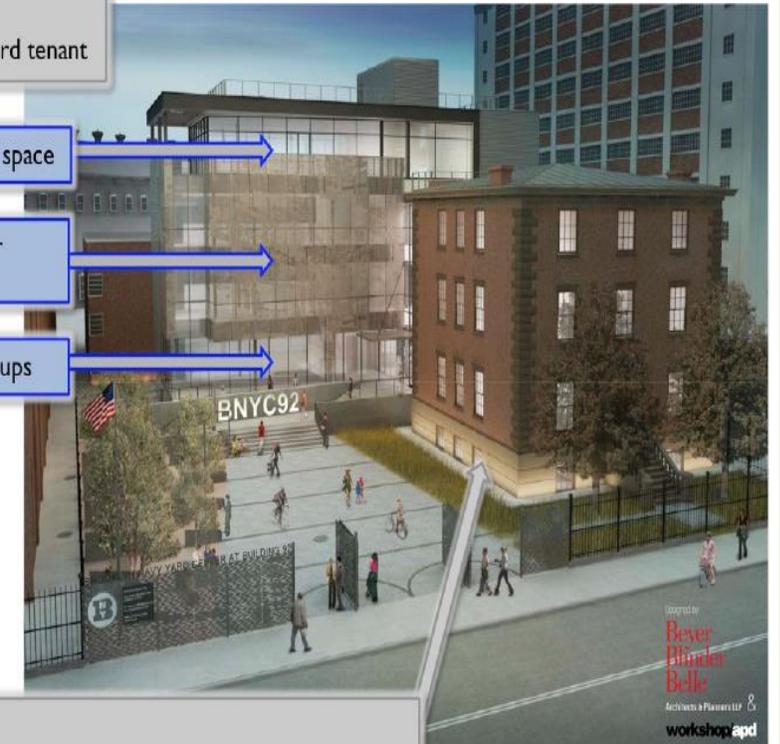
Modern Extension

Modular units constructed by Navy Yard tenant

Rooftop café and special events space

Two floors of leasable space for Job Training Program

Classroom space for school groups



Historic Structure

- Marine Commandant's Residence
- Designed in 1857 by Thomas U. Walter, 4th Architect of the US Capitol
- Three floors containing six galleries

Building 92 – LEED

- Awarded for LEED Platinum certification in 2013 – Highest Level of certification.
- LEED score 52/62
- Sustainable Aspects:
 - ✓ Efficient geothermal heat pump system for conditioning and photovoltaic domestic hot water heating.
 - ✓ Water-efficient plumbing fixtures
 - ✓ Vegetated/Solar Panels roof surfaces
 - ✓ Grey water re-use
 - ✓ Recycled content and low-VOC content materials.
 - ✓ Rain water capture system
 - ✓ Used reclaimed/ recycled construction materials
 - ✓ Energy efficient building envelop system
 - ✓ Energy efficient lightings
 - ✓ Bike racks / Disability assessable



LEED BD+C: Core and Shell v2 - LEED 2.0

Brooklyn Navy Yard Center at Building 92

63 Flushing Avenue
Brooklyn, NY 11205
United States
[Map](#)

LEED
PLATINUM
2013

[Overview](#) [Scorecard](#) [Stories](#)

LEED Scorecard

Platinum 52/62

- ▶ SUSTAINABLE SITES 13 OF 15 
- ▶ WATER EFFICIENCY 5 OF 5 
- ▶ ENERGY & ATMOSPHERE 13 OF 14 
- ▶ MATERIAL & RESOURCES 10 OF 11 
- ▶ INDOOR ENVIRONMENTAL QUALITY 7 OF 12 
- ▶ INNOVATION 4 OF 5 

[Share on Twitter](#)
[Share on Facebook](#)
[Share on LinkedIn](#)
[Print](#)

DOWNLOAD SCORECARD

LEED Facts

for LEED BD+C: Core and Shell (v2.0)

Certification awarded Apr 2013

Platinum	52
Sustainable sites	13/1
Water efficiency	5/5
Energy & atmosphere	13/1
Material & resources	10/1
Indoor environmental quality	7/12
Innovation	4/5

