North Potomac Yard

Environmental Sustainability Master Plan

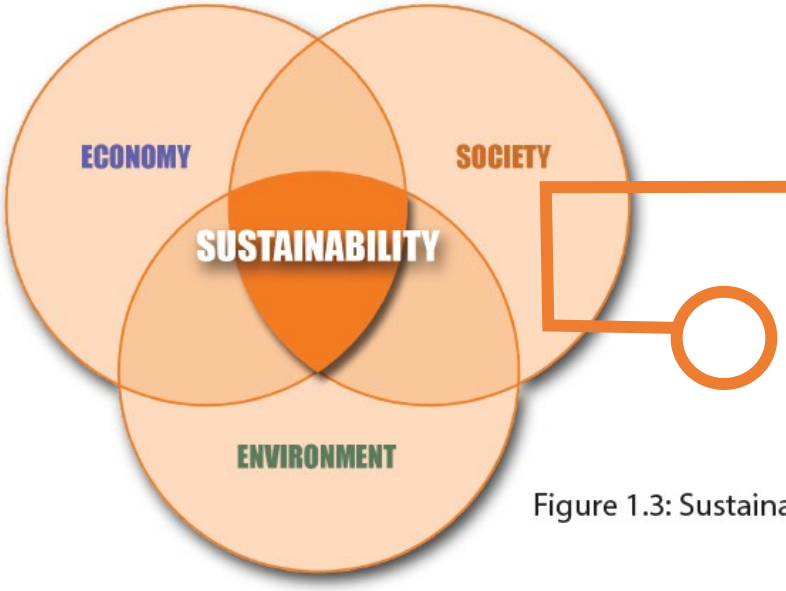
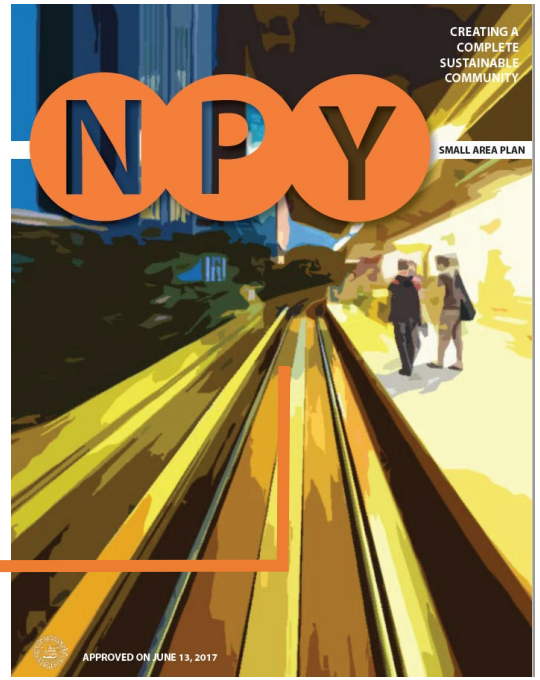


Figure 1.3: Sustainability Diagram



The fundamental goal of the Plan is for North Potomac Yard to achieve progressive and innovative strategies for sustainability in all aspects of development.

North Potomac Yard

Environmental Sustainability Summary of Recommendations

1. Environmental Sustainability Master Plan that implements the Plan and identifies short-term, mid-term and long-term strategies.

2. Strive to achieve carbon neutrality by 2040, and to strive to achieve carbon neutral buildings by 2030.

3. LEED Silver or the City's green building standards

4. Energy consumption/utilization and stormwater should be prioritized

North Potomac Yard

Environmental Sustainability Summary of Recommendation

5. Encourage on-site generation and storage of renewable electricity from solar photovoltaic (PV) and other available renewable resources

