Public Review Draft

Comments Due:
September 10, 2012

The SW Ecodistrict

CREATING A MORE SUSTAINABLE FUTURE

National Capital Planning Commission

JULY 2012

SW Ecodistrict

"WHEN THE WELL'S DRY, WE KNOW THE WORTH OF WATER."

Benjamin Franklin, (1706-1790), Poor Richard's Almanac

"IN ORDER TO CREATE A CLEAN ENERGY ECONOMY THAT WILL INCREASE OUR NATION'S PROSPERITY, PROMOTE ENERGY SECURITY, PROTECT THE INTERESTS OF TAXPAYERS, AND SAFEGUARD THE HEALTH OF OUR ENVIRONMENT, THE FEDERAL GOVERNMENT MUST LEAD BY EXAMPLE."

Executive Order 13514

Chairman's Message

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National Capital Planning Commission

The National Capital Planning Commission is the federal government's central planning agency in the District of Columbia and surrounding counties in Maryland and Virginia. The Commission provides overall planning guidance for federal land and buildings in the region. It also reviews the design of federal construction projects, oversees long-range planning for future development, and monitors investment by federal agencies.

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Represented by the Honorable Tommy Wells, Member, Council of the District of Columbia

Marcel Acosta, Executive Director

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The Monumental Core Framework Plan, 2009
NCPC, illustration by Michael McCann

Introduction

BACKGROUND

In 1997, the National Capital Planning Commission (NCPC) prepared the Legacy Plan, which provided a vision to guide development of the city's monumental core. The Legacy Plan proposed that Washington's monumental core be re-centered on the U.S. Capitol, that the city rediscover its waterfronts, and that federal development become a catalyst for enlivening the city. The plan also emphasized the need to protect the National Mall as a civic and cultural destination.

In 2009, in partnership with the U.S. Commission of Fine Arts, and consultation with the District of Columbia, NCPC prepared the Monumental Core Framework Plan which focuses on the federally dominated precincts surrounding the National Mall, including the Southwest Rectangle – the collection of large mid-century Modern federal headquarter buildings south of Independence Avenue. This plan recommends redeveloping 10th Street, SW into a vibrant mixed-use corridor that extends the civic qualities of the National Mall to the waterfront and re-establishing Maryland Avenue, SW as a pre-eminent boulevard on axis with the U.S. Capitol. Also in 2009, President Obama signed Executive Order 13514 Federal Leadership in Environmental, Energy and Economic Performance (EO 13514), making the reduction of greenhouse gas emissions a priority for federal agencies.

With the adoption of the DC Green Building Act and the updated District Elements of the Comprehensive Plan for the National Capital Region in 2006, the District of Columbia set a course to become a more sustainable and inclusive city. In May 2012, Mayor Vincent Gray released a Vision Plan to transform the District into the greenest, healthiest and most livable city in the nation. The plan articulates the goals, priorities, and actions to achieve social equity, economic competitiveness, and environmental quality.

Now, with a combination of proposed development, new federal planning initiatives, and market/economic forces, Southwest DC is on the cusp of change. A multi-billion dollar waterfront development project is planned and sponsors are considering this area for the location of museum and memorial projects. In addition, the federal government is re-examining its property to meet aggressive sustainability targets, create more efficient workplaces for a modern federal workforce, and reduce its operating costs.

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THE SW ECODISTRICT INITIATIVE

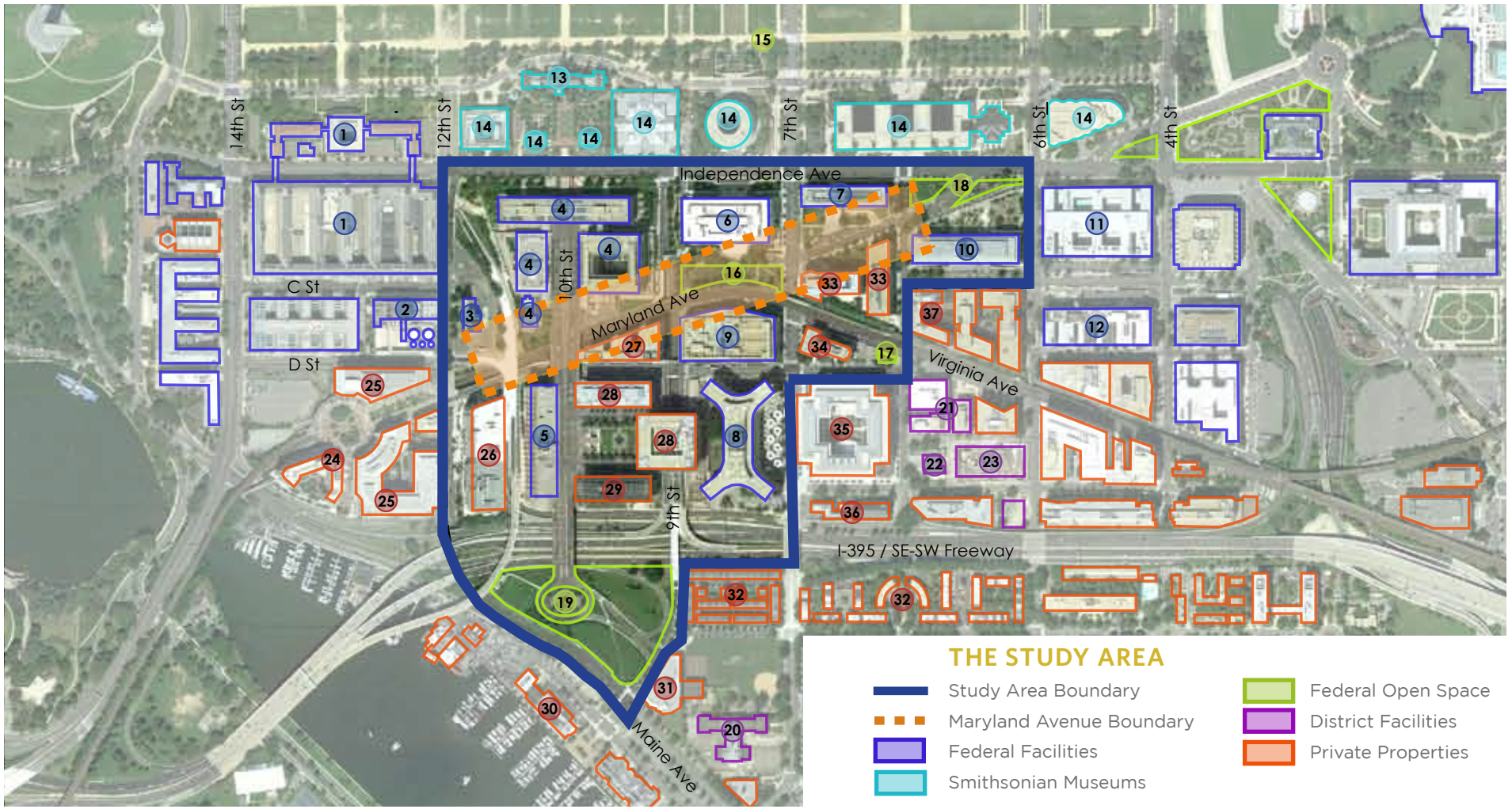
In 2010, NCPC joined federal and local partners to establish the SW Ecodistrict Initiative to transform the Southwest Rectangle into a sustainable and livable neighborhood that uses federal land and natural resources efficiently and contributes to the economic vitality and environmental health of the city.

The SW Ecodistrict Initiative is a 20 to 25-year plan that lays the groundwork for the area's redevelopment into a highly sustainable mixed-use community. The plan includes a Revitalization Scenario and recommends a series of strategies to address land use, public space, transportation, and a variety of environmental issues confronting the federal government and the area's stakeholders. The plan specifically examines the need to:

- Reduce carbon emissions, conserve resources, and reduce operating costs;
- Establish new cultural destinations beyond the National Mall to help relieve development pressure and overuse
- Establish a diverse mix of uses, including cultural, housing, retail, and open space;
- Remove visual and physical barriers between the National Mall and the waterfront;
- Expand transit capacity, improve walkability, and enliven streets and public spaces; and
- Use limited financial resources effectively to improve buildings and infrastructure.

To realize the SW Ecodistrict vision, the plan includes a roadmap to prioritize and phase projects that can be carried out over time as federal agencies' missions and space needs change and as they are economically viable and align with public (federal and local) and private investment priorities. It recommends a governance strategy and outlines the funding and legislative tools that can help implement the recommendations, including district-wide improvements that will benefit multiple stakeholders.

The *SW Ecodistrict Plan* illustrates that the area can become a highly sustainable mixed-use community by employing district-scale strategies and building-scale strategies to yield significant environmental and economic benefits.



THE STUDY AREA

- Study Area Boundary
- Maryland Avenue Boundary
- Federal Facilities
- Smithsonian Museums
- Federal Open Space
- District Facilities
- Private Properties

1. US Department of Agriculture (Whitten Building)
2. General Services Administration Central Utility Plant
3. Cotton Annex
4. US Department of Energy (Forrestal Complex)
5. US Postal Service
6. Federal Aviation Administration (Orville Wright Building)
7. Federal Aviation Administration (Wilbur Wright Building)
8. US Department of Housing and Urban Development (Weaver Building)
9. General Services Administration (Regional Office Building)
10. US Department of Education (Johnson Building)
11. Voice of America
12. US Departments of Health and Human Services / Education
13. Smithsonian Castle
14. Smithsonian Institution
15. The National Mall
16. Reservation 113
17. Reservation 115
18. Proposed Eisenhower Memorial
19. Banneker Park
20. Jefferson Elementary School
21. DC Government Offices
22. DC Fire Department
23. DC Forensics Lab
24. The Portals (Hotel)
25. Republic Properties
26. Potomac Center North, Inc.
27. CIM Urban Reit, LLC
28. JBG Properties
29. L'Enfant Colony, LLC
30. PN Hoffman
31. NBL Associates
32. Private Residential
33. Boston Properties
34. 300 7th Street, LLC
35. Constitution Center
36. St. Dominic's Church
37. Federal Center Hotel Association

THE STUDY AREA TODAY

The Study Area comprises about 110 acres of Southwest Washington and is bounded by Independence Avenue to the north, Maine Avenue to the south, 12th Street to the west, and 4th Street to the east. The area encompasses 15 blocks that include eight federal buildings, two federal parks, and eight private buildings. Approximately 56 percent of the land is federally owned, 26 percent is private, and about 18 percent is devoted to streets, freeways, and rail lines under the jurisdiction of the District of Columbia, the Federal Highway Administration, or CSX Railroad.

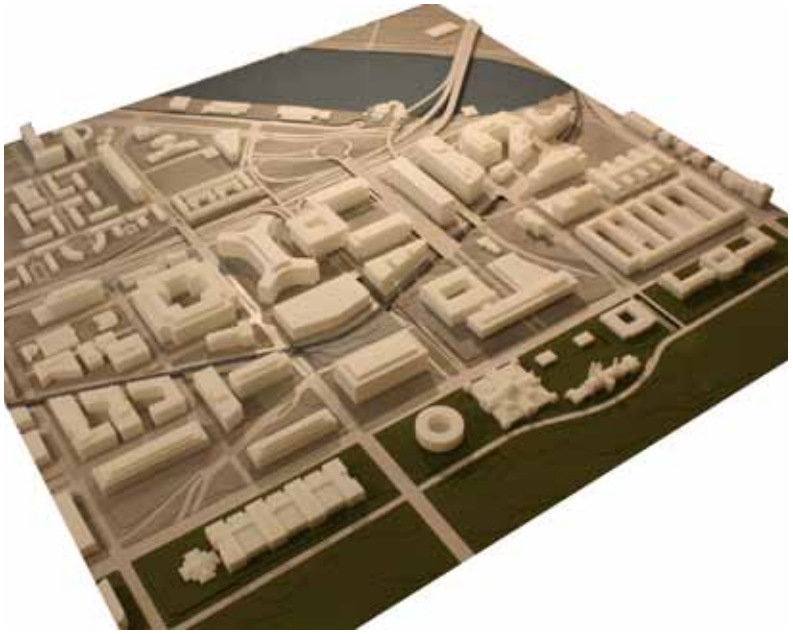
The area was once a diverse working class neighborhood of houses and businesses supporting the nearby shipping wharves along Potomac River and the military arsenal at Ft. McNair. Although the city around it grew and improved, the living conditions within this neighborhood deteriorated until there was a call for radical change following World War II, resulting in the nation's most ambitious Urban Renewal Program. During this period, houses and businesses were razed to make way for a new neighborhood constructed along Modernist tenets, displacing many former residents. The Southwest Freeway was constructed dividing the area into a new residential neighborhood to the south and a predominantly federal office precinct to the north.

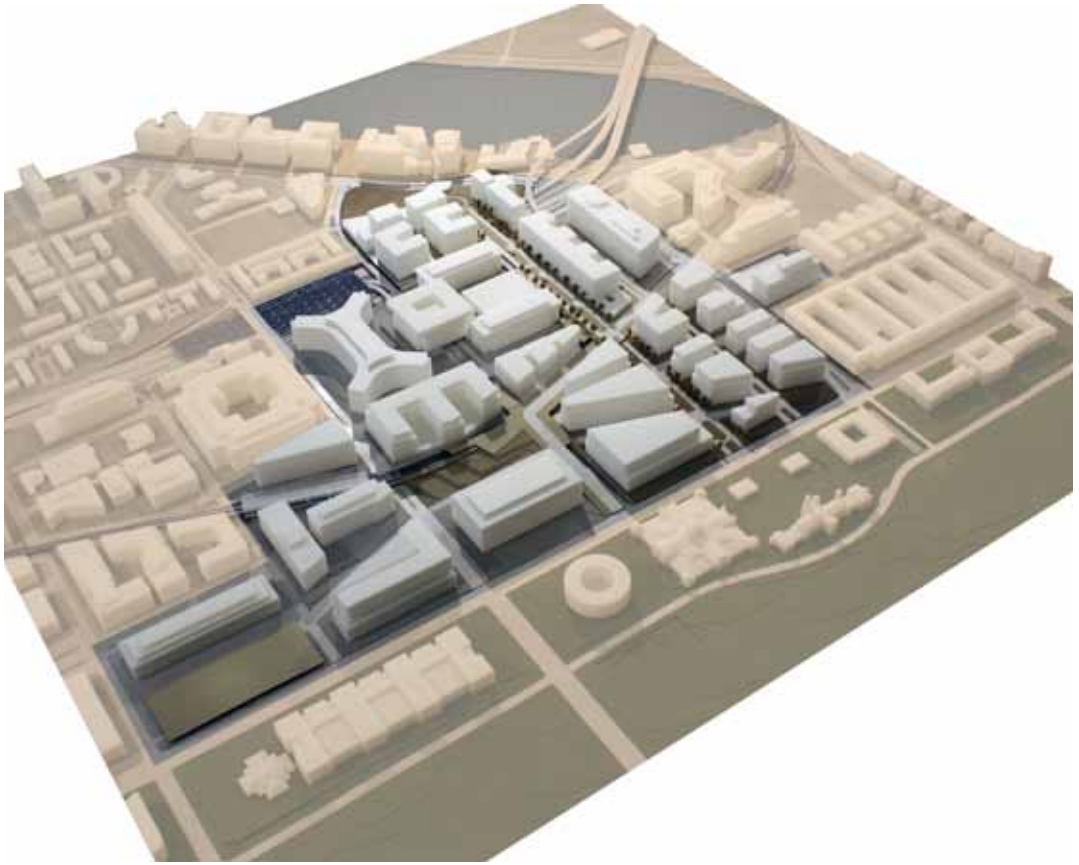
Tenth Street, later named L'Enfant Promenade, became the central spine of this office precinct. Flanked by large office buildings and a hotel, the street was constructed over the train tracks and the new freeway to terminate in a circular park overlooking the Washington Channel and Potomac River. The construction of these and nearby other buildings created a federal enclave built in the late Modern International style. The resulting precinct is characterized by superblocks and single-use office buildings with large setbacks and no ground floor uses.

Crossing the railroad and highway requires multiple levels of streets, ramps and stairs that make it difficult to get around. The streetscape is barren with little vegetation and minimal amenities to serve the daily needs and comfort of pedestrians. Despite the investment expended during the urban renewal era, the building form, infrastructure, and minimal public realm create barriers that sever the area from the surrounding city, causing it to seem isolated and undesirable for improvement or investment.

(Top image) The expansive setbacks, obstructed views, and lack of vegetation and amenities discourage pedestrian activity along 10th Street.

(Lower image) The railway in the Maryland Avenue right-of-way disrupts the street grid, causing a void between downtown and the waterfront.





(Upper Left) Existing Conditions Study Model (2012)
(Above) Recommended Revitalization Scenario Study Model (2012)
(Left) Presentation of Study Model at Task Force Meeting

DEVELOPING THE PLAN

THE SW ECODISTRICT TASK FORCE AND STAKEHOLDER COORDINATION

NCPC convened the SW Ecodistrict Task Force, comprised of 17 federal and local agencies, to guide the development of the plan. In consultation with area stakeholders and the public, the Task Force was instrumental in ensuring that the plan recommendations and proposed Revitalization Scenario advances their shared goals and targets.

An important component of the *SW Ecodistrict Plan* is the *Maryland Avenue SW Small Area Plan* prepared by the District of Columbia Office of Planning (DCOP). Completed in the summer of 2012, this plan was prepared in consultation with the public, nearby residents, and an Advisory Committee of private property owners, transit and rail operators. The plan focuses on infrastructure, land use, and zoning; it addresses how to reconstruct Maryland Avenue, SW to create a more diverse land use, and improve public space along the corridor.

Several venues were used to solicit input during preparation of both the *SW Ecodistrict Plan* and the *Maryland Avenue, SW Small Area Plan*. The SW Ecodistrict Task Force and Working Group held a series of 17 Task Force or working meetings; the Maryland Avenue, SW Advisory Committee held four meetings; and seven public meetings, hosted independently or jointly by NCPC and DCOP, were held to obtain citizen input. Throughout the study, comments were collected via a city initiated on-site user survey, a public comment forum called Ideascale on NCPC's website, an online live chat with the Washington City Paper, and community blogs.

(Upper right) Public Meeting Open House
(Right) Working Group Meeting

Recommended Revitalization Scenario, view south from the National Mall

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The SW Ecodistrict in 2030

THE VISION

The foundation of Ecodistrict planning is the fact that implementing and operating at a neighborhood or "district-scale" achieves greater sustainability and financial benefits than using traditional individual building-scale strategies.

Building upon this foundation, the SW Ecodistrict Plan is a comprehensive and forward-looking approach to urban sustainability and livability. It strives to capture, manage, and reuse a majority of the energy, water, and waste among a group of buildings within a defined area. It includes transportation choices and a mix of uses within a neighborhood of connected parks, plazas, and open spaces that provide for a vibrant, green, and walkable community.

The SW Ecodistrict Task Force's vision is an ecodistrict which transforms the 10th Street and Maryland Avenue, SW corridors into a vibrant highly sustainable mixed-use community that will showcase new possibilities in sustainable practices, high performance buildings and landscapes and use district-scale strategies to yield greater environmental and economic benefits.

(Top) Existing view of 10th St SW looking north.

(Right) In the future, 10th St will become an active, green complete street.

ICON KEY

- Solar PV
- LED light
- Flow through planter
- Green roof
- Solar shade
- Green wall
- Greywater irrigation
- Train

THE SW ECODISTRICT WILL BE A REVITALIZED COMMUNITY AND CULTURAL DESTINATION

The SW Ecodistrict will be a livable community, attractive to workers, residents, and visitors alike. The neighborhood will be a new national cultural destination that extends the civic qualities of the National Mall. It will provide a distinguished setting for future museums and memorials and a place for public gatherings, relieving pressure to locate new development and events on the National Mall. While the area will remain a center for federal agencies, these facilities will be complemented with residential and commercial uses to become a true mixed-use neighborhood.

(Top) Existing view of VRE platform and CSX.

(Left) Regional commuters will experience a more civic intermodal station utilizing green infrastructure strategies.

THE SW ECODISTRICT WILL BE A WELL-CONNECTED COMMUNITY

It will have a complete and continuous network of sidewalks, bicycle lanes, streets, and transit services that offer multiple connections to ensure mobility to, from, and within the area for all modes of travel. Maryland Avenue, SW will be restored as an urban boulevard connecting the area to the U.S. Capitol. A new civic space at the southern terminus of 10th Street, SW will provide direct physical and visual connections to the waterfront. An expanded intermodal station will become the nexus of commuter rail, Metro, streetcar, and bus services, accommodating the increased demand for public transit.

(Top) Existing view from Reservation 113 toward the Capitol

(Right) Reservation 113 will become the central public space for the neighborhood

ICON KEY

- Stormwater collection
- LED light
- Flow through planter
- Green roof
- Solar shade
- Green wall
- Greywater irrigation
- Metro

THE SW ECODISTRICT WILL BE A HIGH PERFORMANCE ENVIRONMENTAL SHOWCASE

The area will become vastly more environmentally and economically efficient. Buildings will be renovated or designed to use less energy and water. The central utility plant will operate at a peak capacity generating power, heating and cooling for customers located in and beyond the boundaries of the Ecodistrict. Micro-grids will allow for more flexible generation and distribution of renewable energy. All stormwater will be captured and cleaned for non-potable water purposes, substantially reducing the use of potable water. Wastewater will be pumped to the treatment plant where it will be used to generate energy to run the plant. Vegetated systems for treating stormwater, green roofs, new parks, and streetscapes will reduce the urban heat island effect, provide pedestrian comfort, and enrich community life. This system will provide connected habitat corridors to the Washington Channel and improve the visual character of the neighborhood. The Ecodistrict will offer visitors to the nation's capital a unique way to learn how to make their own cities and neighborhoods more sustainable.

(Top) Existing view toward Banneker Park from Maine Avenue and 7th Street, SW.

(Left) Banneker Park will become a new civic gateway to the Mall.

THE SW ECODISTRICT WILL BE LED BY AN ECONOMICALLY SUCCESSFUL PARTNERSHIP

The federal government, the District of Columbia, property owners, tenants and residents will be the stewards of the Ecodistrict vision. A successful partnership will provide the coordination, advocacy, financing and management necessary to achieve the goals of the SW Ecodistrict. Together, these groups will pursue district-scale solutions to meet aggressive local and federal sustainability targets. Ultimately, using land, buildings, and resources more efficiently and sustainably will save money and generate new revenue. This will result in prudent use of public dollars as well as numerous environmental and social benefits.

The Path To Sustainability

The path to sustainability will require improving building systems, maximizing the use of urban land, upgrading utility and road infrastructure, and investing in open space and transit. These improvements will meet the Ecodistrict goals, create investment, and save money over time.

The *SW Ecodistrict Plan* integrates district-scale and building-scale strategies to achieve sustainability, support a mixed-use neighborhood, and integrate federal buildings and commemorative works into a livable capital city. This approach will achieve greater results and efficiencies than planning building-by-building or block-by-block. The recommended Revitalization Scenario addresses how a collection of buildings and related infrastructure can function together to:

- Reduce energy consumption and move toward zero-net energy in the form of carbon;
- Reduce potable water consumption and improve stormwater management;
- Maximize use of federal land and buildings;
- Increase development capacity and the mix of uses;
- Improve mobility and walkability and provide a more attractive and engaging public realm; and
- Reduce the federal government's operating costs and contribute to the economic health of the city.