Building 92 – Building Efficiency

Summary of LEED Credits

Energy & Atmosphere

- ✓ 35% green power purchase
- ✓ 31.5% onsite renewable energy
- ✓ 28.0% improvement on baseline building performance rating

Water Efficiency

- ✓ 50% reduction in wastewater generation

Sustainable Sites

- ✓ Public transportation nearby
- ✓ Bike racks
- ✓ Outdoor spaces for public

Material & Resources

- ✓ Regional materials 30%
- ✓ Recycled content 30%
- ✓ Efficient construction waste management plan

0010424382, Brooklyn, NY

Brooklyn Navy Yard Center at Building 92

LEED BD+C: Core and Shell (v2.0)

PLATINUM, AWARDED APR 2013



SUSTAINABLE SITES

AWARDED: 13 / 15

SSc1	Site selection	1/1
SSc2	Development density and community connectivity	1/1
SSc3	Brownfield redevelopment	1/1
SSc4.1	Alternative transportation - public transportation access	1/1
SSc4.2	Alternative transportation - bicycle storage and changing rooms	1/1
SSc4.3	Alternative transportation - low emitting and fuel efficient vehicles	1/1
SSc4.4	Alternative transportation - parking capacity	1/1
SSc5.1	Site development - protect or restore habitat	1/1
SSc5.2	Site development - maximize open space	1/1
SSc6.1	Stormwater design - quantity control	1/1
SSc6.2	Stormwater design - quality control	0/1
SSc7.1	Heat island effect - non-roof	1/1
SSc7.2	Heat island effect - roof	1/1
SSc8	Light pollution reduction	0/1
SSc9	Tenant design and construction guidelines	1/1



WATER EFFICIENCY

AWARDED: 5 / 5

WEc1.1	Water efficient landscaping - reduce by 50%	1/1
WEc1.2	Water efficient landscaping - no potable water use or no irrigation	1/1
WEc2	Innovative wastewater technologies	1/1
WEc3.1	Water use reduction - 20% reduction	1/1
WEc3.2	Water use reduction - 30% reduction	1/1



ENERGY & ATMOSPHERE

AWARDED: 13 / 14

EAc1	Optimize energy performance	8/8
EAc2	On-site renewable energy	0/1
EAc3	Enhanced commissioning	1/1
EAc4	Enhanced refrigerant Mgmt	1/1
EAc5.1	Measurement and verification - base building	2/1
EAc5.2	Measurement and verification - tenant submetering	0/1
EAc6	Green power	1/1



MATERIAL & RESOURCES

AWARDED: 10 / 11

MRC1.1	Building reuse - maintain 25% of existing walls, floors and roof	1/1
MRC1.2	Building reuse - maintain 50% of existing walls, floors and roof	1/1
MRC1.3	Building reuse - maintain 75% of existing walls, floors and roof	1/1



MATERIAL & RESOURCES

CONTINUED

MRC2.1	Construction waste Mgmt - divert 50% from disposal	1/1
MRC2.2	Construction waste Mgmt - divert 75% from disposal	1/1
MRC3	Materials reuse - 1%	1/1
MRC4.1	Recycled content - 10% (post-consumer + 1/2 pre-consumer)	1/1
MRC4.2	Recycled content - 20% (post-consumer + 1/2 pre-consumer)	1/1
MRC5.1	Regional materials - 10% extracted, processed and manufactured regionally	1/1
MRC5.2	Regional materials - 20% extracted, processed and manufactured regionally	1/1
MRC6	Certified wood	0/1



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 7 / 12

EQc1	Outdoor air delivery monitoring	1/1
EQc2	Increased ventilation	1/1
EQc3	Construction IAQ Mgmt plan - during construction	1/1
EQc4.1	Low-emitting materials - adhesives and sealants	3/1
EQc4.2	Low-emitting materials - paints and coatings	0/1
EQc4.3	Low-emitting materials - carpet systems	0/1
EQc4.4	Low-emitting materials - composite wood and agrifiber products	0/1
EQc5	Indoor chemical and pollutant source control	1/1
EQc6	Controllability of systems - thermal comfort	0/1
EQc7	Thermal comfort - design	0/1
EQc8.1	Daylight and views - daylight 75% of spaces	0/1
EQc8.2	Daylight and views - views for 90% of spaces	0/1