6. Explore the development of district energy systems for heating and cooling

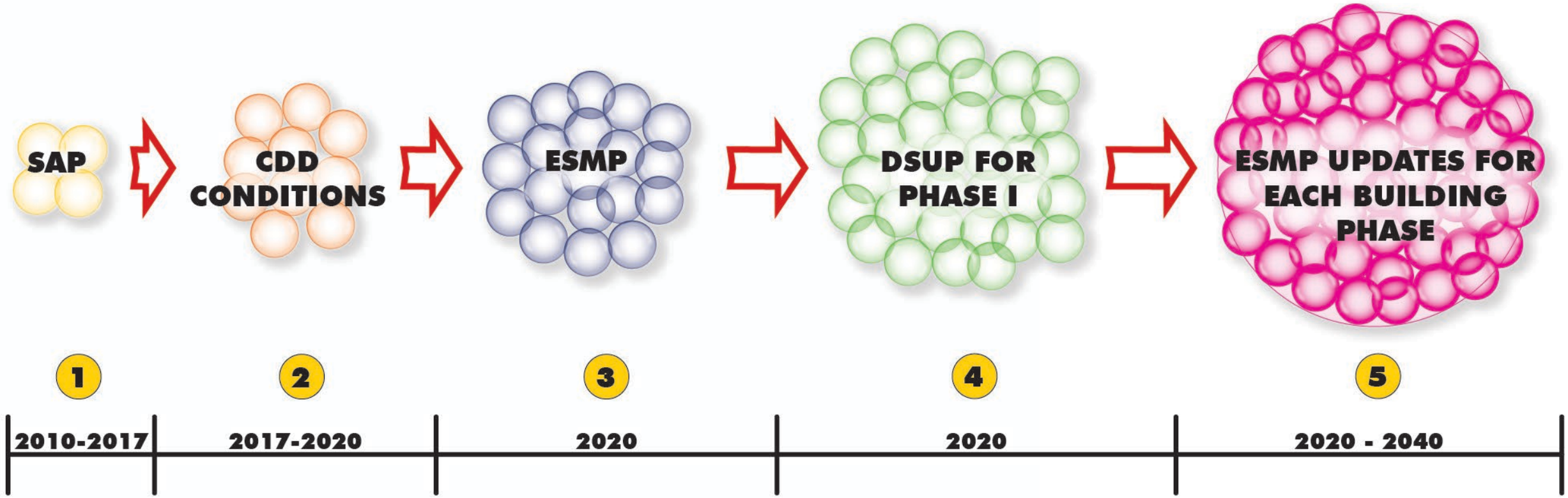
7. Require the provision of green roofs for new development.

8. Establish minimum quantities of green roof and/or solar power generation on building roofs.

SAP and CDD Compliance

North Potomac Yard Small Area Plan		CDD	
ESMP that implements the Plan and identifies short-term, mid-term and long-term strategies	X	Requires submission of ESMP with each building Phase	X
LEED-ND, Silver Certification	X	LEED ND, Silver Certification	X
LEED Silver or the City's green building standards	X	Stormwater phosphorous reductions	X
		Low-Flow fixtures/sanitary flow reductions	X
Establish minimum quantities of green roof and/or solar power generation on building roofs	X	Minimum green roof requirements established	X
Encourage on-site generation	X	Rainwater reuse	X
Provide an integrated open space network, which incorporates environmental components as part of its design.	X	Porous pavement systems	X
		RPA mitigation	X

Role of the NPY ESMP



- Requirement of NPY SAP and CDD Conditions
- Developer prepared, long-range document that sets the vision and framework for sustainability implementation
- ESMP implements and builds on CDD requirements and identifies tools and strategies to meet targets
- The aggregate of tools and strategies employed within each phase
- ESMP will be amended with each building phase

Outline of NPY ESMP

- **Sustainability is Top-of-Mind**
  - Woven into North Potomac Yard fabric
  - Conceptual design → operations
- **District-Wide and Building-Level**
  - Block strategies layer upon one another
  - Site-wide performance
- **Time-Based**
  - Short-Term, Mid-Term, Long-Term strategies
  - Targets to advance sustainability
- **Leadership in Sustainability**
  - Environmental Action Plan 2040
  - NPY Small Area Plan
  - 2019 Green Building Policy