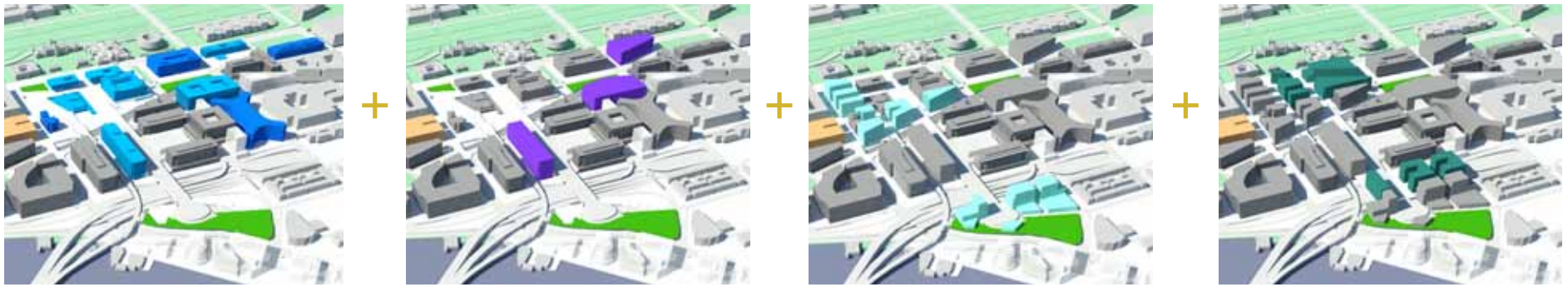
The Revitalization Scenario incorporates multiple building strategies, including rehabilitating, repurposing, infilling with new development, and redeveloping federal buildings and sites. Without displacing federal agencies, these actions can occur as federal space needs change; buildings are modernized, or as opportunities arise to leverage federal, local, and private funds.

- **Rehabilitation** - All existing buildings that will remain in the near future will require some degree of rehabilitation.
  - **Light Rehabilitation** - Buildings that may ultimately be repurposed or redeveloped will be lightly rehabilitated in the near-term by improving lighting and water fixtures to reduce energy and water use.
  - **Full Rehabilitation** - Buildings that will remain permanently will be fully rehabilitated by upgrading windows, building skin envelopes, and mechanical systems.
- **Repurpose** - Some existing buildings may be repurposed. Repurposing involves fully rehabilitating the building and changing the building's use. It may also involve adding height and increasing the building footprint and potentially changing the building's ownership.
- **Infill** - Infill development will occur on existing sites that are vacant or have small, under-utilized buildings.
- **Redevelopment** - Some existing buildings that are inefficient or do not fully use their site may be demolished and redeveloped.

While rehabilitating existing buildings will dramatically decrease energy and water use and improve efficiency of interior space, it is the repurposing, infill, redevelopment and infrastructure improvements that will be catalytic in transforming the SW Ecodistrict.

MULTIPLE SITE AND BUILDING STRATEGIES WILL LEAD TO REVITALIZATION (REFER TO KEY ON PAGE 7)

REHABILITATION + REPURPOSE + INFILL + REDEVELOPMENT



Overtime, lightly rehabilitated buildings will be repurposed or redeveloped to revitalize the area.

The Revitalization Scenario

The Path To Sustainability

The Revitalization Scenario was conceptually modeled to test strategies and determine potential benefits development capacity, the share of transit ridership, and sources and uses for energy, water and waste.

NEW DEVELOPMENT AND INFRASTRUCTURE

The *SW Ecodistrict Plan* seeks to improve the efficiency of federal ownership of land and buildings and retain federal agencies in the District of Columbia in locations appropriate to their missions, while capitalizing on opportunities to integrate a mix of services, hotel and residential uses. The plan will maintain federal office space while increasing development density and balancing the use mix by providing opportunities for cultural, residential, and hotel development. These new uses will supplement existing offices to generate day, evening, and weekend activity and support neighborhood-serving convenience retail. New development also provides the ability to rebuild the street grid which will improve connections and enhance public space for pedestrian enjoyment.

New development will provide the opportunity to maximize green building practices. The increase in density and use mix will help expand and substantially improve the operational efficiency of the existing central utility plant. Using LEED Platinum criteria as a baseline strategy will guide the placement, orientation, and construction of new buildings that employ high energy-efficiency and potable and non-potable plumbing systems.

As streets and sidewalks are rebuilt or created, they will be designed to accommodate the infrastructure necessary to improve the generation and distribution of energy and the capture, treatment, and storage of stormwater for reuse as non-potable water. They can also be planted with canopy and understory vegetation to improve urban ecology and pedestrian comfort.

DISTRICT ENERGY SYSTEM

For energy, the plan seeks to reduce energy use in existing and new buildings, generate and distribute energy efficiently, and use de-carbonized fuel and supplement with renewable power. The existing central utility plant will provide heating and cooling for all federal and new or rehabilitated buildings. Microgrids will be established for federal and clustered private development to allow for more flexible generation and distribution of renewable energy. Most buildings and some infrastructure will support solar arrays and ground source heat production. Meeting EO 13514's goal of achieving zero net energy, as measured by carbon, will be most achievable and most cost effective when all buildings are connected to the central utility plant and the fuel source is switched to a zero carbon renewable fuel source.

WATER SYSTEMS

All stormwater will be captured, cleaned and held in cisterns beneath 10th Street, SW until it is needed for the area's non-potable water uses such as irrigation, toilets, and mechanical equipment. Managing water also provides the greatest leverage to improve the visual character and habitat conditions in the Ecodistrict.

WASTE SYSTEMS

Recycling and composting programs within each building will significantly divert waste from the landfill. Wastewater from toilets will be pumped to the water treatment plant where, through anaerobic digestion, it will be used to generate energy to help run the plant.

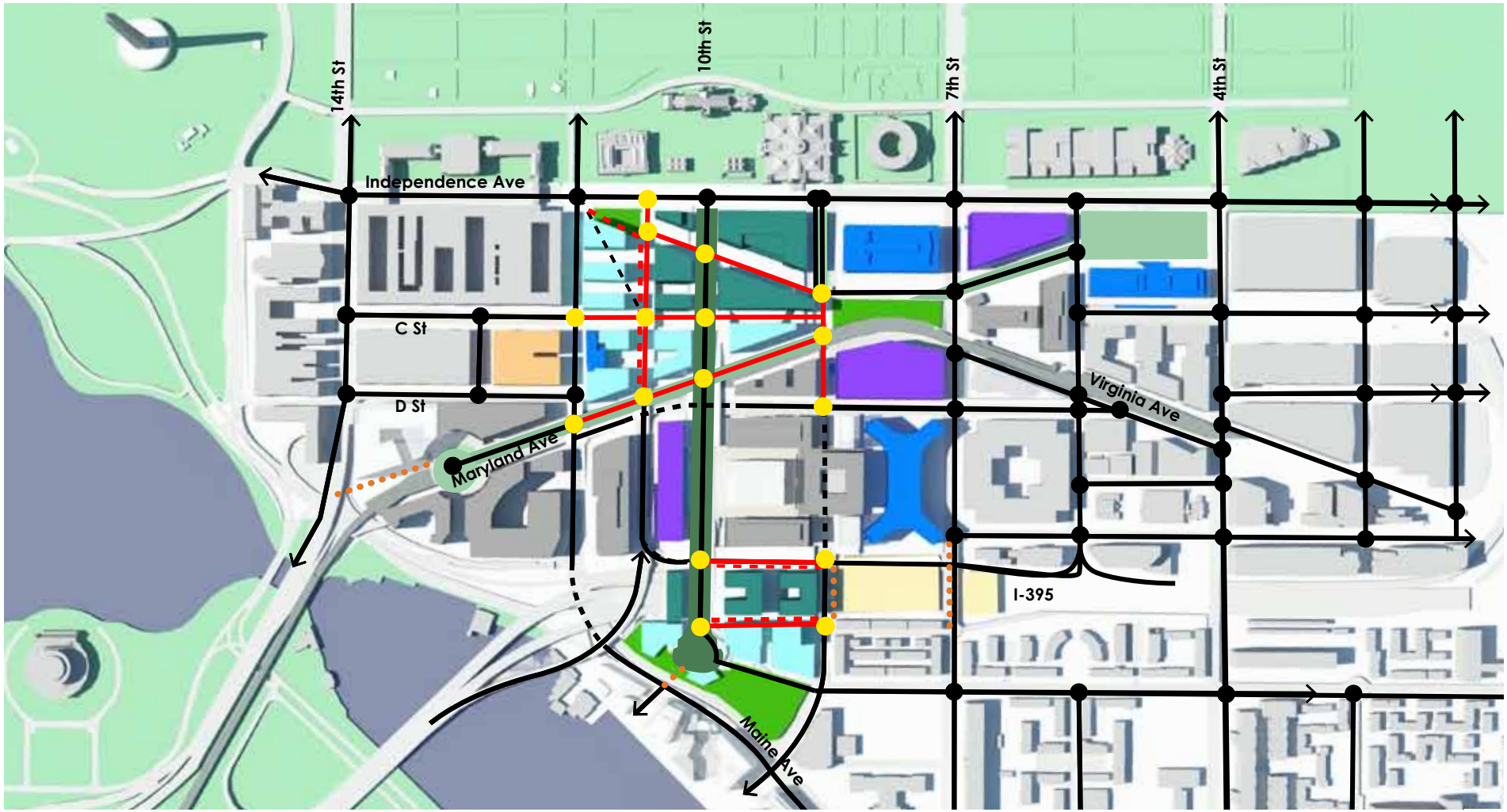
URBAN ECOLOGY

Vegetated systems for treating stormwater, green roofs, and new parks will enrich community life. These systems will provide connected habitat corridors to the Washington Channel and improve the visual character of the neighborhood.

Combined, these strategies will make the SW Ecodistrict a unique and sustainable new neighborhood for Washington, contributing to the area's environmental and economic health and vibrancy. The success of the Revitalization Scenario can be measured quantitatively and qualitatively. Inevitably, as individual improvements are made the actual components and land mix may vary from this scenario. However, the underlying approach will remain very much the same – the land use, transportation, energy, water, and waste framework will continue to guide the evolution of this area to be a sustainable and financial success.

A high-level economic analysis was prepared to understand the public and private investments necessary to fulfill the SW Ecodistrict vision over the plan's 20-year time horizon. The plan provides measurable and intangible economic, social and environmental benefits for the federal government, the District of Columbia, and other public and private stakeholders. The measurable benefits are derived from land sale revenue, rent saving from efficient use of space, reduced operating expenses, increase tax revenue, and net operating income. The intangible benefits are those that are difficult to quantify, such as protecting the historic landscape of the National Mall or cleaner air and rivers. The measurable and intangible benefits will likely exceed the investments in sustainable building and utility infrastructure, public space, and development opportunity creation.

The Revitalization Scenario - Summary Plan



MEASURING SUCCESS

The Revitalization Scenario illustrates how an integrated framework of sustainable neighborhood and environmental strategies can achieve the SW Ecodistrict goals. Success will be measured by an increase in neighborhood vitality coupled with a reduction in resource use per capita.

THE REVITALIZATION SCENARIO OUTCOMES

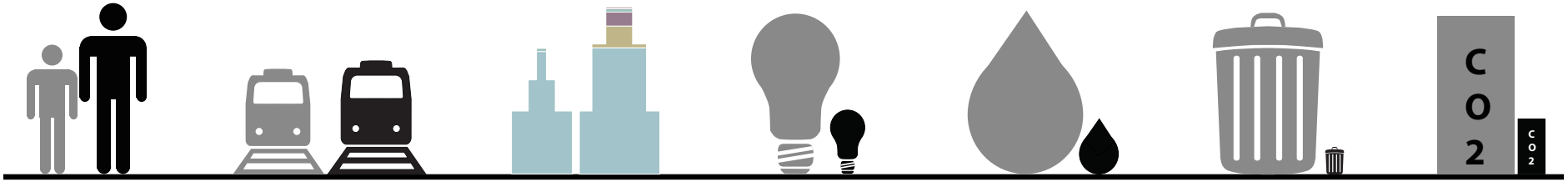
NEIGHBORHOOD DEVELOPMENT RESULTS

- Retains and improves efficiency of **7.9** Million s.f. of federal office space that will accommodate up to **19,000** additional employees
- Creates an additional **1.0** million s.f. of office space for either private or federal office purposes that will accommodate **5,000-6000** workers
- Creates **1.8** million s.f. of residential and hotel space for up to **1,200** residences and **600** hotel rooms that will accommodate **1,500** new residents and **246,000** visitors per year.
- Establishes **4-5** sites for up to **1.2** million s.f. of cultural development area and several memorial sites
- Creates **14.3** acres of new or improved parks and plazas and establishes up to **5** memorial sites.
- Reconnects the street grid and create **17** new intersections for easy accessibility
- **EXPANDS** the rail corridor and the L'Enfant Station to **INCREASE** commuter transit capacity in the region
- Establishes a **GRAND CONNECTION** between the National Mall and the waterfront

ENVIRONMENTAL RESULTS

- Demonstrates district-scale strategies yield greater results
- Reduces the area's greenhouse gas emissions by **51%**
- Allows for the capture and reuse of **ALL** the rainwater in the ecodistrict throughout the year.
- Reduces potable water use by **70%**
- Increases the amount of waste diverted from the landfill **FROM 35% TO 80%**
- Transforms the federally-owned cogeneration plant into a **HIGHLY EFFICIENT** and **FINANCIALLY SUCCESSFUL** energy model.

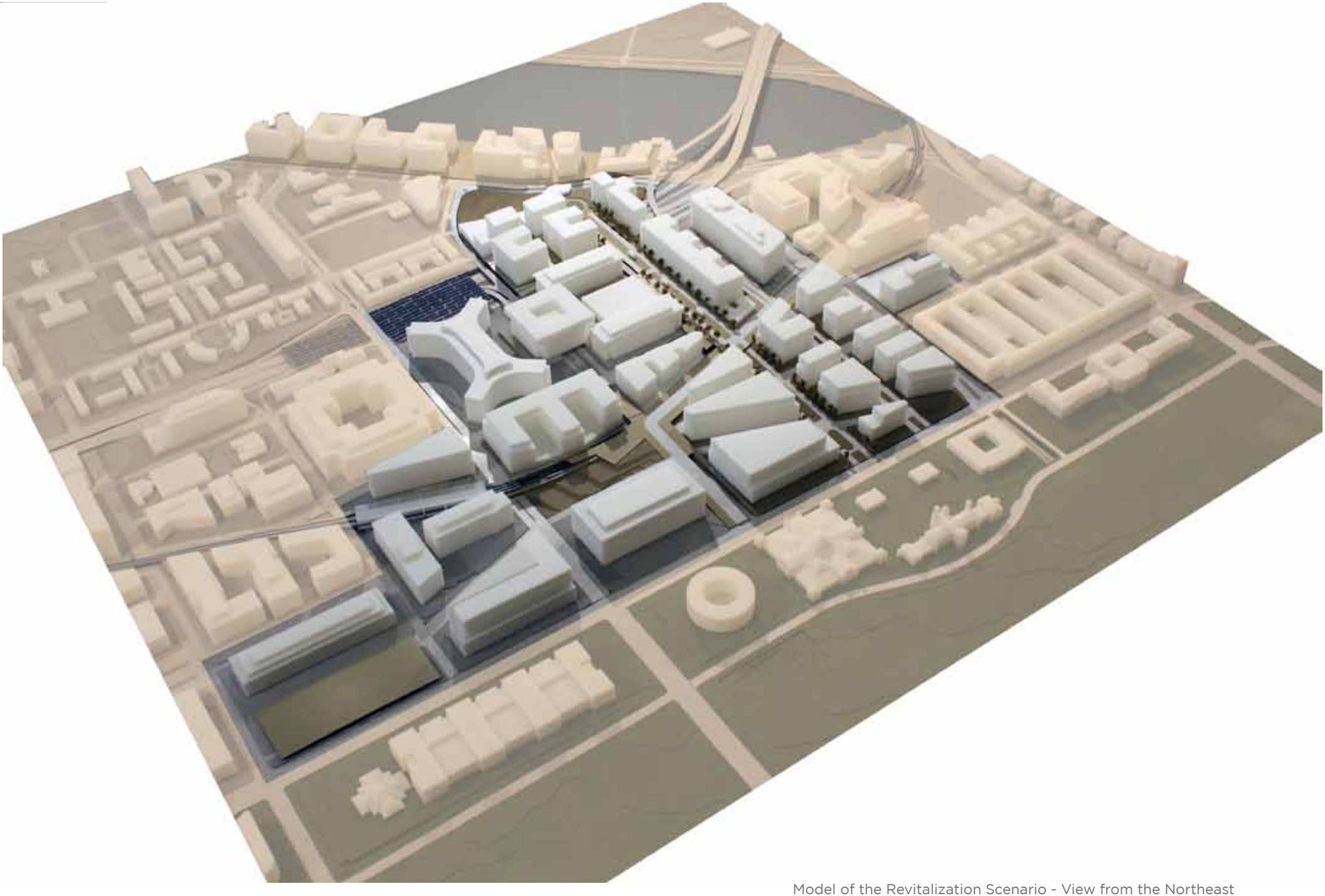
A COMPARISON OF THE STUDY AREA TODAY AND IN 2030



DAILY POPULATION	NEW PEAK HOUR TRIPS	MIXED USE DEVELOPMENT	ENERGY USE	POTABLE WATER USE	WASTE TO LANDFILL	CARBON
33% INCREASE (Employees and Residents)	7% INCREASE (New Metro and Auto Trips)	21% INCREASE (In GSF, including new residential, hotel, cultural and commercial)	62% REDUCTION	70% REDUCTION	80% REDUCTION	75% REDUCTION

The SW Ecodistrict in 2030

Recommended Revitalization Scenario



Model of the Revitalization Scenario - View from the Northeast

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A Revitalized And Connected Community

INTRODUCTION

Washington embraces many roles as the nation's capital and a home town. Its strength lies with its cultural venues, architecture and open spaces, transit system, and diverse and unique neighborhoods. The capital city's precedent plans—NCPC's Legacy Plan and Monumental Core Framework Plan and the District of Columbia's Center City Action Agenda—envision a capital city and thriving downtown centered on the National Mall. These plans call for preserving the civic and ceremonial heart of the nation's capital while promoting diverse, walkable neighborhoods and work centers that blur the boundaries between the federal and local city and are well-connected to the region.

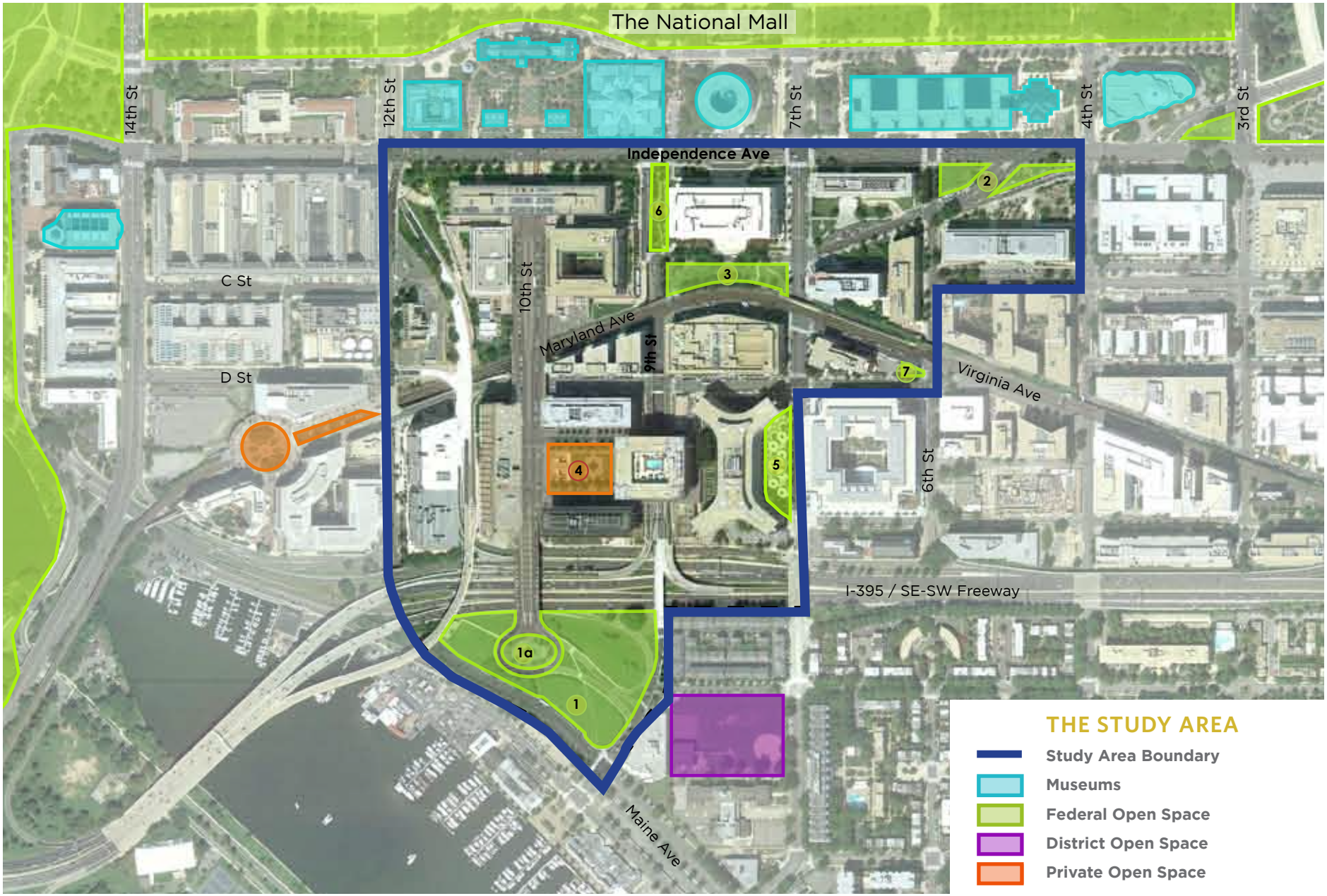
While the federal and local governments share mutual aspirations to advance a great capital city, each has distinct mandates and interests. The federal government is responsible for using federal lands, facilities, and resources efficiently; providing secure high-quality work places to recruit and retain a high quality workforce; and preserving and providing areas for national gatherings and expression, as well as places to honor our country's heritages and heroes. The District's interests lie in facilitating the development of economically sound, vibrant, and distinct business and neighborhood centers and reclaiming the waterfront for daily city life. In the center city, the District and private sector create walkable, engaging, and distinctive places to live, work, and shop. Important to all, mobility is the backbone of an efficient government and a livable and sustainable city. Varied and flexible modes of transport contribute to efficient operations, affordability, convenient living, as well as economic and social vitality.

This section of the SW Ecodistrict Plan establishes objectives and strategies in three areas to transform the Study Area into a revitalized and con-nected community.

- **Civic Realm** strategies enhance and create a variety of public spaces, offering attractive settings for cultural destinations.
- **Land Use Development** strategies accommodate existing federal office space and provide for new residential, retail, and cultural uses.
- **Transportation** strategies build on the existing road, rail, and bus infrastructure to enhance transit capacity, improve bike and pedestrian systems, and better connect all modes of travel, as well as re-establish and improve rights of way to promote active, walkable streets and provide connections within the study area and between the National Mall and the Southwest Waterfront.

These strategies were crafted using the SW Ecodistrict goals, federal and District precedent plans, and the existing conditions and planned projects in and near the Study Area. Along with the environmental targets and strategies in Chapter 3, these objectives, strategies, and recommendations inform the revitalization scenario and work together to create a highly sustainable and well-connected livable neighborhood. These strategies should be used to guide future planning, design, and development decisions.