INNOVATION

AWARDED: 4 / 5

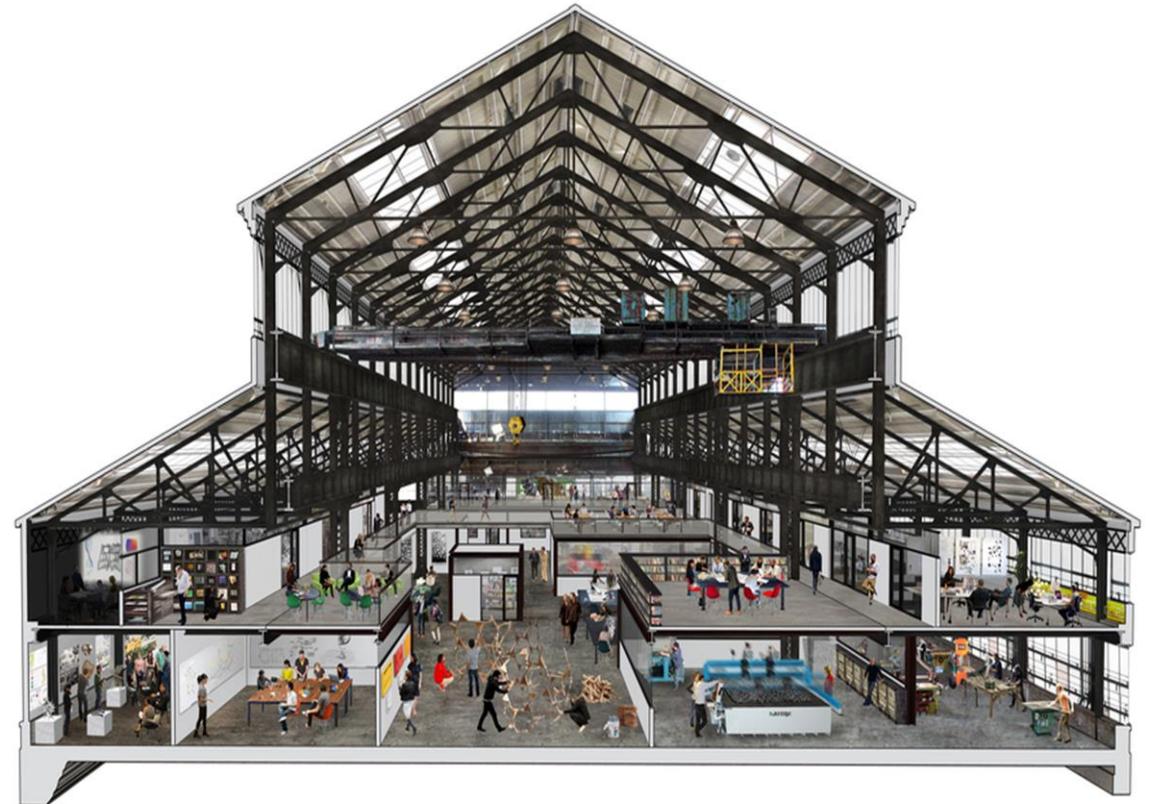
IDc1	Innovation in design	3/4
IDc2	LEED Accredited Professional	1/1

TOTAL

52 / 62

The New Lab – Green Manufacturing Center

- ❖ Three former ship building facilities will be transformed into a green manufacturing center.
- ❖ Building 128, 123 and 28 were built separately between 1895 and 1941 in historic Brooklyn Navy Yard.
- ❖ Decommissioned in 1966.
- ❖ Size: 2-Story (215,000 SF)
- ❖ \$ 60 Million On-going renovation project
- ❖ Estimated completion: Early 2016
- ❖ Still processing in LEED Silver Certification
- ❖ Project Design: Macro Sea and Marvel architects
- ❖ Project Management: DBI
- ❖ Architect: Marvel Architects and PLLC
- ❖ Mechanical Engineer: BD Engineering
- ❖ Funding: New York City Council, New Market Tax Credits and Federal and State Historic Tax Credits



The New Lab – Green Manufacturing Center

MISSION

- ❖ To inspire new paradigms in high-tech green manufacturing
- ❖ To promote interaction between institutions, technical disciplines, designers and local communities
- ❖ To provide open access to state-of-the-art facilities for innovators, inventors, and other creative individuals to create meaningful products and technology
- ❖ To enhance the Yard's initiative to become a national model for sustainable industrial parks
- ❖ To create unexpected value in underutilized places.