CONTENTS

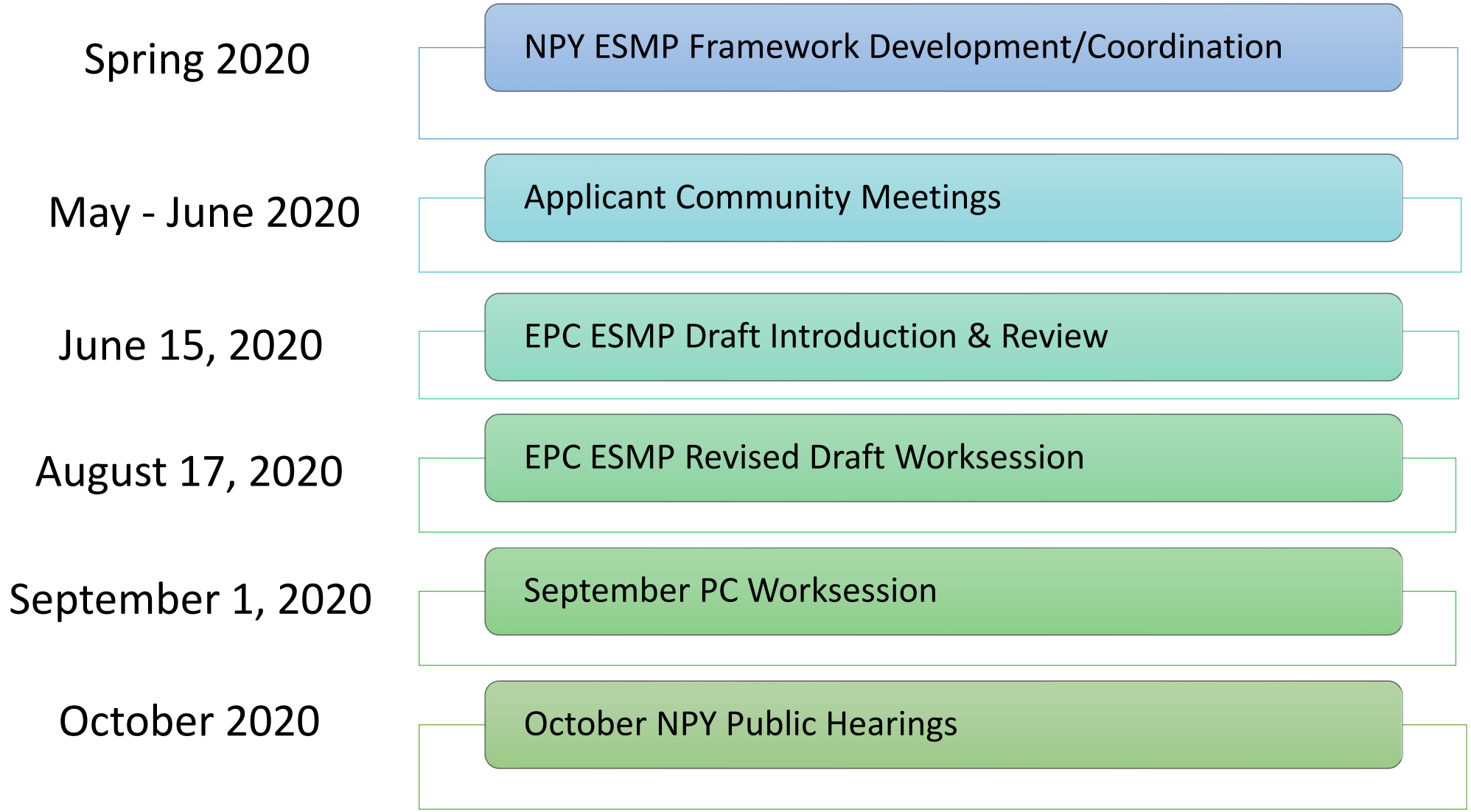
Of the 118 strategies identified, 110 (93%) are being explored as part of Phase 1 and 79 (67%) are District-Wide			
Category Strategies	**District-Wide Strategies: Included**	**District-Wide Strategies: Possible**	**District-Wide Strategies: Under Investigation**
Site: 25	17	4	2
Waste: 9	3	2	1
Water: 10	4	2	1
Carbon: 41	13	7	5
Health & Wellness: 19	9	2	3
Resilience: 6	1	2	1