Civic Realm


The National Mall
14th St
12th St
7th St
4th St
3rd St
Independence Ave
C St
D St
10th St
9th St
Maryland Ave
Virginia Ave
6th St
I-395 / SE-SW Freeway
Maine Ave
1
1a
2
3
4
5
6
7
THE STUDY AREA
Study Area Boundary
Museums
Federal Open Space
District Open Space
Private Open Space

THE IMPORTANCE OF THE CIVIC REALM

Washington's defining features are its iconic open space system and cultural institutions that embodies our country's democratic ideals of freedom and openness. To extend the civic qualities of the National Mall and adjoining cultural uses into the Study Area and create new cultural destinations, it is important to provide a variety of connected public spaces and educational and cultural facilities. These spaces and facilities should offer interesting and stimulating places for personal enrichment, large gatherings and national events, daily en-counters, as well as places to rest and rejuvenate. It is important to place, configure, and treat these public spaces and civic buildings and the relationship between them in a way that respects their public nature and civic character.

THE AREA TODAY

STUDY AREA OPEN SPACE AND CULTURAL FACILITIES

Although directly adjacent to the National Mall and several Smithsonian Institution facilities, there are no cultural or educational facilities in the Study Area and the public space is disjointed and not well defined. Public space is defined as the network of building yards, setbacks, plazas, and parks. The existing parks and plazas comprise 14.3 acres within the Study Area. Three of these sites are listed in the top 20 prime candidate sites for future memorials or museums identified in NCPC's Memorials and Museums Master Plan. The site located at the intersection of Independence and Maryland Avenues is the location for the proposed Dwight D. Eisenhower National Memorial. However, sponsors of other national cultural facilities have passed over both Banneker Park and Reservation 113 despite their close proximity to the National Mall because of the area's current isolated conditions, inadequate public-realm, and poor visitation potential.

1. 6.5 ac. - Banneker Park (Reservation 719)
    - 1a Banneker Overlook
2. 4.0 ac. - Eisenhower Memorial
3. 1.4 ac. - Reservation 113
4. 1.4 ac. - L'Enfant Plaza
5. 1.0 ac. - HUD Plaza
6. 0.7 ac - Earth Day Park
7. 0.2 ac - Reservation 115

PUBLIC SPACE AND CULTURAL FACILITIES

To establish the SW Ecodistrict as a livable community and new national cultural destination, the plan seeks to establish an interconnected system of diverse public places that connect the National Mall and the waterfront and strengthen the civic realm by improving the setting for new public spaces and cultural destinations.

OBJECTIVES

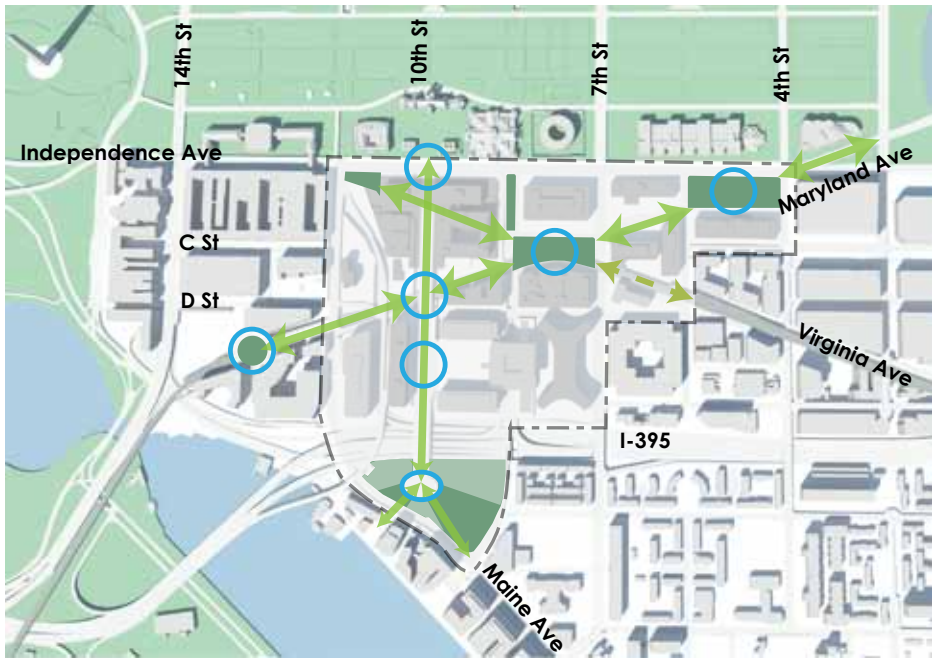
- Dedicate the most important sites for museums, memorials, or other civic institutions of national importance.
- Restore L'Enfant Plan squares, streets, and avenues to reclaim the street grid and open space network.
- Establish an interconnected open space network of multi-purpose spaces.
- Create distinctive settings for parks, plazas, and civic sites.
- Enhance visual and symbolic linkages and programmatic relationships among public buildings and spaces.

DESIGN STRATEGIES

- Use the city's physical framework of major axial views, street grid, prominent termini, reservations, and scenic overlooks to site cultural facilities.
- Use reciprocal views along corridors to create focal points that establish symbolic connections to extend the civic character of the National Mall into the Study Area.
- Design buildings and landscape elements to define public spaces, frame vistas, establish pedestrian orientation and encourage ordered movement through the Study Area.
- Enhance avenues, streets, and public spaces with fountains, public art, landscape features, and other pedestrian amenities.
- Improve street tree canopy to strengthen axial views and extend the park-like character of the National Mall into the Study Area.
- Design parks and plazas to be accessible, safe, inviting, and flexible for year-round recreation and activity.
- Orient building entrances and plazas to create usable and engaging places for pedestrians.
- Harden the structural and architectural features of buildings to limit perimeter security in the public space or building yards; minimize perimeter security and make it indistinguishable from the landscape.

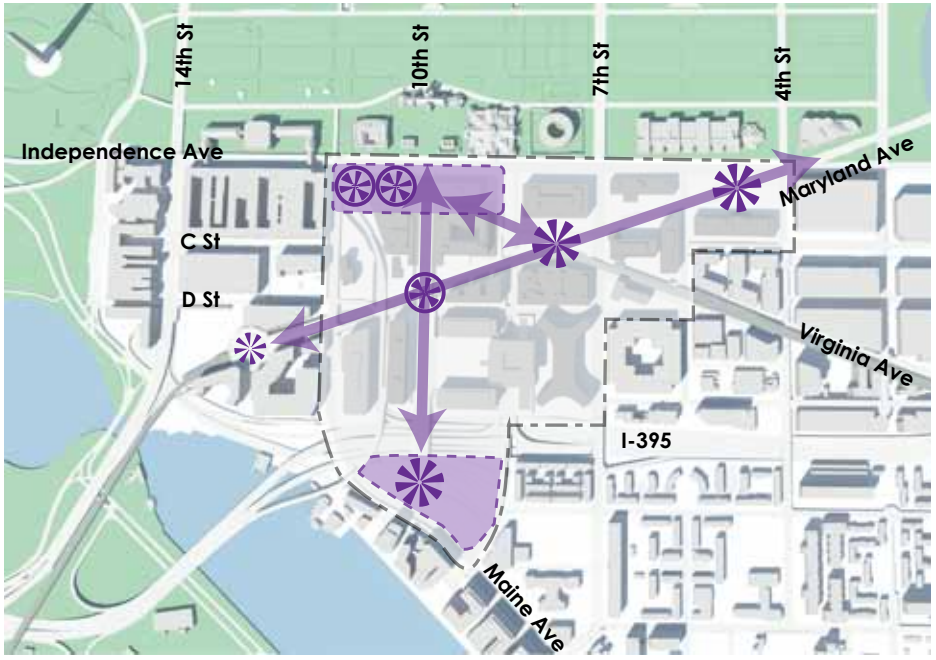
The SW Ecodistrict will have an interconnected open space network

RECOMMENDATIONS



PUBLIC SPACES

Park Space
Green Link
Green Transit
Activity Node



CULTURAL FACILITIES

Cultural Zone
Civic Corridor
Museums and Memorials (2M) Prime Candidate Site
2M Candidate Site
New 2M Candidate Site

PARK SPACES

› Provide a walkable connected network of parks and plazas to support a variety of experiences; some passive and restorative, some commemorative, others active and engaging.

GREEN TRANSIT

› Use innovative sustainable practices at the expanded L'Enfant Commuter Rail Station to manage stormwater and generate electricity.

GREEN LINK

› Design 10th Street as an urban park that extends the civic decorum of the National Mall to the waterfront and restore Maryland Avenue as a green boulevard that strengthens the linkage to the U.S. Capitol.

ACTIVITY NODE

› Use architectural and landscape features to establish activity nodes and to support a variety of activities for formal and casual public congregation.

CULTURAL ZONE

› Concentrate cultural uses in locations that reinforce axial relationships and adjacencies among existing and proposed civic places.

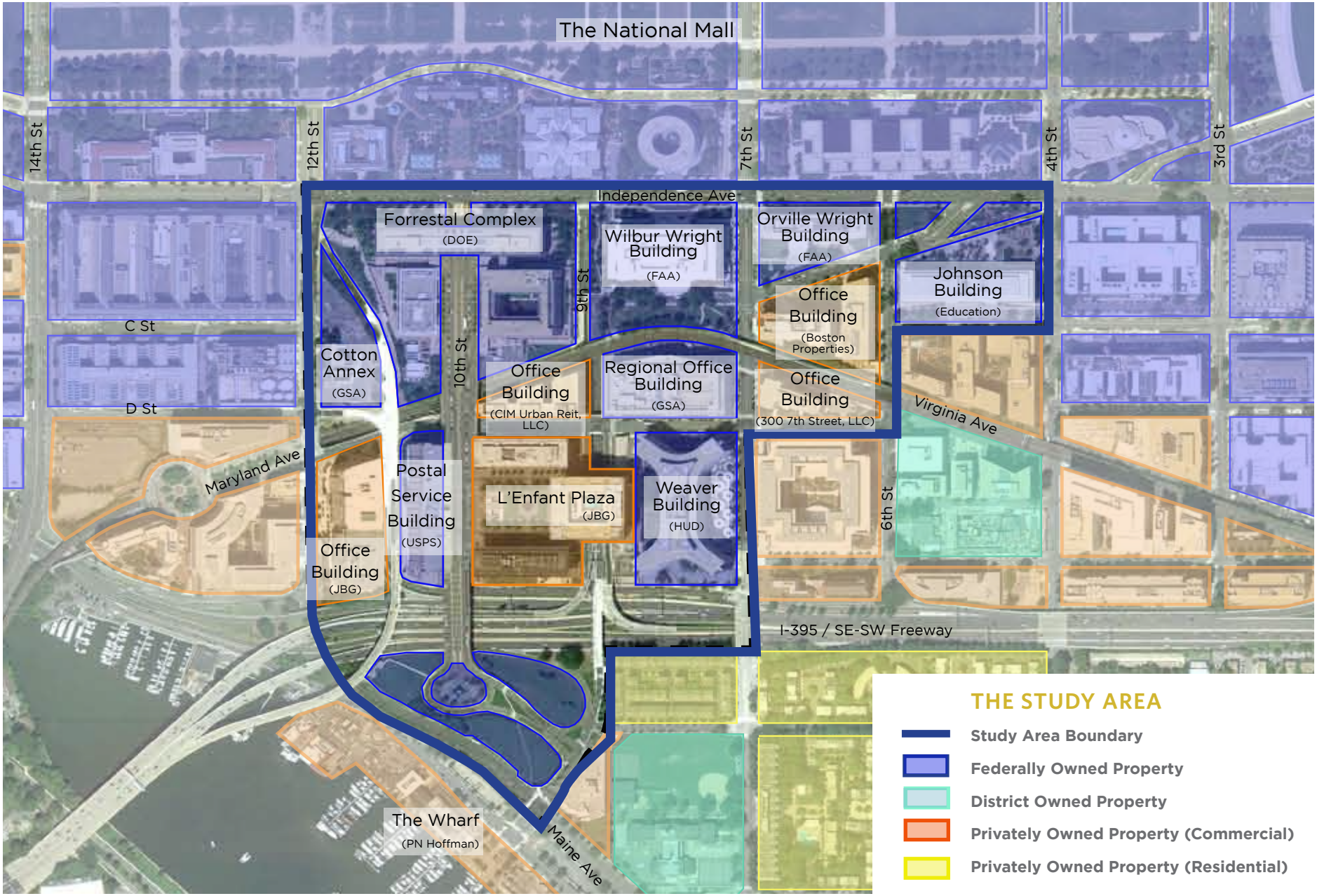
CIVIC CORRIDORS

› Strengthen the relationship between new and existing important public buildings, monuments, memorials, and public spaces by retaining or restoring the historic view corridors and establishing walkable and memorable public spaces that reflect a civic quality befitting the nation's capital.

CULTURAL ANCHORS

› Site new museums, memorials, and civic institutions on axis with, or in proximity to, symbolically important public buildings and places.

Land Use Development



LAND USE DEVELOPMENT

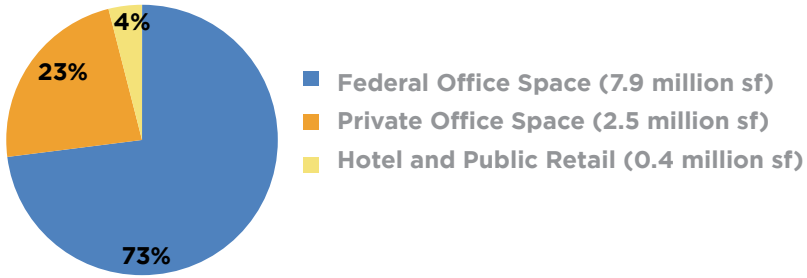
Economic vitality and resiliency is important for the fiscal health of the citizenry and its government. While the concentration of federal agencies is a foundation of Washington's economy and is important to government efficiency, a compact transit-oriented mix of uses is paramount for creating a livable and sustainable urban community. To blur the boundaries of the federal and local city, it is important to increase the mix of uses in a way that reinforces the civic nature of the monumental core while infusing diverse activities to stimulate economic vitality.

TODAY

The existing conditions, as well as current and proposed activity in and near the Study Area, must be considered as decisions are made to revitalize the area. These include neighborhood character and historic preservation, existing land use, and the current activity and projected needs of the federal government, the District of Columbia, and the private sector.

LAND USE

Located between several Smithsonian Institution facilities and the National Mall on the north, and the Potomac River waterfront on the south, the Study Area supports approximately 10.8 million sq. ft. of development. Of this amount, 7.9 million sq. ft. house five federal agency headquarters and ancillary offices. More than 32,000 employees work in the Study Area. Many of the federal buildings provide below-grade parking, cafeterias, and other convenience services only available to building employees. There is one hotel and nearly all of the publicly accessible retail is buried within buildings or located in underground shopping centers.



NEIGHBORHOOD CHARACTER

Superblocks filled with single-use office buildings characterize the area. Multiple levels of building entrances, streets, ramps, and stairs are the result of a tangled network of viaducts crossing active rail, high-speed freeways, and access ramps. An expansive yet inadequate public realm offers few pedestrian amenities, making it difficult and unpleasant to get around. The form of the buildings, related infrastructure, and quality of the public realm contribute toward the inefficient use of land and resources.

FEDERAL FACILITIES

Due to the age of some of its buildings the federal government is investing in the modernization of aging structures, making energy and space efficiency improvements, and reducing overall operating costs. The energy efficiency improvements respond to EO 13514 directives to reduce greenhouse gas emissions, conserve natural resources, and save money. Space efficiency improvements address changing agency missions and respond to new technologies that allow workers to work more efficiently and even remotely. In 2011, the Study Area provides on average about 333 sq. ft. of building space per employee. GSA seeks to cut this in half, while also assessing ways to modernize the work place to attract the next generation of federal employees.

Temporary and permanent perimeter security measures foster the perception of an inaccessible and defensive bureaucracy. These physical defenses conflict with our nation's democratic ideals of an open and transparent society. These traditional physical approaches hinder security efforts to provide access to public buildings and provide vitality within federal office areas. The federal government's approach to perimeter security is evolving to allow a more customized, flexible and balanced approach to assessing building security needs with integrated counter measures that respect the openness and accessibility of the public-realm.

PRIVATE INVESTMENT

Private property owners in the area are also making improvements to their real estate holdings. More than 2 million sq. ft. of Class A leasable office space was renovated in the past five years (2007-2012) and more than $2 billion in investment is planned. Projects include extensive alterations at L'Enfant Plaza, including upgrades to the below grade shopping concourse, a new hotel, and an additional office building. In addition, "The Wharf," a new multi-block neighborhood along the Southwest waterfront is scheduled to break ground in 2013.

The area's potential transformation as recommended by the SW Ecodistrict Plan, the community's development momentum, the proximity to the National Mall, and availability of public space is beginning to garner the interest of museum and memorial sponsors looking to acquire federal land for new facilities and commemorative works.

MARKET STUDY: POTENTIAL DEVELOPMENT PROGRAM BASELINE

In 2011, The DC Office of Planning prepared a market study and conducted a survey to identify a potential real estate development program for the Study Area. This study evaluated demographic trends; the residential, office, hotel, and retail markets; and the city's projected development pipeline to prepare a potential development program that would transform the Study Area into a livable mixed-use neighborhood. The study provided baseline assumptions used to identify a range of development scenarios that were modeled to assess their environmental and economic performance. The market study identified the baseline land use mix and important considerations that were used to guide development of the proposed revitalization scenario. A summary of the market study follows.

Land Use	Baseline Assumptions	Considerations
Residential	1,000 minimum residential units to establish neighborhood identity and support ancillary retail	• Current citywide projects planned or in the construction pipeline will likely limit residential demand in this area until 2020. • A well-connected, attractive streetscape and park amenities will be required to attract new residential development to this area. • Density bonus and housing credits will help to incentivize and improve financial feasibility.
Hotel	600 hotel units	• In addition to planned hotels in the pipeline, 300 rooms can be absorbed by 2020; an additional 300 can be absorbed by 2030. • Hotels are more feasible than residential in near-term; hotels will contribute to use mix until residential demand can be absorbed.
Office	2,000,000 s.f.	• Due to center city location, office will likely be absorbed.
Retail	100,000 s.f. retail can be absorbed today	• New residential and hotel development will generate demand for retail. • Successful retail will require limiting the number and size of internal employee-only federal cafeterias and convenience services. • Residents, workers, and visitors surveyed desire places to eat and shop.
Cultural	1,000,000 sq. ft. of public or private museums, memorials, or other civic institutions.	• Demand based on private sponsorship. • Trends indicate one new museum every 10 years, one new memorial every one year. (This suggests one to three new museums and more than a dozen memorial sites in the monumental core by 2025.) • Four sites in the Study Area are called out in NCPC's 2001 *Memorials and Museums Master Plan* for future commemorative works and cultural facilities.

HISTORIC PRESERVATION

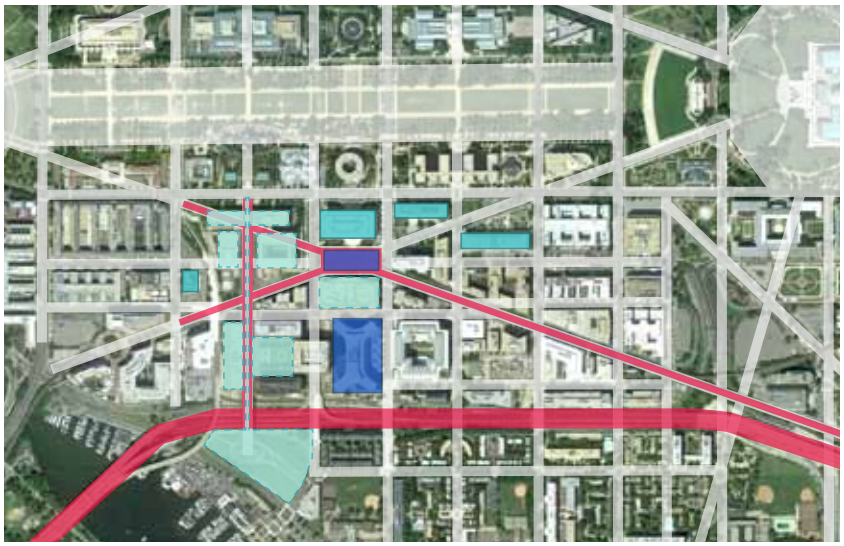
Two eras of city planning are juxtaposed in the Study Area. The historic L'Enfant Plan and McMillan Plans for the City of Washington (commonly referred to together as the L'Enfant Plan) are the still-discernible framework and urban context in Southwest. However, the mid-20th century Urban Renewal Plan altered the framework dramatically. Both plans represent important periods in American planning, urban design, and architecture.

The 1997 National Register of Historic Places (NRHP) nomination for the L'Enfant Plan lists the plan's contributing and non-contributing elements or components. Generally, the L'Enfant extant street and open space system, and the views and vistas it defines are designated contributing elements. The non-contributing elements are components added since 1942 to construct the freeway and Modern-era superblocks.

After 50 years, these mid-century Modern buildings and landscapes are being evaluated for eligibility for listing in the NRHP. The Department of Housing and Urban Development Headquarters (1963-1968) designed by Marcel Breuer was listed in the NRHP in 2008. While appreciation for Modern buildings is growing, the mid-century alterations of the historic street grid complicate the task of reconnecting severed rights-of-way and undoing grade separations. It is difficult to integrate the large scale Modern building typology with a fine-grain historic urban context. It is also challenging to upgrade aging mechanical systems and other inefficient features of these buildings.

Federal agencies are required to comply with the National Historic Preservation Act in the development of proposals to sell, alter, repurpose, or redevelop resources determined eligible for or listed in the NRHP.

NATIONAL REGISTER OF HISTORIC PLACES



L'Enfant's Street Network
Non-contributing Elements
Listed
Eligible for Listing
Not fully Evaluated for Listing

(right) - The U.S. Department of Housing and Urban Development headquarters designed by Marcel Breuer (1963-1968) was listed in the National Register of Historic Properties in 2008.

LAND USE DEVELOPMENT AND ACTIVE BUILDING FRONTAGE

To establish the SW Ecodistrict as an attractive place to live, work, and visit, the plan seeks to balance the existing office use with residential, cultural, and commercial uses that will improve the mix of activities and create an economically viable, vibrant, and walkable neighborhood and cultural destination.