The New Lab – Green Manufacturing Center

BENEFIT: ENVIRONMENTAL

- ❖ Solar panels install on the roof for renewable energy resources
- ❖ Use recycled construction materials such as steel beams and columns
- ❖ Use wood come from sustainably maintained forests
- ❖ Energy efficient windows, lightings, MEP and HVAC systems

BENEFIT: ECONOMICAL

- ❖ support the growth of new industries and foster job creation of United States.
- ❖ create a public space that broadcasts the accomplishments of the New Lab community to a local, national, and international audience.
- ❖ 400 Permanent job creation
- ❖ Bring people from different disciplines together so they can work together
- ❖ Represent a space of sharing of minds for innovation in design, prototyping, and green manufacturing.



CONCLUSION

- We also found two major future projects: Renovation of Bldg. 77 and Wegmans supermarket and retail center.
- Both will renovate and construct with environment friendly materials and methods.
- Both will become highly energy efficient buildings when they finish.
- Combine both, there will be more than 3,600 permanent job opportunities for local community
- The businesses and green developments in the yard are booming.
- Therefore, we believe that the yard has a lot of potential to become nation's one of the top model green manufacturing park in near future according to our field trip observations and research from secondary resources.



REFERENCES

- <http://gbdmagazine.com/2015/a-stronghold-for-sustainability/>
- <http://fortgreenefocus.com/blog/2015/06/10/brooklyn-navy-yard-expansion-aims-to-add-8000-jobs-by-2020-say-business-leaders/>
- <https://commercialobserver.com/2014/08/brooklyn-navy-yards-green-manufacturing-center-gets-a-facelift/>
- <http://inhabitat.com/nyc/bldg-92-at-the-brooklyn-navy-yard-opens-its-leed-platinum-seeking-doors-to-the-public/>
- http://www.nytimes.com/2015/05/13/nyregion/wegmans-to-open-at-brooklyn-navy-yard.html?_r=1
- <http://www.environmentalleader.com/2009/04/15/wind-turbines-solar-coming-to-historic-brooklyn-navy-yard/>
- <http://www.bdcnetwork.com/new-york-mayor-bloomberg-opens-nations-first-multi-story-green-industrial-facility-and-announces-new>
- <http://brooklynnavyyard.org/the-navy-yard/commitment-to-sustainability/>
- <http://bldg92.org/>
- <http://inhabitat.com/nyc/brooklyn-navy-yard-announces-development-of-massive-green-manufacturing-center-for-nyc/>
- <http://macro-sea.com/projects/new-lab-2/#2>
- http://www.nyc.gov/html/bkncb2/downloads/pdf/bnyc92_presentation_101208.pdf
- <http://www.usgbc.org/projects/brooklyn-navy-yard-center-building-92?view=scorecard>
- <http://fortgreenefocus.com/blog/2015/11/12/brooklyn-navy-yard-releases-new-look-at-what-building-77-will-look-like/>
- <http://www.nytimes.com/2015/05/13/nyregion/wegmans-to-open-at-brooklyn-navy-yard.html>
- <http://www.plazaconstruction.com/news/press-releases/fullstory/16.5-million-restoration-and-addition-to-brooklyn-navy-yards-historic->
- http://www.nyc.gov/html/bkncb2/downloads/pdf/bnyc92_presentation_101208.pdf
- <http://www.bkmag.com/tag/brooklyn-navy-yard/>
- <http://macro-sea.com/projects/new-lab-2/#1>



QUESTIONS ?

COMMENT ?

OPINION ?