Table 1. District-Wide Phase 1 Sustainability Strategies

NPY ESMP Targets Through 2040

Topic	Categories	Definition	Short-Term *(0-5 years)*	Mid-Term *(Projected: 5-10 years)*	Long-Term *(Projected: 10-20 years)*
Carbon	Operational	Maximum Energy Use Intensity (EUI) tracked using ENERGY STAR Portfolio Manager in 5-year cycles.	Blocks 10, 14, 18, 20: **35 - 45** Blocks 15, 19: **45 - 40** Blocks 4, 7E, 7W: **65 - 95**		
Carbon	Operational	% annual operational energy savings (energy, lifecycle, urban systems)	15%	*25%*	*40%*
Carbon	Embodied	% reduction in carbon emissions (materials, lifecycle, urban systems)	5%	*10%*	*15%*
Carbon	Renewables	% net annual production	3% - 5%	*5%*	*10%*
Carbon	Transportation	% of non-personal auto trips generated	50%	*65%*	*75%*
Water	Potable Water	% reduction in potable water use (fixtures)	30%	*35%*	*40%*
Water	Irrigation	% reduction in potable water use (irrigation)	20%	*50%*	*75%*
Water	Rainwater	% volume of impervious roof surface stormwater harvested for re-use	5%	*10%*	*15%*
Waste	Construction	% reduction in waste (materials & diversion)	50%	*65%*	*75%*
Waste	Consumables	% reduction in on-going waste (operations)	15%	*25%*	*35%*
Site	Open Space	% of site established for open space (ground-level and rooftop)	35%	*40%*	*45%*
Site	Heat Island	% of grade-level and above-grade coverage district-wide	25%	*50%*	*90%*
Site	SWM Treatment	% reduction in phosphorous	40%	*50%*	*60%*
Site	SWM Volume	% runoff volume managed on site	25%	*35%*	*50%*
Site	Tree Canopy	% of tree canopy coverage district-wide	40%	*45%*	*50%*
Site	Green Roof	% of roof allocated for vegetation (VT <25%: green roof + PV = 50% total)	25%	*30%*	*40%*

Outreach


Spring 2020
NPY ESMP Framework Development/Coordination
May - June 2020
Applicant Community Meetings
June 15, 2020
EPC ESMP Draft Introduction & Review
August 17, 2020
EPC ESMP Revised Draft Worksession
September 1, 2020
September PC Worksession
October 2020
October NPY Public Hearings

Proposed Staff Recommendations

The Environmental Sustainability Master Plan (ESMP) will be used as a guide for achieving the environmental objectives of the North Potomac Yard Small Area plan. The ESMP primary goal is to create a low-carbon-emitting community, that aims to minimize Greenhouse Gas (GHG) emissions in ways that also improves air quality, human health and wellness, water conservation, and resilience. The plan will be amended and shall be evaluated with each phase and/or building to ensure the compliance with the intent of the ESMP. The ESMP shall also be revised to include the following:

Carbon

- Evaluate the life-cycle cost and carbon impact of high-efficiency electrical equipment for heating, cooling, and domestic hot water such as heat pumps and radiant heating and cooling. Eliminating fossil fuel for building heating and hot water reduces GHGs while improving local and regional air quality. Consider installing electrical plugs and infrastructure to be ready for a low/no cost transition for all electrical operation to achieve both carbon reduction and carbon neutral targets.
- Evaluate the reduction of embodied carbon (the carbon emitted in the extraction, manufacture, transportation, and installation of materials) for all buildings (including the impact of installing fossil fuel equipment and distribution systems to later be upgraded to all electric.
- All buildings to evaluate measures to minimize or eliminate reliance on fossil fuels.

Proposed Staff Recommendations

Operational Carbon

- Buildings will consider passive design measures (orientation, massing, window orientation for daylighting, PV available roof area, façade optimization, respond to occupancy) to reduce overall energy demand and active measures such as shared thermal energy plants to more effectively delivery energy to the buildings.
- Maximize the utilization of non-potable water reuse for landscape, watering, vehicle washing, plumbing trap primers, cooling towers, and consider toilet flushing, where feasible.

Open Space

- Trees and plants should contribute to the goal of biodiversity and increased habitat value. Plant species with habitat value include those that provide nectar and fruit for insects and birds and shelter for birds. Edible native landscaping should also be considered (e.g. service berry).
- Open space around the site will combine ecological function with programmatic use to provide site services to visitors and residents as well as environmental benefits.
- The entire development is within a five-minute walk of the Four Mile Run RPA significant habitat.
- Interpretive signage and demonstration areas should support eco-literacy on site by providing educational materials and opportunities for engagement.
- Open space designs should ensure long-term viability of features including plants and materials.

Proposed Staff Recommendations

Stormwater

- Maximize the amount of roof stormwater and managed by green infrastructure.
- Streetscapes, open spaces and parks are anticipated to integrate bio-filtration facilities and/or permeable pavements where appropriate.
- Development blocks will be responsible for treating stormwater runoff within each respective development block using various low impact development (LID) measures.

Health and Wellness

- Provide access to healthy and affordable food through permanent and temporary on-site amenities and edible landscaping on residential buildings, where feasible.
- Utilize natural materials and include living (plant) material in common spaces.

Implementation

- The reporting of the ESMP requirements shall be prepared for each building by its owner, property management entity, or BID on an established reporting schedule.

Discussion