OBJECTIVES

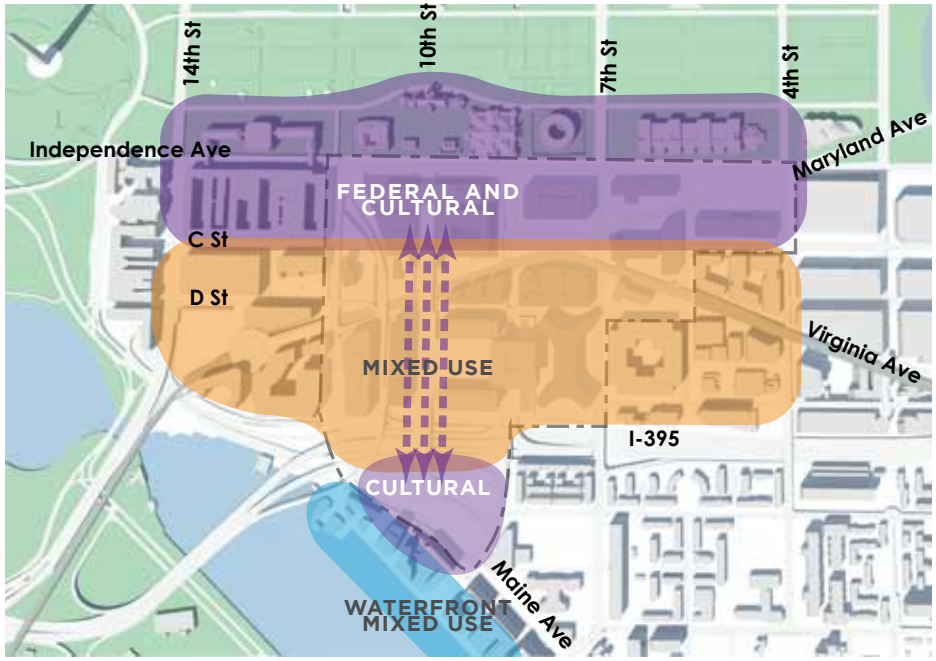
- Promote compact mixed-use transit-oriented development and active streets.
- Maximize efficient use of valuable urban land and federal facilities, and retain agency headquarters and federal office space near transit and the executive and legislative branches of government.
- Program and design streets and buildings in a way that integrates the civic qualities of the National Mall with the vitality of the city.

DESIGN STRATEGIES:

- Employ a range of strategies to rehabilitate, repurpose, redevelop, and infill with new development.
- Locate and design new buildings along the avenues and primary streets in a manner that respects the monumental core's civic qualities.
- Increase the diversity of uses by mixing complementary uses vertically within a building or horizontally within a block.
- Cluster museums, memorials, and civic institutions to establish new nationally significant cultural destinations.
- Cluster residential development to establish an identifiable neighborhood and community identity.
- Design public spaces and building frontages to be publicly accessible, visually engaging, and able to accommodate restaurants, retail, cultural uses, public services, and other activities and amenities to activate the street.
- Eliminate employee only cafeterias and services from building interiors.
- Integrate sustainable practices as building and landscapes features that provide interpretive opportunities.
- Encourage complimentary programs between museums and civic institutions to strengthen the educational programs and activities.

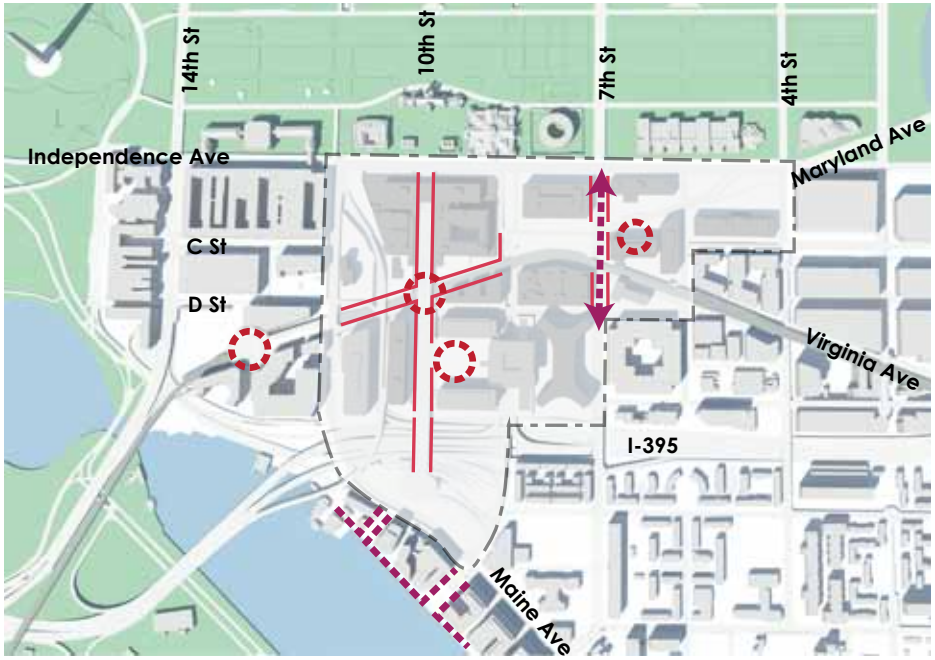
The SW Ecodistrict will retain agency headquarters, mixed-use development and active building frontages

RECOMMENDATIONS



LAND USE AND DEVELOPMENT

- Federal and Cultural
- Mixed Use
- Waterfront Mixed Use



COMMERCIAL NODES AND ACTIVE BUILDING FRONTAGES

- Commercial Node
- Commercial Frontage
- Active Building Frontage

FEDERAL AND CULTURAL ZONE

› Focused on Independence Avenue and anchored by the Smithsonian Castle, program and design buildings to accommodate a mix of uses, such as museums, civic institutions, plazas, residences, and offices to complement the Smithsonian Institution and other federal agency headquarters in a setting befitting the monumental core.

MIXED USE ZONE

› Concentrate a mix of federal and private offices, residences, and commercial activity within a neighborhood setting.

CULTURAL ZONE

› Establish a concentration of museums, memorials, and civic institutions within a signature landscape and park that serves as an extension of the National Mall and Smithsonian Institution.

WATERFRONT MIXED USE - THE WHARF

› A mixed-use waterfront neighborhood.

RETAIL NODES AND FRONTAGES

› Concentrate retail activity near transit hubs and key intersections adjacent and accessible to public sidewalks and plazas.

ACTIVE BUILDING FRONTAGES

› Locate institutional, educational, cultural, or commercial uses in all or a portion of the ground floor of building to establish active frontages to enliven streets.

Transportation and Street Network, Function and Character

TRANSPORTATION AND STREET NETWORK

Washington is recognized for a robust transit system that serves its city center and outlying suburbs. However achieving the SW Ecodistrict's goal to improve mobility to, from, and within the area will require expanding transit capacity and enhancing intermodal connections by using multiple types of transit services. This is critical to support high-density compact development and is essential for a pedestrian friendly community. Improved transit also helps reduce roadway congestion and air pollution, lessens dependence on fossil fuels, increases public health and business productivity, and makes it easier to access jobs and contribute to the local and regional economy.

TODAY

The Study Area's greatest assets are its transit and road connectivity to the city and the region, and convenient location between the National Mall, Smithsonian museums, and the waterfront. The area is easily accessible from the freeway and is well-served by numerous local and commuter bus routes, Metrorail, and Virginia Railway Express (VRE) commuter rail. However, the growing ridership demand on a constrained transit system compromises these assets. In addition, the disconnected street grid and multiple levels of streets and sidewalks make walking and bicycling within or through the Study Area unpleasant and difficult.

Freeway access is provided via the 9th and 12th Street expressway ramps. These roads serve about 15,000 vehicle trips during the PM peak hour with 13,000 allocated to office trips. The Federal Highway Administration (FHWA) is studying how to reduce congestion and improve connections over the 14th Street and Case Bridges. New development will have minimal impact on peak hour traffic since most trips will be added to the transit system. As more housing is introduced, automobile trips could actually decline because of greater live-work opportunities and increased reliance on transit. There are approximately 700 on-street parking spaces and 4,964 garage parking spaces in the Study Area. Most federal buildings and private offices provide below-grade parking for varying percentage of their employees. Public parking is provided on-street and below L'Enfant Plaza.

The District of Columbia, the National Park Service (NPS), and the Washington Metropolitan Area Transit Authority (WMATA) are considering future significant area transit improvements. The District proposes to extend a future Circulator route and a dedicated streetcar line along 7th Street and seeks to improve inter-city and tour bus operational issues that impact its neighborhoods and businesses. Nearby, the NPS is planning a National Mall Circulator route, and is studying how to address tour bus operations on the National Mall. WMATA is evaluating improvements to long-term rail service, including how to relieve congestion on the Green Line and at L'Enfant Plaza.

Currently, physical limitations within the rail line corridor, at L'Enfant Station, and at Union Station limit the ability to improve both regional commuter rail service and freight service that pass through the area. Several initiatives are underway that have the potential to improve freight transportation and transit capacity that will benefit the rail service providers, the city, and the region. The Union Station Redevelopment Corporation is studying how to improve rail operations and the user experience at Union Station. CSX, owner of the rail corridor, is improving the rail line as part of the National Gateway project to increase freight capacity between the Mid-Atlantic and the Midwest regions of the United States. This initiative provides an opportunity to make improvements within the rail corridor to enhance commuter rail service as well as deck the rail line to reconstruct Maryland Avenue.

The number of stakeholders, their operational requirements, and the jurisdictions that cross neighborhood, city, and state borders makes rail transport solutions complex. Decisions made by one provider could hinder or support robust commuter rail service in the Mid-Atlantic region over the next 50 years. Constrained right-of-way, growing ridership, and competing operational needs call for strong partnerships and coordination among all transit service providers.

TRANSPORTATION

To establish the SW Ecodistrict as a well-connected community, the plan seeks to improve mobility and accessibility to, from, and through the Study Area.

OBJECTIVES

- Maximize transportation choices.
- Maximize use and efficiency of the rail corridor and transit network.
- Provide accessible and clearly identified pedestrian connections between the different types of transit.
- Accommodate tour bus parking in appropriate locations.

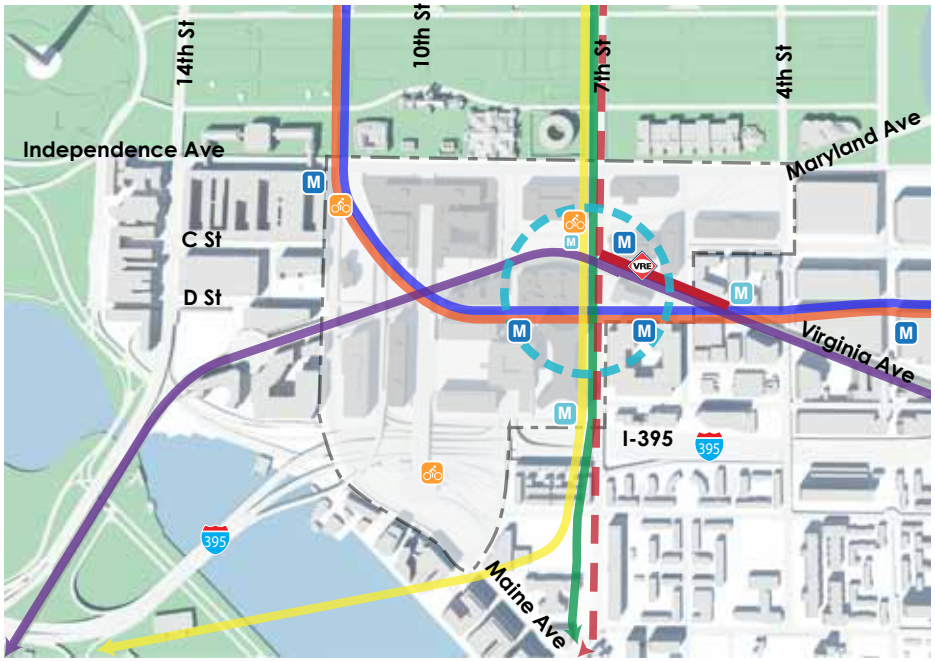
DESIGN STRATEGIES

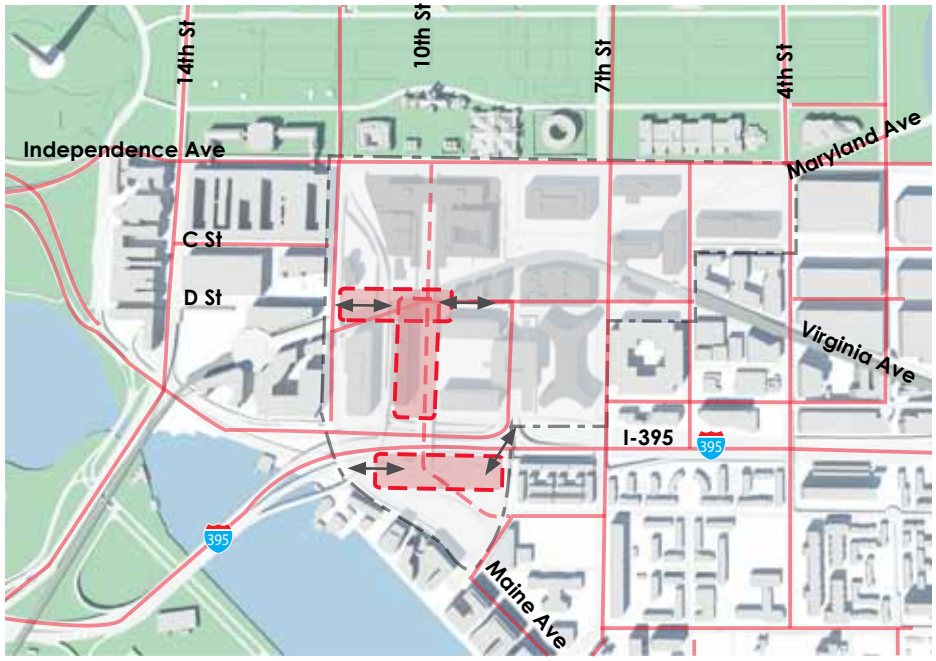
- Expand the three track rail line to four tracks to maximize freight and commuter rail services.
- Increase the number and size of passenger platforms at L'Enfant Commuter Rail Station to accommodate, VRE, MARC, and Amtrak service.
- Cluster transit services to ensure that local and regional networks are efficient and well connected.
- Ensure easy, convenient, and intuitive pedestrian access between transit modes.
- Provide for electric vehicle use, car sharing, and bike sharing.
- Employ parking management strategies to maximize convenient car parking and encourage alternative forms of transportation.
- Design the lower level of 10th Street, SW to accommodate tour bus parking. If sub-surface parking at Banneker Park is determined to be appropriate, it shall not limit, discourage, or prevent the development of future national museums or commemorative works from locating on site and shall be designed to prevent tour bus routes from traversing residential neighborhoods.




The SW Ecodistrict will offer multiple transportation choices for employees, residents and visitors.

RECOMMENDATIONS





TRANSIT

- Metro Orange
- Metro Blue
- Metro Yellow
- Metro Green
- VRE
- Commuter Rail Expansion
- Transit Hub
- Improved Metro Access
- New Metro Access
- Existing Metro Access
- Future Streetcar
- Bikeshare

BUSES

- Metro Bus Route
- Potential Bus Route
- Potential Tour Bus Layover
- Tour Bus Layover
  Potential ingress and egress to minimize neighborhood circulation

TRANSIT HUB EXPANSION

› Expand L'Enfant Station to increase commuter capacity by increasing the number or tracks and size of passenger platforms to better accommodate MARC, VRE, and Amtrak services. Locate future streetcar and bus services near Metro and commuter rail; and improve pedestrian connections among all modes of travel.

NEW METRO ENTRANCES

› Locate new Metro entrances or improve existing entrances to improve Metro access from the Southwest neighborhood and connections between Metro, Commuter Rail, and surface transportation.

BICYCLE INFRASTRUCTURE

› Increase the number of bike lanes and bike-share stations and facilities, including directional signage and bicycle parking, storage, and repair

TOUR BUS PARKING AND ROUTES

› Conduct a tour bus parking and route circulation study to determine the appropriate locations and design for potential underground tour bus parking or layovers. Accommodate bus layover parking in appropriate locations where bus access and loading functions and routing do not impact locations for future cultural development or impact residential neighborhoods.

STREET NETWORK, FUNCTION AND CHARACTER

To achieve the SW Ecodistrict's goal to improve mobility and livability, it is important to improve physical linkages and the quality of connections for pedestrians, bicyclists, and drivers within the Study Area and to adjacent neighborhoods and the city. Streets establish the structure and character of the neighborhood; as public space they contribute to the neighborhood's functionality and the pedestrian experience, which strengthens their role in the capital city's composition.

OBJECTIVES

- Restore the L'Enfant Plan street network.
- Design streets for a range of functions that facilitate local and federal needs.
- Design streets to establish an identity and create a sense of place that reinforces their function and character.

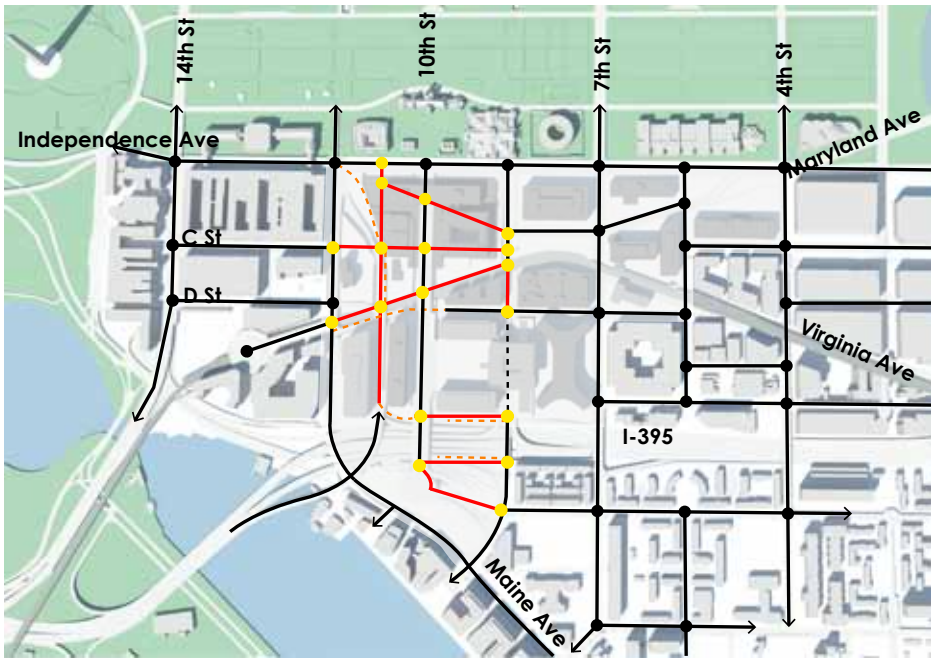
DESIGN STRATEGIES

- Establish a network of streets that are walkable, beautiful, distinct, green, and lively.
- Design streets for a range of functions that facilitate traversing the city, loading and parking, daily activities, and special events.
- Design streets to improve connectivity for pedestrians, bicyclists, transit users, and motorists.
- Design streets to provide inviting and continuous sidewalks, reduce curb cuts, and incorporate transit-friendly way-finding and infrastructure.
- Design streets to capture, cleanse, and transport storm water.
- Design the street network to improve connectivity and link desirable activities along building frontages and public spaces.
- Improve intersections to maximize pedestrian and bicyclist accessibility and safety.
- Improve crosswalks and employ traffic calming measures, such as curb extensions, on-street parking, and minimizing right-on-red turns.
- Ensure easy, convenient, and intuitive pedestrian access between buildings and elevated streets.
- Improve overpasses and underpasses to include trees, vegetation, lighting, and public art to enhance the pedestrian experience.
- Employ operational strategies to restrict the size or types of vehicles that can access certain streets, blocks, or loading areas.



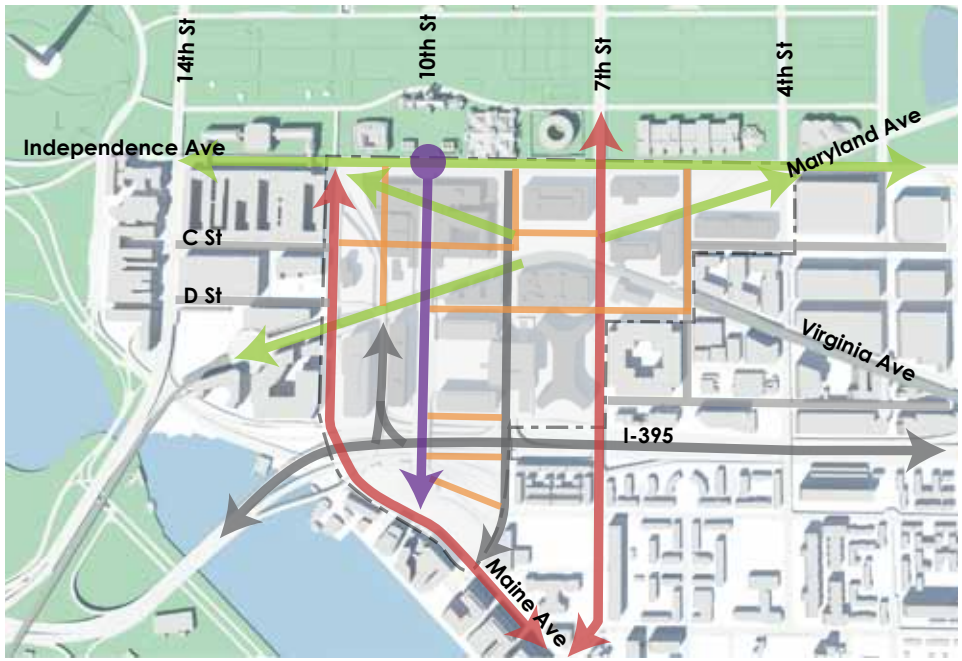

The SW Ecodistrict street network will serve a range of functions and create a sense of place.

RECOMMENDATIONS



STREET NETWORK

Existing Road
Existing Tunnel
Proposed Road
Proposed Highway Access
Existing Intersection
Proposed Intersection



STREET FUNCTION AND CHARACTER

Monumental
Civic
City
Local
Freeway

PROPOSED STREETS AND INTERSECTIONS

› Restore the street grid to re-establish the street network and improve vehicular, pedestrian, and bicycle connectivity throughout the Study Area

MONUMENTAL STREETS

› Design these streets to respect the stately, ceremonial, and cohesive character of the monumental core and to accommodate large special events. Orient, mass, and articulate buildings and landscapes along monumental streets to establish signature architecture, strong-edged tree-lined view corridors, and cohesive symbolic linkages.

› CIVIC STREETS

› Design these streets to accommodate daily activities and large, special events. Anchor streets with signature cultural uses linked by a series of public spaces, activities and mix of uses that prioritize civic experience.

CITY STREETS

› Design local connector streets to accommodate cross-town commuting, and significant pedestrian use and activity.

LOCAL NEIGHBORHOOD STREETS

› Design local neighborhood streets to accommodate daily activities, strengthen east-west connections, and provide locations for operational requirements for adjacent buildings.

SOUTHWEST FREEWAY

› Redesign access ramps as urban interchanges where necessary to accommodate air-rights development of new buildings and access roads.

A Revitalized and Connected Community

The SW Ecodistrict will become a neighborhood with active, mixed-use streets frequented by employees, residents and visitors.

CONCLUSION

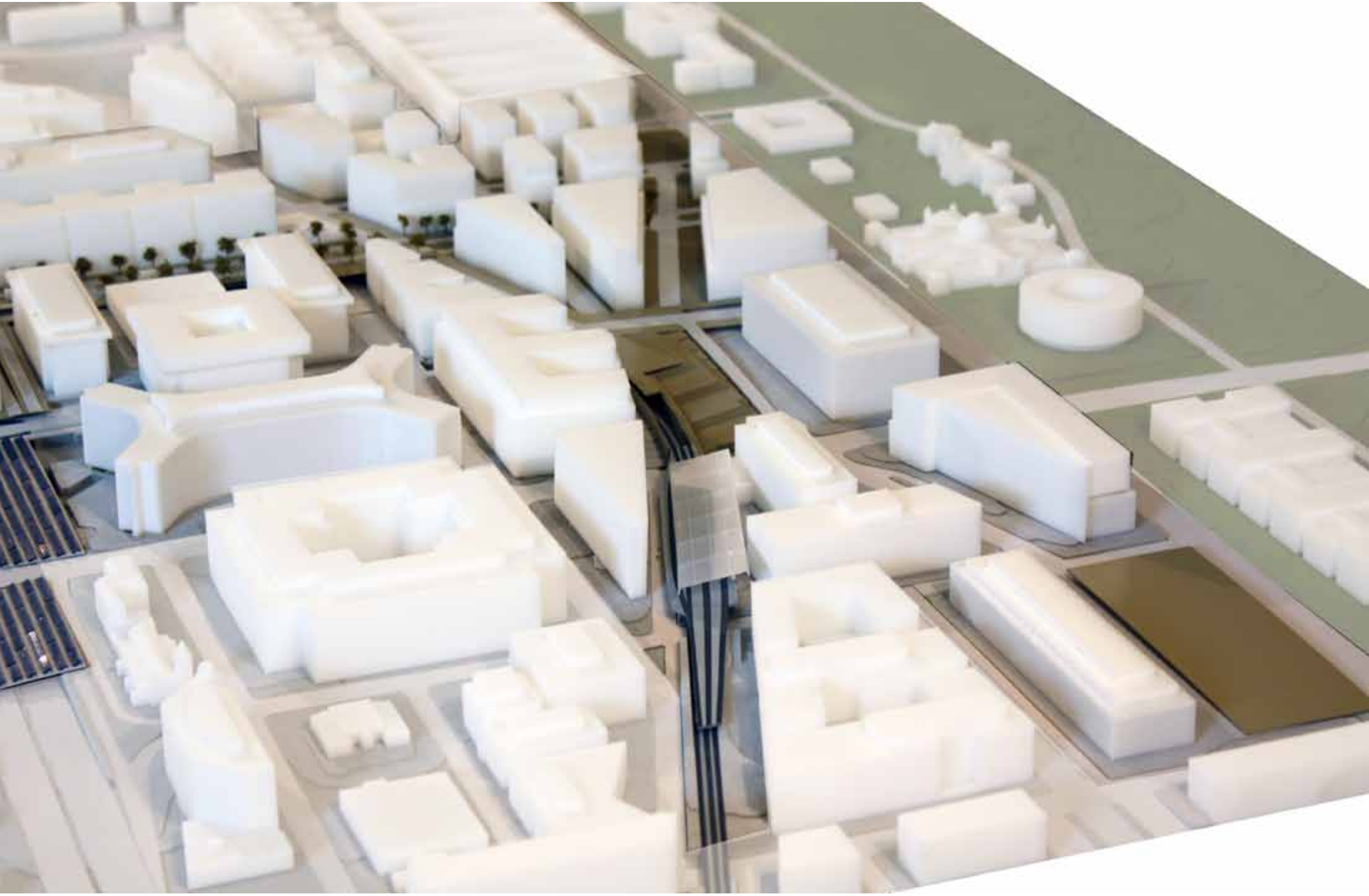
The SW Ecodistrict Plan builds upon the vision articulated by the Legacy Plan and the Monumental Core Framework Plan. Both plans establish goals to integrate federal buildings, museums, and commemorative works with the capital city and to create a neighborhood that extends the vitality of the National Mall to the Southwest waterfront. When fully executed, these strategies will result in a revitalized and well-connected neighborhood that achieves the following;

NEIGHBORHOOD DEVELOPMENT

- **Retains and improves space efficiency of 7.9 million sq. ft. of federal office space that will accommodate up to 19,000 additional employees.** This can be achieved by rehabilitating and redeveloping buildings to increase their space efficiency. It will help retain federal headquarters in the monumental core, consolidate agency functions, and reduce reliance on lease space.
- **Creates an additional 2.8 million sq. ft. of private development that will accommodate 1.8 million sq. ft. of residential or hotel development and 1 million sq. ft. of private or federal office space.** This can be achieved by infilling on vacant or under-used parcels along Maryland Avenue and as freeway air-rights or repurposing potentially excess federal building space. This development will accommodate 5,000 –6,000 additional workers, 1,250 residents and up to 2,000 visitors.
- **Accommodates at least 100,000 sq. ft. of convenience retail development.** This community-serving retail can easily be accommodated on the ground floors of private and federal buildings at key intersections along 10th Street and Maryland Avenue. This provides the opportunity to privatize and relocate interior cafeterias in federal buildings to the street frontage.
- **Establishes up to 1.2 million sq. ft. of cultural and educational development for up to five museum sites.** Most of this can be accomplished on National Park Service lands. However, redevelopment of the Forrestal Complex and adjacent land will provide the opportunity to locate up to two additional museums and a new memorial site in close proximity to the National Mall and Smithsonian Institution. Together, these new destinations would attract an additional 1.5 to 2.5 million visitors a year.
- **Creates more than 14.3 acres of new or improved parks and plazas and improves or creates up to five memorial sites.** This is achieved by rehabilitating Banneker Park and Reservation 113, constructing the Eisenhower Memorial, establishing an urban park along the 10th Street and Maryland Avenue corridors, and establishing new open spaces on smaller parcels, or at important intersections of streets and avenues.
- **Improves the quality of the public realm.** This is achieved by reconnecting the street grid, orienting publicly accessible uses toward the street, and improving the function and quality of the streets and sidewalks, including vehicular viaducts and underpasses crossing active rail and freeways.

MOBILITY

- **Improves accessibility by improving access to and between all transit modes,** expanding the VRE platform at L'Enfant Station, providing transit lanes along the city's local connector streets, and providing for car share parking.
- **Improves quality of the public realm by reconnecting the street grid,** locating and orienting publicly accessible uses toward or on the street, and improving the streetscapes, including sidewalks along over-passes and under-passes.
- **Improves active walking and biking transportation by connecting the street grid;** prioritizing pedestrian and bicycle paths; providing attractive stairs and ramps between vertical grade changes; improving intersection crossing distances and traffic signalization; improving the quality of underpasses and overpasses, and providing dedicated bike lanes, bike sharing stations, bike parking, and bicyclist amenities.
- **Establishes a primary transit center at L'Enfant Station and improves commuter rail ridership** by accommodating a four track rail corridor and expanding the width and length of the VRE station platforms; maximizing surface transit along 7th Street; establishing new Metro station entrances in the vicinity of L'Enfant Station; and improving pedestrian connections to and between all transit modes.
- **Improves vehicular circulation by connecting the street grid,** retaining easy north/south access to the freeway, and providing adequate circulation for cars and buses that minimizes impact on adjacent residential neighborhoods.



Model of the Revitalization Scenario - View of Virginia Avenue, Reservation 113 and L'Enfant Regional Transit Station

3

An Environmental Showcase

ENERGY, WATER, WASTE AND GREEN INFRASTRUCTURE

Over the last two decades, both the public and private sectors achieved measurable results reducing greenhouse gas emissions and natural resource consumption by integrating sustainability early into the building design process and throughout building operations. While this approach is now standard and widely used, the results of these efforts can only achieve so much. Today, each person or building may use less water and energy than it has in the past, but the world's overall development footprint continues to grow and impact the ecosystem. Depleting scarce resources also limits the nation's success at being internationally competitive. As a result, people must be even smarter about how they develop their neighborhoods and cities.

More and more people are beginning to recognize the financial and sustainability benefits that can be achieved with district-scale systems that operate beyond the individual building and site scale. These systems can yield greater results by taking advantage of economies of scale while still being small enough to adapt to new technologies.

The federal government's footprint in the SW Ecodistrict presents a unique opportunity for it to be a leader in supporting district-scale strategies. These strategies are also critical for achieving the goals and requirements in Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance (EO 13514), signed by President Obama in 2009.

EO 13514 requires all federal agencies to reduce greenhouse gas emissions, manage stormwater, and reduce water use and waste – a challenge for buildings in urban areas. Through district-scale planning the study area has the opportunity to transform a resource-intensive environment into one that is able to capture, manage and reuse a majority of its resources. This means that through district, block, and building strategies, the Ecodistrict will create energy from renewable sources, capture and use rainwater for its non-potable water needs and divert a majority of its waste from landfills. It can also support connected, living corridors of green infrastructure, with green roofs and walls, streetscape and tree plantings and open spaces contributing to improved human health and urban biodiversity. These strategies will provide cost savings over the long run, and enable federal agencies to exceed the goals and requirements of EO 13514.

EO 13514 also requires agencies to prepare for the effects of climate change—a process known as climate adaptation. The U.S. Climate Change Science Program examined the potential effects of climate change in the National Capital Region in 2009. Washington, DC is particularly vulnerable to threats associated with sea-level rise in low lying areas. The SW Ecodistrict is located out of the floodplain. Because its topography is substantially elevated from the Washington Channel, providing it protection from near-term impacts with regard to sea-level rise.

This chapter first discusses the modeling process and then building-scale strategies for energy, water, and waste collectively. These strategies are often integrated and focus on ways to reduce a building's use of resources. Following the building-scale discussion, are broader sections on energy, water, waste and urban ecology that focus on their importance to the Ecodistrict, and their related strategies at both the block and district scale.

Conceptual Modeling of the Revitalization Scenario

The revitalization scenario has been defined with conceptual modeling of potential alternatives for development program, urban design and sustainability strategies. The conceptual modeling measured potential resource use of energy, water, and waste on an annualized basis within the SW Ecodistrict study area. The modeling of potential improvements was done at the building, block and district scale.

Current federal and city policies for government and private sector facilities will shape the design of district improvements, adding more efficient buildings to the district by 2030. EO 13514 will influence government procurement processes, including how government buildings are remodeled or built new. Through an iterative process, the team refined the conceptual designs as modeling results were identified. The modeling results were compared against national baselines for energy, water, and waste use to measure success. The modeling also included the potential cost of improvements based on a conservative estimate of near term construction costs.

Resource use was measured on a square foot basis. For example, gallons per square foot for water and energy use per square foot were used to illustrate building system outcomes. As the team developed the design for the district, we assessed the value of an improvement at each scale of the district. For example, as the population in the district increases through redevelopment, the relative use of resources is reduced. The cost trade-off for these potential outcomes informed refinement of the revitalization scenario.

The baseline for the SW Ecodistrict included an assessment of existing improvements for water, waste, and energy at the building scale. This was the starting point to measure compliance with the Executive Order as new building strategies were employed. Year over year reductions in energy and water use would be required from the existing condition to meet the Executive Order. In the future, reductions in resource use would be achieved by exceeding the baseline indices as building occupancy changed. The baseline establishes the point beyond which the likely cost and benefits of higher levels of resource use efficiency are reasonable. For example, energy use for new buildings in the district can be measured against other buildings nationally in the Commercial Buildings Energy Consumption Survey (CBECS) of 2003. This is a national index of energy use in commercial buildings. In early phases, it is feasible to achieve a 30 percent reduction below the CBECS survey indices. In later phases, we could achieve an 80 percent reduction. To put this in perspective, LEED Platinum certified buildings in DC have achieved a 30 percent to 40 percent reduction in energy use from the CBECS survey. Modeling of water and waste would similarly measure success against the baseline.

At the block scale, the project quantified how streets, open space and buildings would share resources. A key strategy in reducing stormwater run-off is to collect it for reuse. Here, a block or group of blocks share a stormwater system to clean and then convey stormwater to a storage tank for reuse. The measurement of this block strategy included the likely loss of stormwater to evaporation as well as the loss of water through the transpiration of water through plants. The team quantified the area of roof, streets, and open space. In the block scale modeling, the amount of pervious or impervious area was measured to quantify the amount of potential rainwater harvesting.

At the district scale, the team measured development scenarios that quantified the resource use and cost of all building, street, and open spaces improvements. Where blocks were redeveloped the model accounted for changes in land use and the intensity of activity. Across the district, modeled building systems included rehabilitated and redeveloped buildings, and building s with new uses.

The existing Central Utility Plant would supply buildings across the district with power, cooling, and heat. In early years, natural gas will be use for create power, heating, and cooling in the central plant. The carbon emissions from gas fuel use could be offset with carbon credits. In the future the fuel source for the central utility plant can be changed from natural gas to another fuel that does not release carbon into the atmosphere. The advantage of connecting buildings together affords a simple way to overcome the barriers present if a building were to source its power, cooling, and heating efficiently with zero carbon emissions.

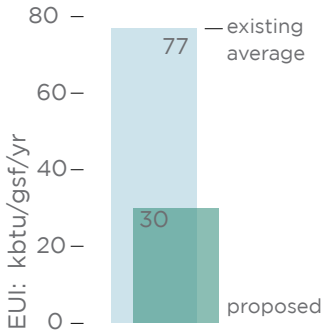
By separating potable and non potable water systems in the district, non potable water could replace potable water use for specific uses. For example, potable water would no longer need to be used for toilet flushes. It would be limited to potable uses such as hand washing or drinking. To accomplish this, part of the waste water would be treated on site to extract water for non potable uses. As a result the waste flow to DC's waste water treatment system would be minimized.

The following strategies have been informed by the conceptual modeling to define the revitalization scenario and to achieve Executive Order 13514.

CONCEPTUAL MODELING

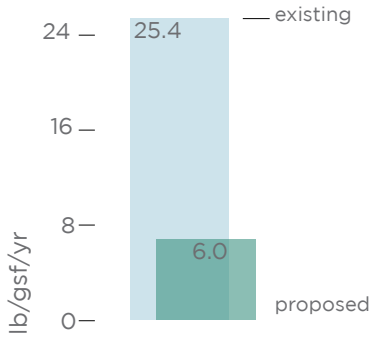
TOTAL ENERGY USE

Modeling of improvements to existing buildings identify significant reductions in energy use.



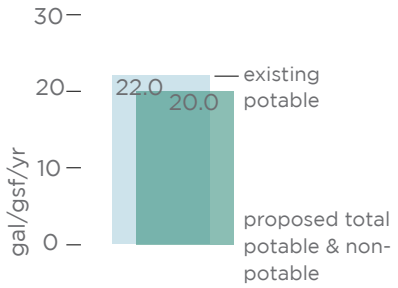
SCOPE 1 & 2 CARBON

Improvements to existing buildings energy usage will lead to a reduction of carbon prior to the decarbonization of the central utility plant.



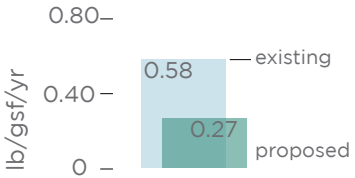
TOTAL WATER USE

Currently, all the water used is potable. The modeling identified a reduction in total water usage, with a significant reduction in potable water use.

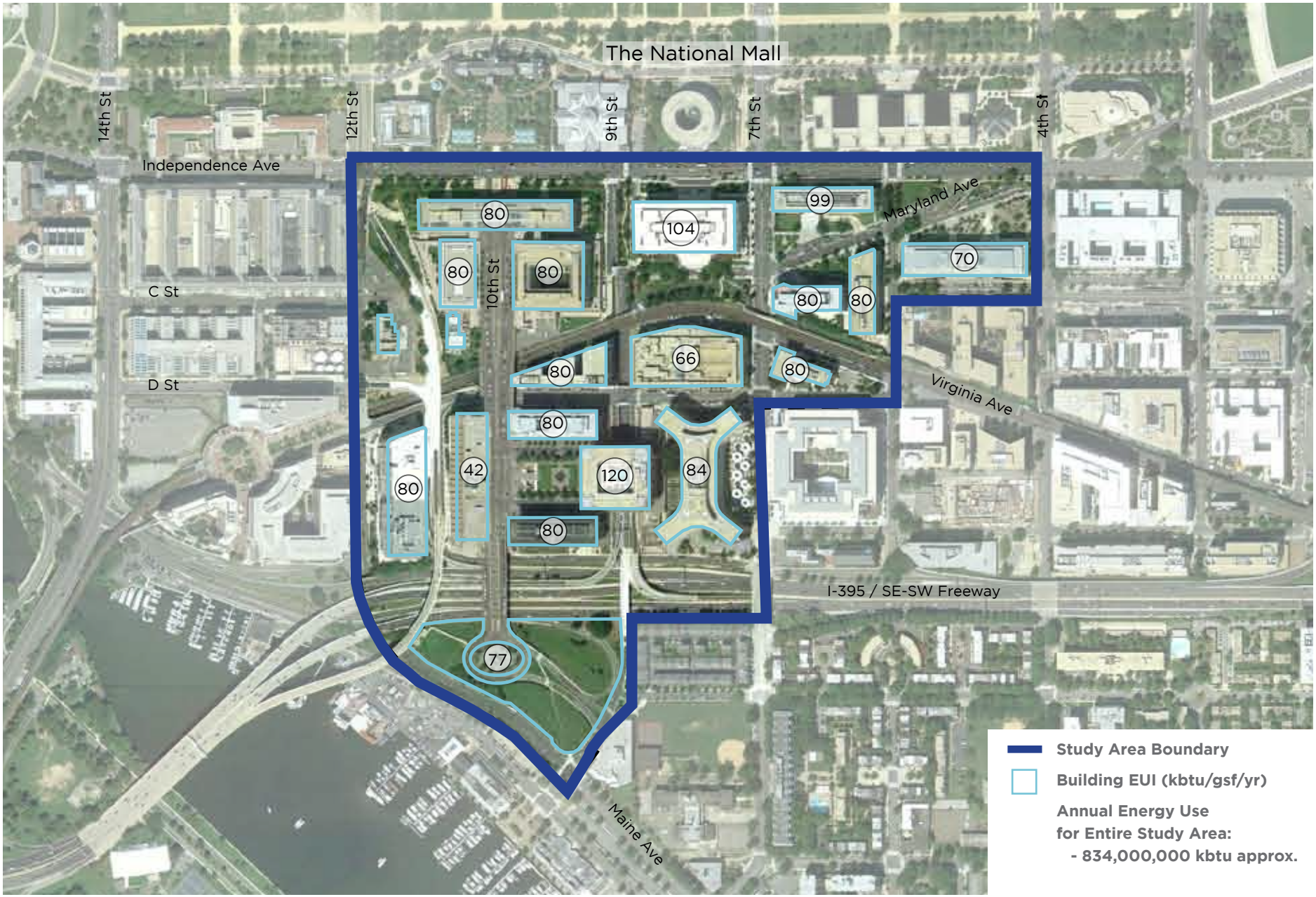


TOTAL WASTE IMPACT

Improvements to the recycling program will lead to reduction in waste going to the landfill.



Existing Energy Use



Energy, Water, and Waste at the Building Scale

CONCEPTUAL STRATEGIES

While energy, water, and waste strategies at the district-scale often result in tremendous sustainability improvement, building scale strategies can be "low-hanging fruit." Often simple improvements to buildings can vastly improve energy, water, and waste performance without having to spend a lot of money. Other, more costly improvements can also be made, yielding even better performance.

Currently, existing federal buildings in the study area are not energy or water efficient due to their design and antiquated infrastructure systems. When possible, the federal government is making improvements such as installing low flow fixtures and energy efficient lighting. These measures save money and resources; however, to meet the energy, water, and waste targets (described in the following sections) greater improvements will need to be done in the future.

An important part of the development of the revitalization scenario was modeling individual buildings and sites. The conceptual modeling for the individual buildings identified a potential 47 percent reduction in energy use with a light rehabilitation (upgrading controls and lighting) of existing buildings. Fully rehabbed or new buildings can expect to see on average a 72 percent reduction in energy use from the existing buildings.

The modeling considered how much water, waste, and energy would be used in each building, street, or open space. The modeling also identified different sources of power, heating, and cooling to be supplied across the district. Through this we could estimate the cost of improvements and their value meeting the Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance The matrix on this page provides the guidelines for building improvements.

DESIGN STRATEGIES AT THE BUILDNG SCALE

	Building Strategy				
	Light Rehab	Full Rehab	Repurpose	Infill	Redevelop
Energy					
Tenant Improvement					
Lighting System Upgrade	X	X	X	X	X
Plug Load Reduction	X	X	X	X	X
Sustainable and Certified Materials	X	X	X	X	X
Radiant Heating and Cooling		X	X	X	X
Low Volume Air Distribution		X	X	X	X
Core and Shell					
Upgrades to building systems during natural cycle of obsolescence.	X				
New Mechanical and Electrical System - Hydronic thermal energy distribution.		X	X	X	X
High performance building envelope		X	X	X	X
Maximize the use of renewable energy resources (PV) and shared energy technology		X	X	X	X
Maximize building energy use efficiency		X	X	X	X
Capitalize on Ground Source Heat Below Building Site				X	X
Capitalize on Ground Source Heat Below Open Space and Streets					X
Water					
Replace plumbing existing fixtures with high efficiency fixtures	X	X	X		
Install high efficiency fixtures		X	X	X	X
Collect rainwater		X	X	X	X
Install non-potable water system		X	X	X	X
Waste					
Provide waste sorting stations at point of use locations.	X	X	X	X	X
Reclaim, recycle, and compost the majority of waste (solid and organic) generated within the area.		X	X	X	X
Minimize construction waste.		X	X	X	X

Energy

THE IMPORTANCE OF ENERGY

The majority of energy consumed on this planet comes from non-renewable fossil fuels such as coal, oil, and gas which produce greenhouse gas emissions, known to cause global warming. It is widely acknowledged that as a result of greenhouse gas emissions our planet is already experiencing climate changes and extreme weather events, which are permanently damaging the ecosystem. To curb climate change and its detrimental effects, people must reduce their overall energy consumption and switch to renewable "carbon-free" sources of energy that do not create greenhouse gas emissions..

THE AREA TODAY

ENERGY USE

Many federal buildings in the study area today are very inefficient because: they have thin walls and windows; are oriented north/south which maximizes heat gain; have little natural light because of large interior hallways and extremely large footprints; and have antiquated mechanical systems. When possible, the U.S. General Services Administration (GSA) has made energy efficient improvements to some federal buildings in the area but their overall design and layout continues to prevent significant improvements in energy efficiency. An existing federally-owned central utility plant provides heating and cooling to the federal buildings within the area, but is not authorized to provide service to non-federal users. The private buildings are more energy-efficient because property owners have made investments; however, none of them use renewable energy or are part of a larger more efficient district-energy system such as the central utility plant because it is not available for use by private property owners

ENERGY SOURCE

Today, the majority of the energy used in the area comes from coal-fired electricity plants. Coal is highly inefficient and one of the most polluting energy sources on earth. Burning coal is a significant contributor to global warming and releases toxic pollution into the air and water. Approximately 76 percent of the energy used within the Ecodistrict is provided by Pepco and comes from burning coal. Natural gas, a cleaner and more efficient form of energy, produces 26 percent of the Ecodistrict's energy supply and is provided by Washington Gas. While natural gas is a cleaner alternative to coal-fired electricity, it is also a non-renewable source of energy and produces carbon dioxide and other greenhouse gas emissions. Less than one percent of the Ecodistrict's overall energy use today is generated from renewable resources within the Ecodistrict.

THE TARGETS

The target for the Study Area is to create a zero net energy district, as measured in carbon. This means that in addition to producing all of the energy it consumes on-site, the Ecodistrict must not produce any carbon emissions or pay for offsetting carbon credits. There are several greenhouse gas emissions, but carbon emissions are considered one of the primary contributors to global warming. This target is derived from EO 13514, which requires all new federal building projects that begin the planning process in 2020 to be zero net energy buildings by 2030.

Buildings in warm climates on large sites have the opportunity to harness a significant amount of renewable energy from the sun. If the buildings are also energy efficient, it is possible that they will be able to operate on the solar energy that the site generates (thus becoming a zero net energy building). Achieving this target on a site-by-site basis in a dense urban environment, where solar exposure is usually limited to small rooftop areas, is more difficult. Dense urban areas such as the SW Ecodistrict can, however, move closer to achieving this target by taking advantage of energy planning at the block and district-scale.

ZERO NET CARBON BY THE YEAR 2030

RECOMMENDATIONS

BLOCK-SCALE ENERGY SYSTEMS

There are several strategies that would allow both public and private buildings within any block to share energy.

SOLAR THERMAL - Solar thermal equipment heats water using solar energy.

› Use solar thermal on both new and rehabilitated buildings. Office buildings that do not need a lot of hot water can share excess hot water with adjacent residential/hotel buildings that may need more than they can produce individually.

SOLAR PHOTOVOLTAICS (PV) – Solar PV equipment is placed on building rooftops to harness solar energy for building use.

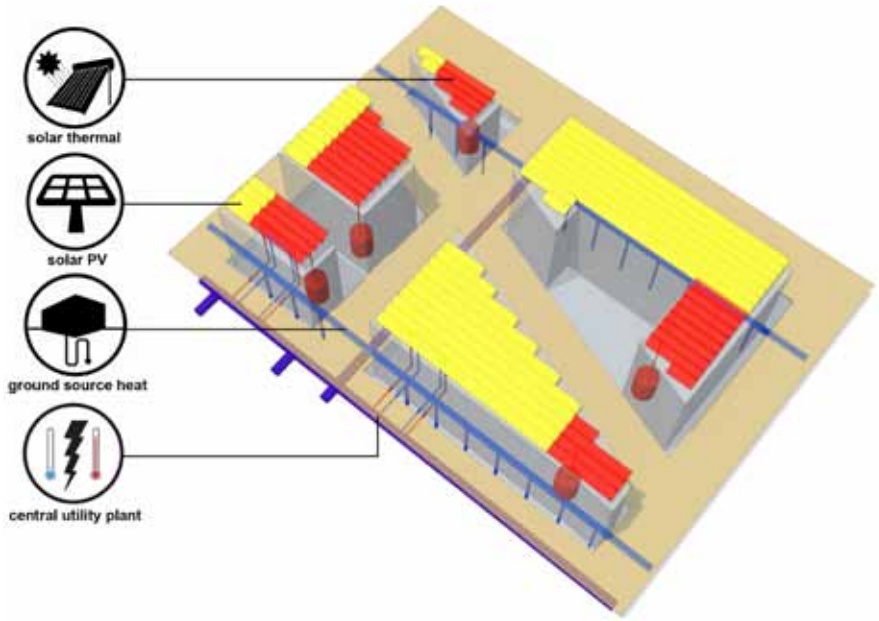
› Install solar PV on all building roofs and over the freeway between 7th and 9th Streets. The energy from the freeway installation can support energy use in the adjacent block and district.

GROUND SOURCE HEAT – The earth's relatively constant temperature under ground is used to provide heating and cooling for buildings.

› Use ground source heat technology for new buildings North of C Street on land where large blocks would allow subsurface well fields that do not conflict with existing elevated structures.

CENTRAL UTILITY PLANT (CUP) – At the block-scale, the central utility plant (also see district scale strategies) allows the sharing of heating and cooling between buildings. For example: excess heat from an office building can be used in an adjacent residential/hotel building.

› All new and rehabilitated buildings (both public and private) should connect to the existing central utility plant.



BLOCK-SCALE ENERGY SYSTEMS

RECOMMENDATIONS

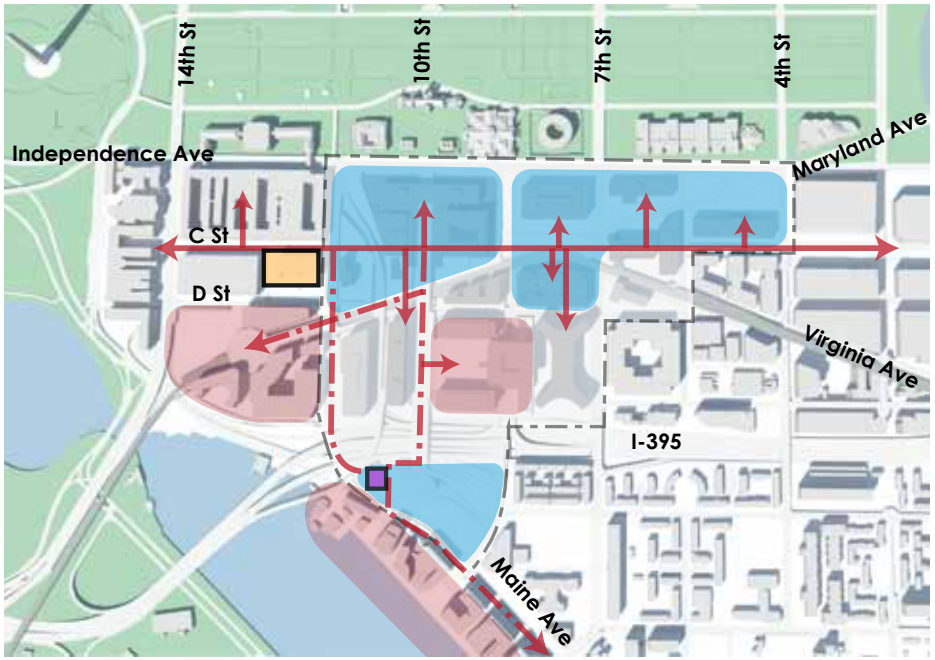
DISTRICT-SCALE:

There are three important district-scale strategies that significantly help the Ecodistrict use less energy overall, and generate and share renewable energy.

CENTRAL UTILITY PLANT In 1933 the federal government built a central utility plant at 12th and C Streets SW to provide heat to federal buildings in downtown Washington D.C. Today the plant predominantly provides heating through steam and also a small amount of cooling to a majority of the federal office buildings within the Ecodistrict and other parts of downtown, in addition to several buildings of the Smithsonian Institution. GSA owns and operates the facility. By law, they can only provide service to federal users. Nearing 80 years old, the plant is in need of modernization and as a result is not very efficient compared to today's standards. Central utility plants, sometimes called combined heat and power or cogeneration, are integrated systems that provide both electricity and heat. These plants have an advantage over conventional single-source electricity plants because they capture waste heat as electricity is produced (from natural gas in this case) and recycle it to provide heat to buildings. Conventional systems simply exhaust heat into the environment, requiring additional fuel to heat the buildings.

- Invest in the existing central utility plant for heating and cooling. Modernize the plant's equipment.
- Increase efficiency by adding new residential and commercial uses throughout the study area and upgrading equipment to support new users. Adding residential uses to the central utility plant would balance loads between day and evening use.
- Change the central utility plant to a less carbonized energy source when the technology is available. While natural gas is significantly better than coal as an energy source, it still produces carbon emissions. Electrofuels such as anhydrous ammonia are an emerging technology under study by the US Department of Energy, which could provide a renewable, carbon-free energy source for the plant in the future.

MICRO-GRIDS Micro-grids are power grids that allow electricity to be produced and used locally. The advantages are numerous: Micro-grids optimize heat energy. Between 60 and 80 percent of a typical power plant's energy consumption never becomes usable electricity, but is instead lost through production and transmission. Energy produced and distributed locally through a micro-grid could be used for electricity and to heat water. Renewable energy produced within the Study Area could be distributed through a micro-grid to other nearby buildings. This creates opportunities for property owners to sell excess power to the regional grid. Adding additional energy sources increases electrical reliability within the area and reducing dependence on the regional power grid. As new areas are redeveloped in locations remote from the central utility plant, they may develop a micro-grid district to balance loads among day and evening use.



DISTRICT-SCALE ENERGY SYSTEMS

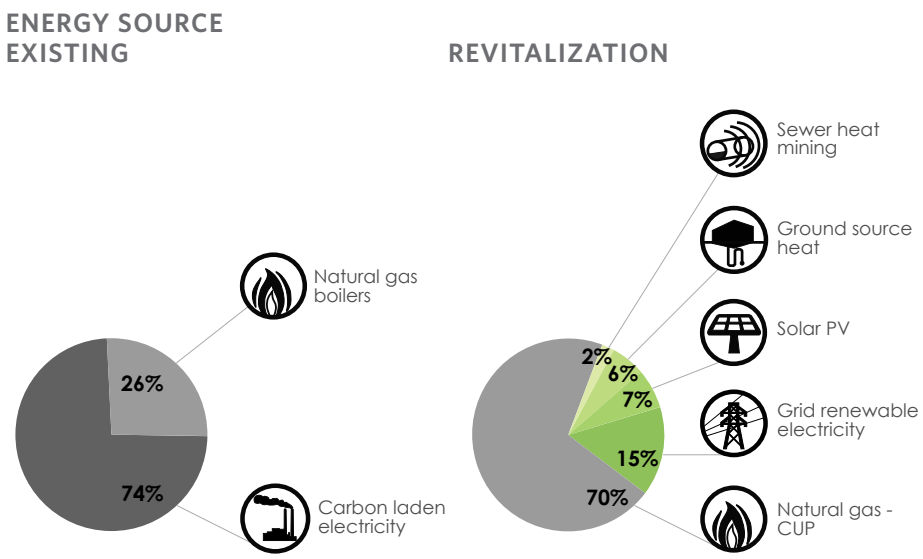
- Establish micro-grids, grouped by development areas of Mixed-Use and federal buildings, within the Ecodistrict. These micro-grids can be connected together with other buildings that might share power and energy between them.

SEWER-MINING Sewer-mining uses the constant temperature of sewage from buildings to create even warmer heat for nearby buildings. It requires no combustion and works well in densely built areas with high heat consumption, such as residential buildings.

- Build a sewer-mining facility in the southern area of the Ecodistrict to provide heating to new residential and cultural buildings immediately north and south of Banneker Park.

CONCLUSIONS

Strategies identified for the Revitalization Scenario will lead to an increase in use of alternative energies and a reduction in greenhouse gas emissions and operating costs.



Greenhouse gases will be reduced 51%. The SW District will become Zero Carbon with the conversion of the Central Utility Plant to a non-fossil fuel source.

BEST PRACTICES

ENERGY

Seattle Steam, Seattle, WA Seattle Steam represents a successful privately owned cogeneration plant. Founded in 1893, Seattle Steam provides district heat to approximately 200 buildings in Seattle's Central Business District and First Hill neighborhoods.

Seattle Steam provides a cost-effective, reliable and environmentally-friendly heat source for use in heating buildings, generating hot water, humidity control, and sterilization. The energy is distributed by Seattle Steam through 18 miles of pipe under approximately one-square mile of downtown Seattle to many of the city's office buildings, hospitals, hotels and college campuses

In 2004, Seattle Steam renewed its 50-year franchise agreement with the city. In the fall of 2009, Seattle Steam began its conversion to renewable energy by installing a new boiler that can burn clean urban waste wood, making it possible to use renewable biomass as its primary source of fuel. At full load, the biomass boiler will reduce the carbon footprint of Seattle Steam and its customers by 50 percent, and will provide a large boost to the region's sustainability goals.

Mary E. Switzer Building, Washington, DC GSA recently installed ground source heat in the Mary E. Switzer Building – two blocks away from the SW ecodistrict. Heating and cooling loads are expected to be 30 percent more efficient.

SW Waterfront, Washington, DC The Hoffman Madison mixed-use waterfront neighborhood , expected to be under construction in SW Washington in 2012 will have a three-story central utility plant expected to provide all electrical, heating and cooling power sources for the area northwest of 7th Street SW. The plant will significantly contribute to the neighborhood's greenhouse gas reductions.

Water

THE IMPORTANCE OF WATER

Water is a vital resource to the life of the SW Ecodistrict. People, plants and urban wildlife depend on water for their existence. People also depend on water to heat and cool buildings. There are five types of water that are important to the sustainability of the Ecodistrict:

Potable Water – water that has been processed and treated so that it is clean enough to drink. It is pumped to buildings within the district from the municipal water system.

Stormwater – water that falls onto the study area when it rains. It eventually runs into the municipal storm system where it is pumped out to the water treatment plant where to be treated.

Greywater – water that is generated from domestic activities such as laundry, dishwashing, and bathing.

Recycled Stormwater/Greywater – stormwater/greywater that is captured and reused for irrigation and/or toilets.

Blackwater – water that is discharged from toilets.

Traditionally, these types of water function independently. Potable water is used for all water needs on a site. Stormwater, greywater and blackwater are all pumped to a wastewater treatment plant. While this has worked in the past, it is becoming increasingly clear that it is cheaper and more sustainable to integrate these systems. Highly treated and energy intensive potable water does not need to be used for all of the area's water needs, especially when the stormwater and potable water rates (paid by property owners) are scheduled to increase substantially by 2032. The more the study area can capture stormwater, reuse it for non-potable water uses, and decrease its overall potable water use, the more money it will save.

THE AREA TODAY

While this area is not part of the District of Columbia's antiquated combined sewer system, where stormwater and sewage use the same pipes and often overflow into the rivers during heavy rains, it is still important to capture and treat stormwater.

In 2012, rain produces 92.4 million gallons of water in the study area per year. With 82 percent of the land area comprised of hard surfaces, very little rainwater infiltrates into the ground and instead runs off the area's buildings and streets into the municipal storm sewer system. On its way, it picks up pollutants such as oil, gasoline and pesticides. Once in the system, it must be pumped to the Blue Plains Treatment Plant where significant amounts of energy are used to clean the water before it is released. None of it is reused. The Blue Plains Treatment Plan is owned and operated by DC Water, the water and sewer authority that provides water and wastewater treatment services to the District of Columbia and parts of region.

Today, all of the water that is used in the study area is potable - meaning it has been processed and treated so that it is clean enough to drink. Potable water is unnecessary for many uses, including irrigation, building mechanical systems, and toilet flushing since rainwater and greywater could be used instead.

THE TARGETS

The targets for stormwater and potable water come from Executive Order 13514.

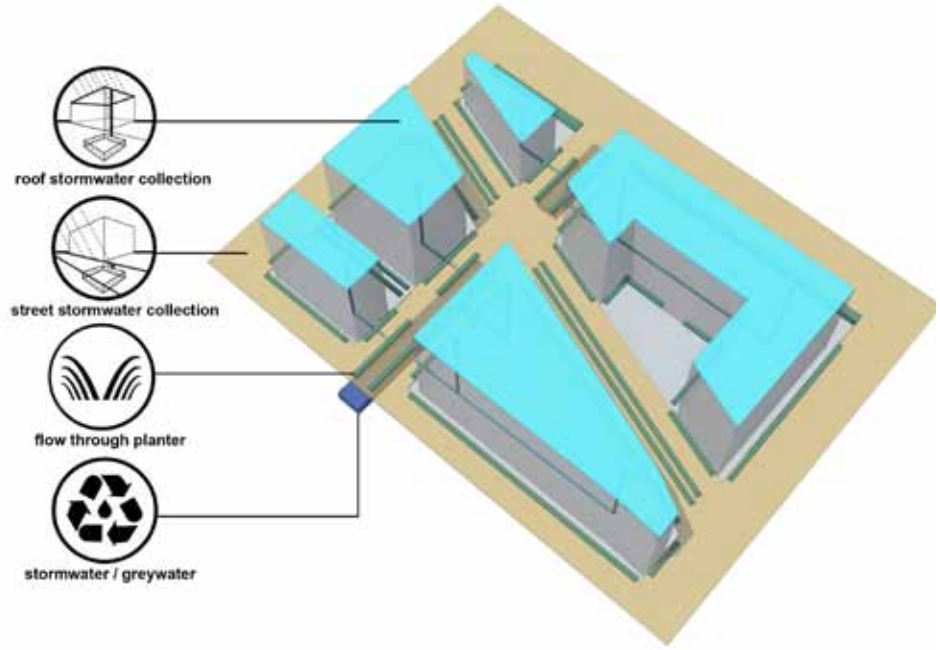
STORMWATER - RETAIN 95TH PERCENTILE RAIN EVENT

The stormwater target is to retain a 95th percentile rain event. In Washington, DC this means all rain events that produce up to 1.7 inches of rain in 24 hours. Few rain events in Washington, DC actually produce that much rain in 24 hours so the target essentially means that all of the rain that falls in the area throughout the year will be retained and reused. This is very challenging in a dense urban area with little pervious surface.

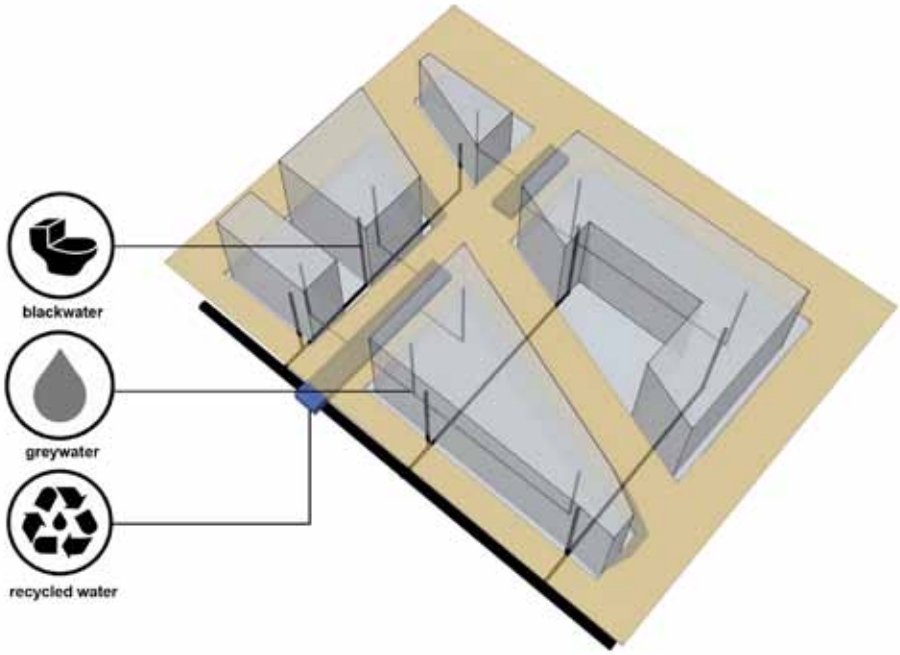
POTABLE WATER USE - REDUCE BY 50 PERCENT

The potable water target is to reduce potable water use by 50 percent (as measured per square foot). Today, the area uses potable water for all of its water needs. This amounts to approximately 22 gallons of water/square foot/year. The target is to reduce potable water use to 11 gallons/square foot/year.

RECOMMENDATIONS



BLOCK-SCALE WATER COLLECTION SYSTEMS



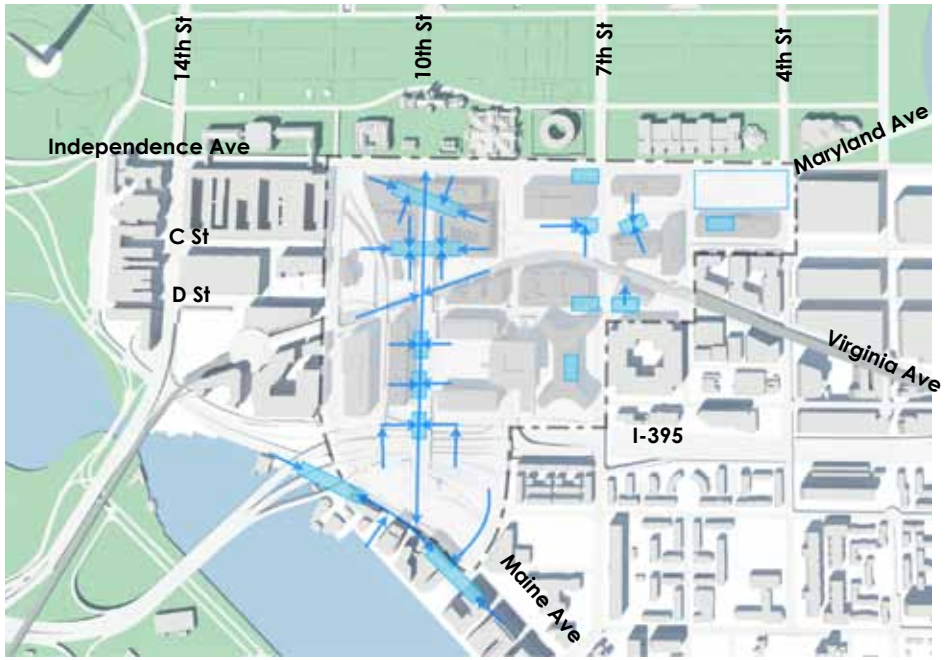
BLOCK-SCALE WASTE WATER SYSTEMS

BLOCK-SCALE

A key strategy in reducing stormwater run off is to collect it for reuse. Here, a block or group of blocks share a stormwater system to clean and then conveys stormwater to a storage tank for reuse. Our modeling at the block scale indicates that the project can maximize the capture and reuse of naturally occurring rain and the treatment of waste water leaving the district.

- **ROOF STORMWATER** - Collect rain water from building rooftops and send to the district-scale water system.
- **STREET STORMWATER** - Collect stormwater runoff from streets/plazas and send to district-scale water system.
- **FLOW THROUGH PLANTERS** - When possible, pre-treat as much stormwater in vegetated flow-through planters prior to sending to district-scale water system.
- **RECYCLED STORMWATER/GREYWATER** - Reuse collected stormwater/ greywater for all non-potable water needs and landscaping.
- **WASTE WATER** - Solids captured from waste water could ultimately reduce the Ecodistrict's greenhouse gas emissions while providing alternative energy source through anaerobic digestion. It is not technically or financially feasible to do this in the near future in the Ecodistrict. The solids in waste water will continue to be pumped to the DC Water treatment plant. The anaerobic digestion facility that DC Water is building will make a regionally scaled process that is effective in capturing its latent energy resulting in usable fertilizer and a low carbon energy source.

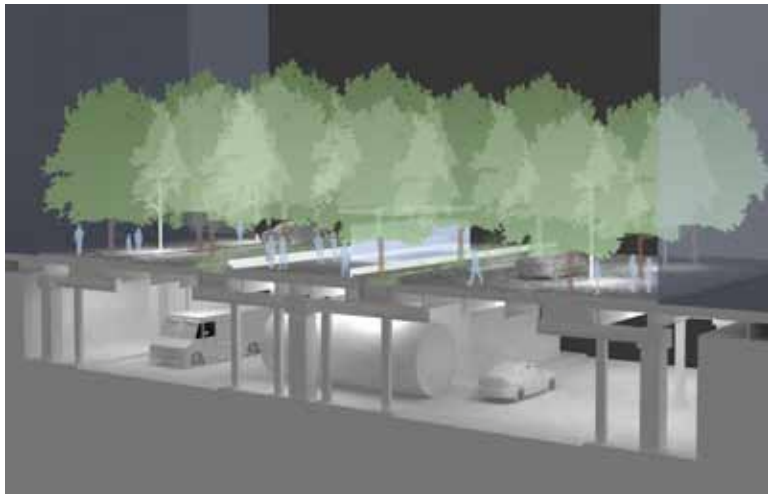
RECOMMENDATIONS



DISTRICT-SCALE WATER SYSTEMS

Water Storage

Water Collection



(Above) - Potential stormwater storage (tank or cistern) under 10th Street,SW

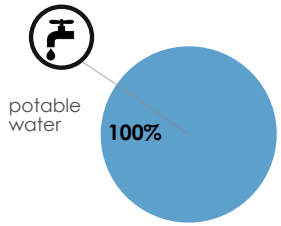
DISTRICT-SCALE

- All stormwater and greywater will be sent to cisterns under 10th Street, SW. Reuse of this water in buildings and landscapes could provide 71 percent of the total water used in the Ecodistrict. It could also provide a free water source to the central utility plant (described in the Energy Section), which uses significant amounts of potable water annually.
- Blackwater and greywater strategies are important for meeting the area's potable water reduction goals. In this regard 40 percent of the non-potable water is to be sourced from waste water and 27 percent from stormwater. In so doing, potable water use can be reduced by 63 percent and stormwater runoff can be eliminated.

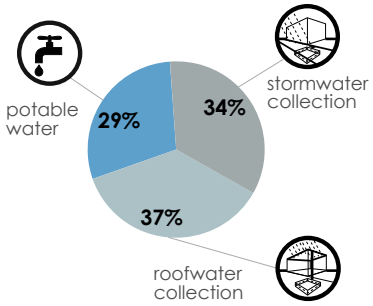
CONCLUSIONS

Strategies identified for the Revitalization Scenario will lead to a 60% reduction of potable water use.

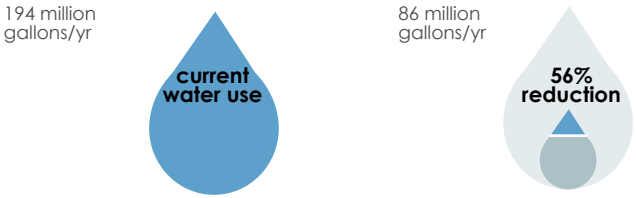
WATER SOURCE EXISTING



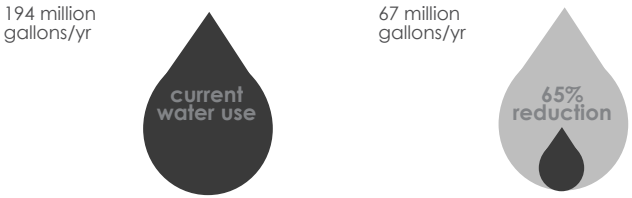
REVITALIZATION



WATER USE



WASTE WATER



BEST PRACTICES

WATER

The Hoffman Madison Waterfront development, soon to be under construction in SW Washington DC, will have an elaborate 675,000 gallon cistern system that will be constructed to capture more than 25 million gallons of runoff each year that currently drains into the Washington Channel due to the lack of permeable surfaces. The captured runoff will be recycled to the greatest extent possible, including the provision of chilled water for the development's cogeneration plant.

Waste

THE IMPORTANCE OF WASTE

Reducing overall waste is critical to the success of the Ecodistrict because processing waste uses a lot of energy and if it cannot be reused, the waste is trucked to a landfill where it consumes large amounts of land, making it unusable for anything else. This section discusses two kinds of waste:

- **Building waste** – the waste that is produced in buildings everyday such as waste from food and paper.
- **Construction waste** – the waste that results from building materials that can't be reused when an existing building is demolished or when a new building is constructed.

THE AREA TODAY

Today, it is estimated that 60 to 70 percent of the area's overall waste is sent to the landfill. This means that it is recycling approximately 30 to 40 percent of its current building waste -largely paper, plastics, and glass. There are very limited composting opportunities for food and landscape residuals today. to put this into context, the City of San Francisco is now diverting 77 percent of its overall waste from the landfill. This means that it is recycling and/or reusing 77 percent of its overall waste and that only 23 percent of its overall waste is going to the landfill.

THE TARGETS

There are two waste-related targets that are achievable in this plan.

SOLID WASTE TO LANDFILL - REDUCE BY 80 PERCENT

CONSTRUCTION WASTE - RECYCLE 75 PERCENT AS BUILDINGS ARE REHABILITATED OR REDEVELOPED

RECOMMENDATIONS

DISTRICT SCALE

The district can effectively reduce waste generation through collective community action. In this regard, sorting waste at the point of use or altering procurement protocols is best orchestrated at a district scale.

USE REGIONAL WASTE AND RECYCLING SYSTEMS FULLY

The Study Area strategies utilize the regional waste and recycling system because currently it is not financially or technically feasible to process and reuse waste within the area itself.

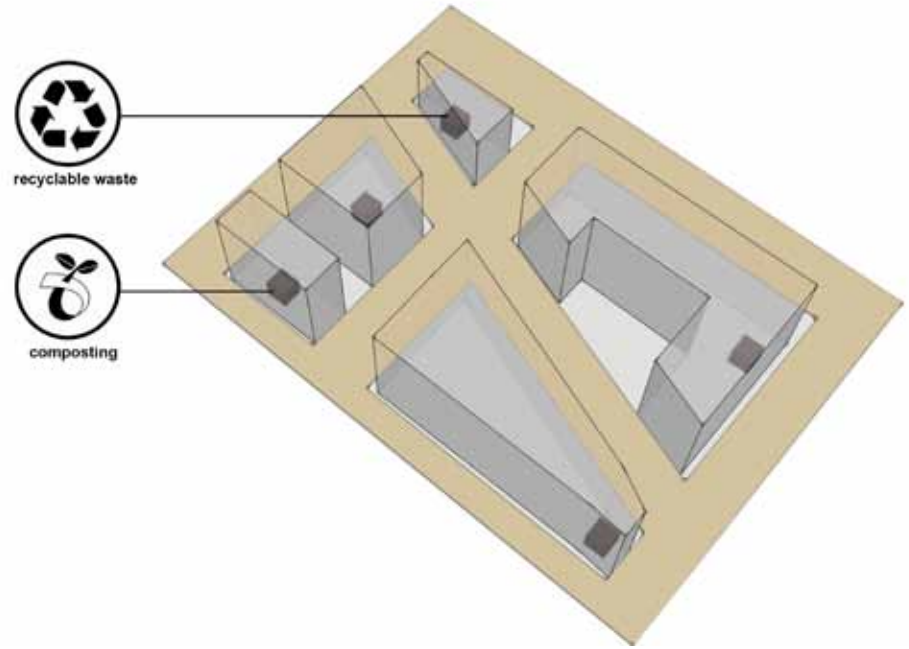
Non potable water can be reclaimed from waste water. In this, the remnant solids from the water reclamation process would not be composed on site. Rather, they would be conveyed through the sewage system to the Blue Plains Waste Water Treatment Plant for further dewatering and anaerobic digestion. The power generated from the methane gas through anaerobic digestion would be used to power the treatment plant.

Operational improvements such as designated composting and recycling stations at all of the buildings will go a long way towards meeting the 80 percent diversion rate from the landfill.

PILOT COMPOSTING PROGRAM

- In addition to continue bolstering recycling programs in federal and private buildings, the federal agencies and private buildings will significantly benefit from a pilot composting program for food and landscape residuals.

BUILDING & BLOCK-SCALE WASTE SYSTEMS



USE CONSTRUCTION WASTE MANAGEMENT STRATEGIES.

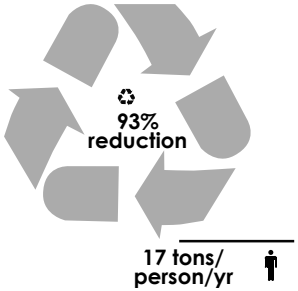
- Operational improvements during the demolition and construction of buildings are the key to meeting the Ecodistrict's construction waste goals. Construction waste management strategies include:
- Early planning to set targets and adopt waste prevention plans.
- Requiring that reusable wood and other materials are used before new ones
- Purchasing reused, recycled, or recycle-content materials and equipment.
- Finding creative ways to reuse items already existing within the project site.

CONCLUSIONS

The Revitalization Scenario strategies will lead to recycling of 80% of solid waste and 75% of construction waste.

EXISTING SOLID WASTE

REVITALIZATION



CONSTRUCTION WASTE RECYCLING

BEST PRACTICES

WASTE

The U.S. Department of Agriculture building on Independence Avenue has implemented a successful composting program that, while in its infancy, is already diverting approximately 7 percent of its food waste from the landfill.

Green Infrastructure

THE IMPORTANCE OF GREEN INFRASTRUCTURE

Green infrastructure is defined as a connected system of landscaped elements, such as parks, living walls, green roofs, streetscape plantings, bioretention such as rain gardens, and mature tree canopies. When linked together, green infrastructure can provide a unified, resilient urban ecosystem that improves both ecological and human health. The most successful systems seamlessly blend these elements into energy, water and waste infrastructure, and enhance the built environment for improved human connections with nature.

Integrating a green infrastructure system into the buildings, sites, and utility infrastructure will result in cost-effective improvements through a living system that:

- **Cleans** the air and stormwater to enhance urban ecology and improve human health,
- **Cools** the overall temperature of the area, reducing the heat island effect, decreasing energy costs, and improving habitat and pedestrian comfort, and
- **Connects** contiguous green spaces along the ground, up living walls, and over green roofs, creating diverse habitat opportunities and connecting people to nature.

There are three green infrastructure elements that work together to improve the urban ecology of the SW Ecodistrict:

- **Permeable surfaces** – areas on the ground and on roofs that are able to absorb water and oxygen. Permeable surfaces increase the health and vitality of vegetation.
- **Tree canopy** – the overall area covered by trees. Extensive tree canopy coverage helps reduce the heat island effect, offers greater habitat opportunities, and provides a more comfortable pedestrian experience.
- **Parks and plazas** – publicly accessible spaces that provide vegetation, increase habitat opportunities, and improve human health. They also contribute to the cultural character of a neighborhood (for more information, please see p.16-17).

THE AREA TODAY

Typical of many urban areas, the study area is a low-functioning ecosystem that is caused by a number of factors:

- Approximately 80 percent of the surface is impervious, a state where the ground is unable to absorb water and oxygen.
- About 50 percent of the study area is built above the ground. Due to weight restrictions, older elevated structures often limit the ability to retrofit streetscapes with a large tree canopy and vegetation.
- The few areas that are vegetated, including the 10 acres of parks and plazas, are mostly small spaces between a building and the sidewalk that are unsuitable for habitat. They suffer from severely compacted soil, are not properly maintained, and contain non-native invasive species.
- Only about 8.6 percent of the Study Area is covered by tree canopy, and the surviving trees have limited growth potential. As a comparison, about 37 percent of Washington is covered by tree canopy.

As of June 2012, there were no green roofs, living walls, or bioretention areas that collect and treat stormwater, or other green infrastructure elements in the study area. However, the District of Columbia's 2012 update to the Zoning Regulations requires parcels to calculate and maintain a Green Area Ratio (GAR), a calculation that compares the permeable surfaces, tree canopy and landscaped areas to the overall site area. Based on the District's underlying land use for the Study Area, the GAR is 0.30.

THE TARGETS

The target for green infrastructure in the Study Area is to achieve a minimum Green Area Ratio (GAR) of 0.45, well above the District's minimum GAR of 0.30. This will be accomplished by using green roofs and living walls; bioretention in parks, plazas, sidewalks and medians; edible gardens and improved parks; and permeable pavements and sidewalks that allow for greater tree canopy and vegetation.

ACHIEVE A MINIMUM GREEN AREA RATIO OF 0.45

Green roofs significantly contribute towards increasing the SW Ecodistrict's GAR, and provide a variety of benefits to urban ecology and human health. They reduce energy use by providing superior insulation qualities, increase permeable surfaces, and establish vegetated areas that provide habitat opportunities for pollinators and rooftop gardens for occupants. However, the SW Ecodistrict must balance the benefits of green roofs with the need to increase renewable energy use and capture and reuse as much stormwater as possible. Because there is a limited amount of area available to successfully achieve all three goals, the use of green roofs should be strategically located in places where they are visible to building occupants, maximizing both ecological and human benefits. Establishment of green roofs, renewable energy systems and recycled stormwater/greywater systems should be planned holistically to yield maximum results.

As a part of the GAR, credit is also given to reducing the amount of impervious surface in the area, increasing the overall tree canopy, and establishing urban parks. By establishing a minimum pervious surface area target of 35 percent, the SW Ecodistrict will contribute to the improved health of the Chesapeake Bay watershed. By establishing a minimum tree canopy area target of 40 percent and concentrating new plantings along streets and in the 14.3 acres of new or improved parks and plazas, the SW Ecodistrict can help Washington move towards its city-wide goal of 40 percent.

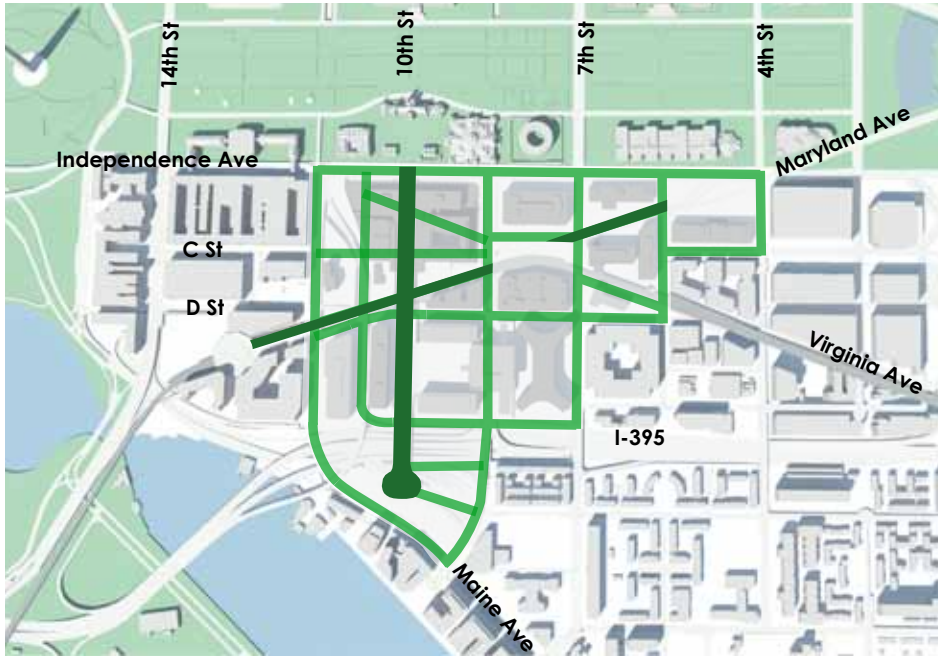
RECOMMENDATIONS

BUILDING-SCALE The following recommendations are able to make the biggest impact through implementation on a building-by-building basis.

- Green Roofs: Locate and design green roofs to maximize their ecological function and their visibility to on-site and nearby building occupants and/or from the street level.
- Edible Rooftop Gardens: Designate selective rooftop areas for edible gardens, and use compost and mulch from the area to amend planting beds and improve soil quality.
- Green Walls: Incorporate green walls into exterior building features to cool structures, decrease energy costs, reduce heat island effect, and enhance streets and plazas.
- Rain Gardens: Incorporate rain gardens into landscaping to provide stormwater management.

(Images, clockwise from upper left) - Solar/Green Roof, Edible Rooftop Garden, Edible Green Wall, Green Wall, Rain Garden

RECOMMENDATIONS



GREEN STREET INFRASTRUCTURE

Green Corridor

Enhanced Tree Canopy

Green streets will be used to manage stormwater and improve urban ecology

BLOCK-SCALE While many recommendations at the block scale are implemented in the public realm, adjacent landowners and government agencies with jurisdiction over the public realm can work together to achieve even greater results.

- **Stormwater Management:** Capture and treat stormwater across property lines using integrated green infrastructure elements in parks, plazas, building yards, and along streets. Elements include low impact development features like rain gardens, cisterns, and grassed swales.
- **Pervious Area:** Maximize ground infiltration by increasing open space and using permeable pavement and structural pavement systems that allow for water and oxygen absorption to improve vegetative root growth.
- **Native Vegetation:** Integrate native vegetation into parks, plazas, streetscapes and bio-retention features such as rain gardens to improve water quality and visual aesthetics, lower energy/water consumption, and promote mid-Atlantic ecology.
- **Parks and Plazas:** Design parks and plazas for people to socialize and reconnect with nature, treat stormwater, control flooding, and provide habitat opportunities.
- **Urban Soils:** Establish healthier urban soils by using compost and mulch from the Ecodistrict, structural soils that resist compaction, and more permeable pavers that allow for vegetative root growth.
- **Urban Heat Island Effect:** Use shade from trees and structures, as well as surface materials with a high solar reflectance index (SRI), to reduce the heat island effect.

DISTRICT SCALE In order to meet green infrastructure targets, some recommendations must be implemented at a district scale.

- **Green Corridor:** Transform 10th Street into a “green spine” of vegetation to connect the National Mall and the SW Waterfront. Use street trees, water features and other green infrastructure elements such as rain gardens to connect parks and plazas.
- **Tree Canopy:** Use tree-friendly construction details that increase soil permeability and root growth, in streetscapes. Concentrate new tree canopy into parks and plazas, redeveloped parcels, and along streets.
- **Awareness Campaign:** Integrate exhibits and way finding elements into the green infrastructure system to connect people to nature. Provide interpretive/educational information about regional ecology, history, and culture.
- **Indicator Species:** Identify a bird or insect to serve as the “indicator species” to monitor the ecological health of the SW Ecodistrict.

CONCLUSIONS

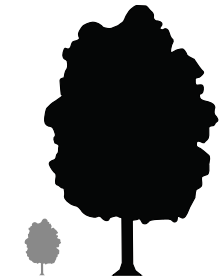
The Revitalization Scenario strategies will lead to a resilient green infrastructure system that significantly improves ecological health; Treats stormwater and prevents flooding; reduces energy use in buildings; reuses compost created in the SW Ecodistrict to improve soil quality; connects green spaces for contiguous habitat for critters; filters air pollutants; reduces urban heat island impacts; absorbs carbon dioxide in the soil and tree canopy; and improves human health with views and access to roof gardens, parks, and recreational areas for rest and social interactions.

GREEN INFRASTRUCTURE

› Achieve a Green Area Ratio (GAR) of 0.45 and 14.3 acres of improved parkland for ecological and human health.

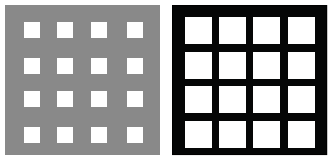
TREE CANOPY

› Increase tree canopy coverage from the existing 8.6 percent to 40 percent



PERMEABLE SURFACES

› Increase in permeable surface from the existing 20 percent to at least 35 percent



BEST PRACTICES

GREEN INFRASTRUCTURE

Philadelphia Municipal Green Infrastructure Plan (Philadelphia, PA) http://www.phillywatersheds.org/what_were_doing/green_Infrastructure

The Philadelphia Water Department captures, treats and reuses stormwater through an integrated green infrastructure system. When compared to traditional underground stormwater conveyance systems, green infrastructure provides a cheaper and more flexible solution that delivers additional ecological and personal health benefits. Linking smaller elements, such as green roofs, rain gardens, and tree boxes, creates a resilient and growing system that not only treats stormwater, but increases awareness of city residents and employees about the health of the ecosystem.

Greenwich Millennium Village (London, England) http://en.wikipedia.org/wiki/Greenwich_Millennium_Village

Initiated in 2006, this brownfield development in southeast London is a mixed-use community that fully integrates a contiguous system of green infrastructure into the neighborhood. The green infrastructure treats stormwater runoff, provides habitat for a variety of species, and teaches residents and visitors about their ecosystem. It contributes towards an overall 30 percent reduction in water use, 80 percent reduction in energy use, and provides opportunities to interact with nature throughout the development, both in a streetscape/public realm setting as well as in restored wetland areas.

An Environmental Showcase

The SW Ecodistrict will become an educational showpiece and national model for environmental stewardship

CONCLUSION

ENERGY, WATER, WASTE AND GREEN INFRASTRUCTURE

The outcomes of the environmental systems recommendations include:

ENERGY

- **Reduces the energy use of all buildiings**, including lightly rehabbed buildings by 47% and fully rehabbed buildings and new development by 72% lower than today's building.
- **Results in a 30% increase in the district's total energy use supplied by renewable energy.** This assumes 15% will be produced within the area and 15% will be purchased from credits. This energy will not create any greenhouse gas emissions and will reduce costs over the long-term.
- **Results in a 51% reduction in greenhouse gas emissions for the ecodistrict.** This significantly exceeds the federal government's goal to reduce greenhouse gas emissions 28% by 2030. If the cogeneration could adapt to using a renewable fuel source in the future, the area could be zero net energy with no greenhouse gas emissions.
- **Demonstrates that the cogeneration plant is extremely valuable in reducing the ecodistrict's greenhouse gas emssions.** The proposed development strategy assumes that the plant will provide heating and cooling to all buildings in the ecodistrict resulting in 70% of the area's total energy use being supplied by natural gas instead of coal.

WATER

- **Reduces the overall potable water use by 67% per square foot per year.** This will be accomplished through high efficiency buildings and the capture and reuse of stormwater for non-potable water uses.
- **Allows for the capture and reuse of all the rainwater in the SW Ecodistrict throughout the year.** Not only will this provide a free water source for non-potabable water uses but it will decrease the ecodistrict's greehnhouse gas emissions by eliminating the need to pump and treat water miles outside of the district.

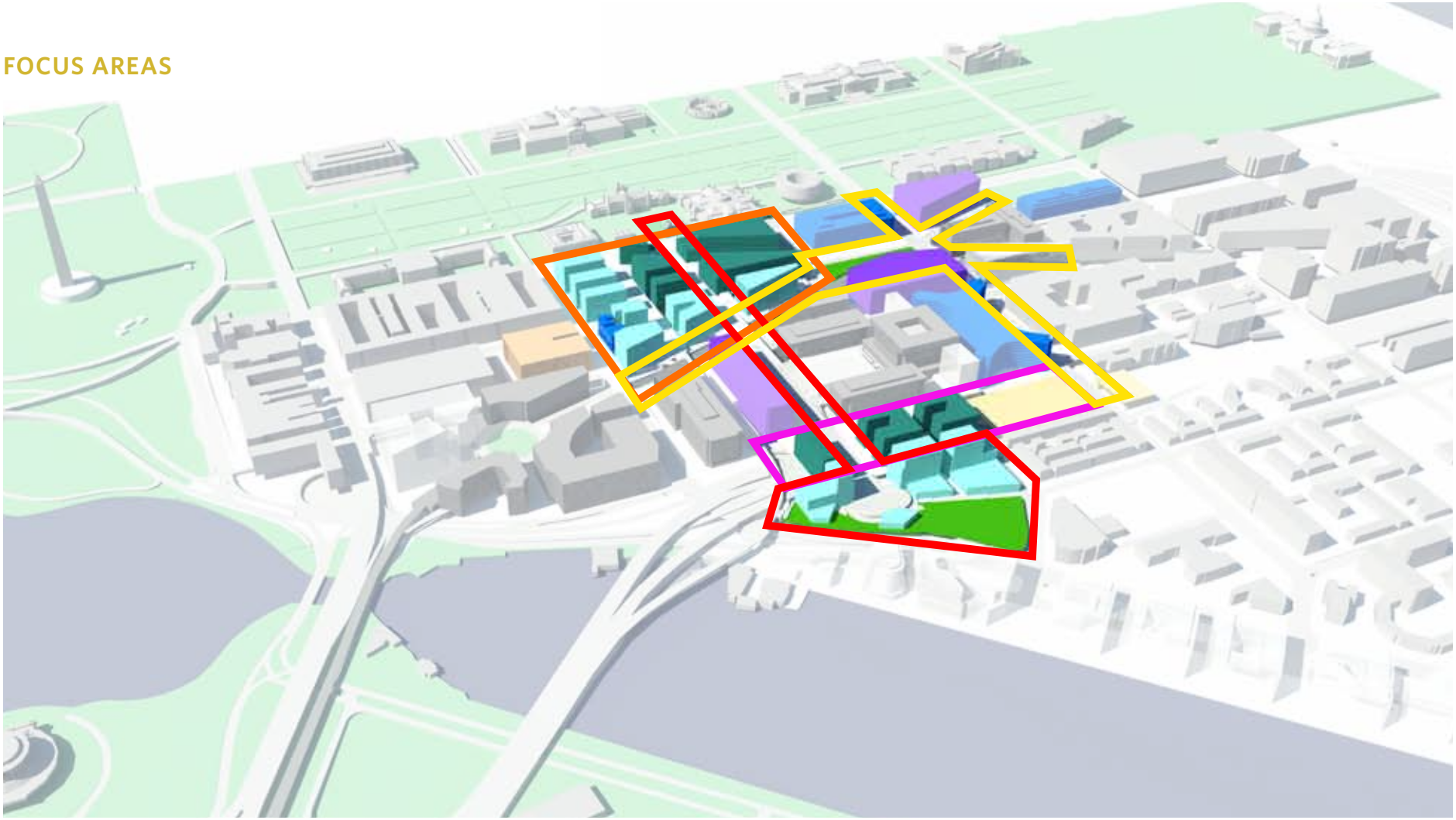
WASTE

- **Increases the amount of waste diverted from the landfill from 35% to 80%.** This will be achieved through executing programs to reduce product consumption and encourage recycling and composting.

GREEN INFRASTRUCTURE

- **Improves human health** with views and access to roof gardens, parks, and recreational areas for rest and social interactions.

FOCUS AREAS



Independence Quarter

10th Street SW Corridor and Banneker Park

Maryland Avenue and 7th Street, SW Corridors

Southwest Freeway

4 Guiding Successful Revitalization

To achieve the SW Ecodistrict goals, four Focus Areas are used to organize recommendations into manageable and related efforts. Each Focus Area includes a revitalization objective, a summary of considerations to address, recommendations, and projected results. Individually, each of these improvements will address important issues to incrementally help realize the plan; collectively, they will be transformative.

The recommendations are organized into buildings, site, infrastructure, streets and public space categories. The recommendations also identify opportunities to leverage investments, link critical and functional project components, and address unique and pragmatic near- and long-term phasing conditions. Easier and less expensive near-term improvements could occur within five to ten years. Complex and more expensive long-term improvements could occur over the 25-year planning horizon.

FOUR FOCUS AREAS:

INDEPENDENCE QUARTER

› Redevelop Independence Quarter into a mixed-use community befitting the monumental core.

10TH STREET SW CORRIDOR AND BANNEKER PARK

› Establish the 10th Street as a vibrant civic corridor with Banneker Park as a premier national cultural destination.

MARYLAND AVENUE AND 7TH ST, SW CORRIDORS

› Restore Maryland Avenue as an urban boulevard centered on a new signature urban park and an expanded L'Enfant Station Intermodal center.

SOUTHWEST FREEWAY

› Develop the air-rights over a decked Southwest Freeway for private mixed-use development

Independence Quarter

View of Independence Quarter from the north west

(top image) - Existing Conditions Study Model (2012)
(lower image) - Recommended Revitalization Scenario Study Model (2012)

REVITALIZATION OBJECTIVE

Redeveloping of the area between Independence and Maryland Avenues provides the greatest opportunity to create Independence Quarter, a new walkable neighborhood that will help blur the boundaries between the federal and local city. The primary objectives for this area are:

- Reconnect the street grid;
- Balance the office and housing use mix;
- Increase efficient use of federal lands and buildings;
- Improve the setting for cultural development;
- Unlock the potential for 10th Street and Maryland Avenue to be vibrant corridors.

TODAY

Today, approximately 20 acres south of Independence Avenue support the Department of Energy (DOE) Headquarters, the Cotton Annex, the 12th Street Highway Ramp and Tunnel, and several oddly shaped, under-used parcels. The General Services Administration (GSA) has jurisdiction of the land and buildings and the District of Columbia controls the streets. The Department of Energy's 1.8 million sq. ft. Forrestal Complex includes underground parking, a day care center, and cafeteria for DOE employees. The Cotton Annex is currently vacant.

Infrastructure barriers make it difficult to access the area by car or foot. These include the I-395 access ramps, the depressed CSX Railroad corridor, and a broad Independence Avenue. Except for 10th Street, all streets have been abandoned, creating one large superblock. The excessive setbacks and elevated structures create large buildings yard that make entrances hard to find, and there are no easily accessible ground floor uses to activate the street. Collectively, these characteristics create a foreboding and inhospitable pedestrian environment.

CONSIDERATIONS

There are several considerations to be addressed as decisions are made to revitalize Independence Quarter.

FEDERAL LAND AND FACILITIES GSA and its tenants are working to significantly increase operational and space efficiency of the federal real estate portfolio, at individual facilities and through workplace management and operations. Significant drivers in this effort are several Executive Orders and Congressional directives to eliminate excess federal property and wasteful spending, conserve energy and water, and reduce greenhouse gas emissions, as well as address changing agency missions and shifts in work force technology and demographics. The concentration and configuration of federally owned land and facilities in Independence Quarter can help advance these directives.

GSA has improved the DOE building to increase energy and space efficiency; however, they are also evaluating how to address the long term operational needs of the agency. GSA is also assessing the feasibility, costs, and benefits of disposing of four triangular under-used parcels along the Maryland Avenue corridor. Congress has also introduced legislation directing GSA to sell the corner site at Independence Avenue and 12th Street, SW for the National Woman's History Museum, as well as portions of the DOE complex.

While potential redevelopment of the DOE Headquarters and the potential disposition of these parcels will address agency needs and help meet executive and legislative directives, it is important to retain ownership of an adequate amount of federal land to meet federal office space needs and retain cabinet agency headquarters in this area. To maximize government efficiency and ensure continuing operations of public service, it is critically important that federal agencies not be displaced and that real estate and facility operation decisions not be made in isolation or in a piecemeal fashion. A comprehensive approach is necessary to maximize the use of the land and its real estate value.

CULTURAL FACILITIES The Study Area is garnering interest from potential museum and memorial sponsors because of its proximity to many Smithsonian Institution facilities, the National Mall, and the Wharf, a new community being developed along the Washington Channel. The National Woman's History Museum is seeking Congressional approval to purchase federal land at or near the southwest corner of 12th Street and Independence Avenue, SW. Congressional legislation has been introduced to authorize the National Museum of the American Latino Commission use of the Arts and Industries Building and an underground annex for the museum. Other sponsors in the exploratory stages of museum or memorial development are also expressing an interest in this area.

HISTORIC PRESERVATION At the turn of the 20th century, the area was a walkable neighborhood of houses, businesses, and offices. The street and the block configuration were altered with the introduction of the Urban Renewal Plan after the Second World War. Built in the 1930s, the Cotton Annex pre-dates urban renewal and has been determined to be eligible for the National Register of Historic Places (NRHP). While the L'Enfant Plan of Washington is also listed in the NRHP, the portion of Virginia Avenue between 9th Street and Independence Avenue does not contribute to the L'Enfant Plan because the avenue was abandoned and views to the Washington Monument blocked. If restored, its non-contributing status could be re-evaluated in this area. Although 10th Street is a contributing element of the L'Enfant Plan, the view corridor between the Smithsonian Castle and the waterfront is non-contributing because the view was blocked when the Forrestal Complex was constructed in 1970. The Forrestal Complex is nearing the threshold for consideration but has not yet been fully evaluated for listing in the NRHP. However, the DC State Historic Preservation Office has indicated that it considers restoration of the 10th Street view corridor more important than preservation of the Forrestal Complex if it is ultimately determined eligible for the NRHP. Redeveloping the Forrestal Complex will reestablish Virginia Avenue and its link between Reservation 113 and the Washington Monument, restore views between the Smithsonian Castle and the waterfront, and reclaim the street grid and the block configuration of the L'Enfant Plan. The federal government will be required to comply with the National Historic Preservation Act in the development of proposals to sell, alter, repurpose, or redevelop resources considered eligible for or listed in the NRHP.

RECOMMENDATIONS

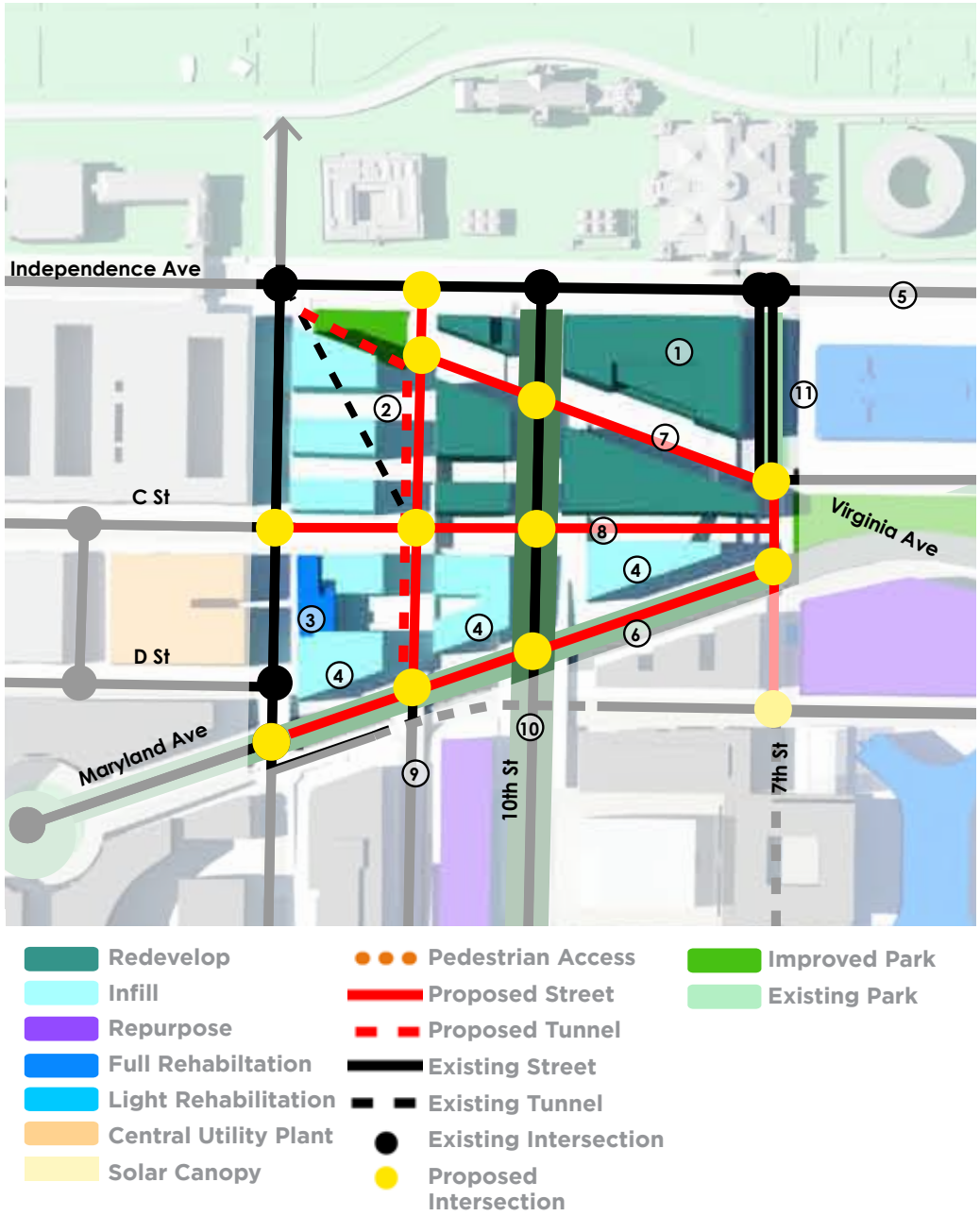
The development and infrastructure strategies to achieve the *SW Ecodistrict Plan* are identified on this page.

RESULTS

Redeveloping the Forrestal Complex, developing under-used parcels, decking the 12th Street ramp and Maryland Avenue, and employing district-energy and water management strategies will help infuse the civic qualities of the monumental core with the vitality of downtown and transform the area into a sustainable neighborhood and work place. These recommendations will:

- Retain a parcel that will accommodate a 1.8 million sq. ft. for a new DOE headquarters.
- Provide a prominent site for the National Woman's History Museum.
- Provide a new public park or plaza.
- Yield more than 2 million sq. ft of development for places to live, visit, work and commemorate.
- Re-establish three streets that will provide up to 11 new intersections to improve walkability and accessibility.
- Restore the L'Enfant Plan street network and important reciprocal views, including Virginia Avenue and the iconic view to the Washington Monument from Reservation 113 and an important visual connection between the National Mall and the Banneker Park.
- Increase efficiency of the Central Utility Plant' by improving the use mix to balance energy loads.

SUMMARY PLAN



INDEPENDENCE QUARTER - PROJECT RECOMMENDATIONS

		Summary Description	Phasing and Related Projects Near- Term Projects (3-10 years) Long Term Projects (5-25 years) Coordination with Other Projects	Potential Partners Federal - F District - D Private Sector - P Cultural - C
Building and Site Development				
1	**Forrestal Complex**	Redevelop the Forrestal Complex to improve development capacity and the mix of uses necessary to enhance sustainability. Provide locations for a nationally significant museum and a modern headquarters for the Department of Energy that supports their mission, provides more efficient government office space, and showcases high performing sustainable practices.	Near Term - Rehab for energy and water use reductions Long Term - Redevelop Site	F, D, P, C
2	**12th Street Tunnel Air-rights Development -**	Realign the 12th Street ramp to enter the grid at Maryland Avenue and deck the tunnel to develop a mix of uses, with emphasis on residential or hotel development. Provide a commemorative park on Independence Avenue between 11th and 12th Street. Consider incorporating the commemorative park into the design of the adjacent parcels such as the design of Market Square on Pennsylvania Avenue, NW.	Coordinate with Forrestal Complex Redevelopment	F, D, P, C
3	**Cotton Annex**	Expand the Cotton Annex to maximize use of surrounding parcels and rehabilitate to improve space, energy, and water efficiency, without compromising the integrity of the building's architecture.	Coordinate with adjacent infill or redevelopment	F, D, P, C
4	**GSA Parcels 1-3**	Develop under used parcels along Maryland with a mix of uses, incorporating residential development where possible. Consider increasing the size of these parcels by aggregating with adjacent lands where feasible.	See Maryland Ave Focus Area Potential to Coordinate with Forrestal Complex Redevelopment	F, D, P, C
Infrastructure, Streets and Public Space				
5	**Independence Avenue**	Locate and design buildings for a mix of uses and design the streetscape to activate street life and respect the civic qualities of the Mall and the Smithsonian Institution. Designate prominent parcels for a national cultural institution and a commemorative work. Enhance streetscape along Independence Avenue.	Coordinate with Forrestal Complex Redevelopment	F, D, C
6	**Maryland Avenue**	See Maryland Avenue Focus Area - Deck the CSX rail between 9th and 12th Street to establish an important park-like Boulevard with the character and civic decorum of L'Enfant's radial avenues and mixed-use vitality of the city. Minimize the physical and visual impacts caused by the varying grade changes and conditions along the Avenue. Design the Avenue as a prominent green street with a strong street wall that respects the historic 160-foot monumental view-shed to the US Capitol. Maximize street network connections, and design a dignified and cohesive walkable streetscape that connects a series of signature civic spaces. Maximize stormwater capture, filtering, and storage.	See Maryland Ave Focus Area Potential to Coordinate with Forrestal Complex Redevelopment	F, D, P, C
7	**Virginia Avenue**	Reestablish Virginia Avenue to create walkable blocks, access for all modes of travel, and reclaim important views and linkages between the Washington Monument and Reservation 113.	Coordinate with Forrestal Complex Redevelopment	F, D, P, C
8	**C Street**	Construct C Street as a through city street to improve mobility and provide access to buildings for daily functions (loading, parking, entries).	Coordinate with Forrestal Complex Redevelopment	F, D, P
9	**11th Street**	Construct 11th Street between Maryland and Independence Avenues, improving mobility, and providing access to buildings for daily functions (loading, parking, entries).	Coordinate with Forrestal Complex Redevelopment	F, D, P
10	**10th Street**	See 10th Street Focus Area		
11	**9th Street (north of Maryland Avenue)**	Design 9th Street to connect Independence Avenue and Maryland Avenue with a park-like character that links the Smithsonian's Ripley Garden and Reservation 113, and retains adequate access to the I-395 tunnel and adjacent buildings – the segment of the street between Independence Avenue and C Street should be phased in concert with the future redevelopment of the U.S. Department of Energy.	Coordinate with Forrestal Complex Redevelopment	F, D
	All Projects	Construct and connect infrastructure systems and buildings to generate, convey, collect, store, and distribute thermal energy and recycled water throughout the district. Design and orient building footprints to maximize natural light and air ventilation.		F, D, P, C

10th Street, SW Corridor And Banneker Park

View of 10th Street, SW from the Mall

(top image) - Existing Conditions Study Model (2012)
(lower image) - Recommended Revitalization Scenario Study Model (2012)

REVITALIZATION OBJECTIVE

Establish the 10th Street, SW corridor and Banneker Park as a cultural destination, and environmental showcase to extend the civic qualities of the National Mall and Smithsonian museums and gardens to the waterfront and infuse the vitality of the city into the Monumental Core. Because of its prominent location, the corridor provides opportunities to showcase the best of American innovation and culture and commemorate our nation's values, ideals, and aspirations. The primary objectives for this area are:

- Design 10th Street as a walkable, vibrant mixed-use cultural corridor.
- Create a setting along the corridor and at Banneker Park befitting a national cultural destination, to serve as an extension of the National Mall and its adjacent museums.
- Program the corridor for active daily street life and for special exhibitions and events.
- Design the corridor to serve as the energy and water management spine of the Ecodistrict.
- Use the lower level of 10th Street to accommodate energy, water, and parking infrastructure.
- Exemplify state-of-the-art urban design and environmental practices to increase public awareness.

TODAY

10th Street, also known as L'Enfant Plaza, is a large unfriendly pedestrian street that links the National Mall and Smithsonian museums to Banneker Park. The elevated park overlooks the waterfront and sits on axis with the Smithsonian Castle. Although thousands of people work along the 10th Street corridor, the area is perceived as a desolate part of the city with very little public amenity or street life.

North of the CSX Railroad, the Study Area is visually and psychologically cut off from the National Mall and Smithsonian Museums by the Forrestal Complex that spans it. South of the tracks, 10th Street is lined with the U.S. Postal Service headquarters and the privately-owned L'Enfant Plaza office and hotel complex. These single-use superblock-sized buildings with excessive setbacks have no relationship to the expansive 225-foot wide right-of-way that is under

the jurisdiction of the city. A portion of the street sits on sub-surface parking and a portion is elevated to cross over the train tracks, the 10 lane freeway and ramps, and frontage access roads. Stairs and access ramps create a complex layer of building entrances and pedestrian routes, making it difficult to get around. The lack of trees or other vegetation, minimal seating, and poor use and quality of materials make the street uncomfortable to walk or linger.

Banneker Park is an eight acre elevated site that sits 30 feet above Maine Avenue. It overlooks the Washington Channel with sweeping vistas to East Potomac Park, the Potomac River, and beyond. This federal parkland is managed by the National Park Service. The park contains a plaza that sits within a large, barren, sloping lawn containing vehicular access ramps and includes interpretive signage commemorating the contributions of Benjamin Banneker. Poor pedestrian conditions cause the plaza to seem disconnected from the city despite being less than a half mile from the Mall. It is occasionally used by workers during lunch and as a pass through for pedestrians that take the steep dirt slope to the Maine Avenue Fish Market.

A planned new waterfront community will soon transform this area into a lively mixed-use neighborhood and regionally important waterfront destination. This investment is supplemented by expansion and improvements to the L'Enfant Plaza Complex. These new developments will alter some of the mid-century Modern public spaces along 10th Street and the waterfront, as well as reduce the views of the river from Banneker Park.

CONSIDERATIONS

There are several considerations to be addressed as decisions are made to revitalize the 10th Street corridor and Banneker Park.

HISTORIC PRESERVATION 10th Street was once a neighborhood street that serviced the working wharfs along the river. It was altered in the mid-20th century into a large plaza-like street (L'Enfant Promenade) and park (Reservation 719). The vistas associated with 10th Street, SW and Reservation 719 (now known as Banneker Park) are called out as non-contributing elements in the NRHP nomination of the L'Enfant Plan of Washington. These non-conformities are a result of the altered street grid, block configurations, and topographical changes that occurred during the urban renewal era when the Forrestal Complex was built and 10th Street was reconstructed to span the train tracks and the freeway. Although the intent of the SW Ecodistrict Plan is to re-establish the street grid and the block configuration of the L'Enfant Plan, further evaluation of the mid-century Modern buildings and landscape will be necessary to determine their historical significance.

The L'Enfant Plaza Complex and the Overlook were designed by IM Pei and Dan Kiley, two renowned mid-century Modern de-signers. The Modern buildings and landscapes of this era are nearing the threshold for consideration for inclusion on the NRHP. Although several nearby federal buildings and spaces have been determined eligible for the NRHP, neither the U.S. Postal Service nor 10th Street (L'Enfant Promenade) has been studied to determine their eligibility. Some research has been conducted to evaluate the potential eligibility of Banneker Park and the work of Dan Kiley; however, it is inconclusive at this time. Additional research and evaluation is necessary to determine the eligibility for these landscapes and buildings, and compliance with Section 106 of the National Historic Preservation Act. The federal government will be required to comply with the National Historic Preservation Act in the development of proposals to sell, alter, repurpose, or redevelop resources considered eligible for or listed in the NRHP.

CULTURAL FACILITIES Over the centuries the area evolved from a river plantation to a settlement of immigrants and freed African Americans, to the nation's first full-scale urban renewal project. A cultural heritage trail called River Farms to Urban Towers details the rich history of this area. In 1971, the 10th Street Overlook was named Banneker Park in honor of Benjamin Banneker, a freed African American astronomer and mathematician who helped to survey the boundaries of the new capital city. Legislation to designate this site as a national memorial to Benjamin Banneker lapsed in 2005; new legislation has been introduced but not enacted at the time this plan was written.

On axis with the Smithsonian Castle, the terminus of 10th Street (Banneker Park) is called out in the Museums and Memorials Master Plan as one of the top 20 prime sites for a future museum or memorial. The siting of the park and the perception that the area is isolated and removed from the National Mall has deterred several museum sponsors from seriously considering the site for a nationally significant museum. However, with continued investment in the area and nearby neighborhoods, the site is garnering the attention of museum and memorial sponsors.

ELEVATED 10TH STREET The conditions below 10th Street and the topography of the park present opportunities and challenges. As an

elevated street, there are opportunities to use the lower level of 10th Street for utilitarian purposes. The area can accommodate parking of some tour buses and its location provides access and routes that will not impact nearby neighborhoods. The area can also house large cisterns to store and treat rainwater for reuse as non-potable water. The topography of Banneker Park also presents opportunities to establish important views to the Potomac River and unobtrusively incorporate a sewer-mining facility into the hillside. It potentially could accommodate a parking garage for cars or tour buses; however, a parking garage will likely prevent sponsors from considering the site for a future museum or memorial due to security concerns. In addition, circulation must be designed to keep buses from traversing through nearby neighborhoods on local streets.

RECOMMENDATIONS

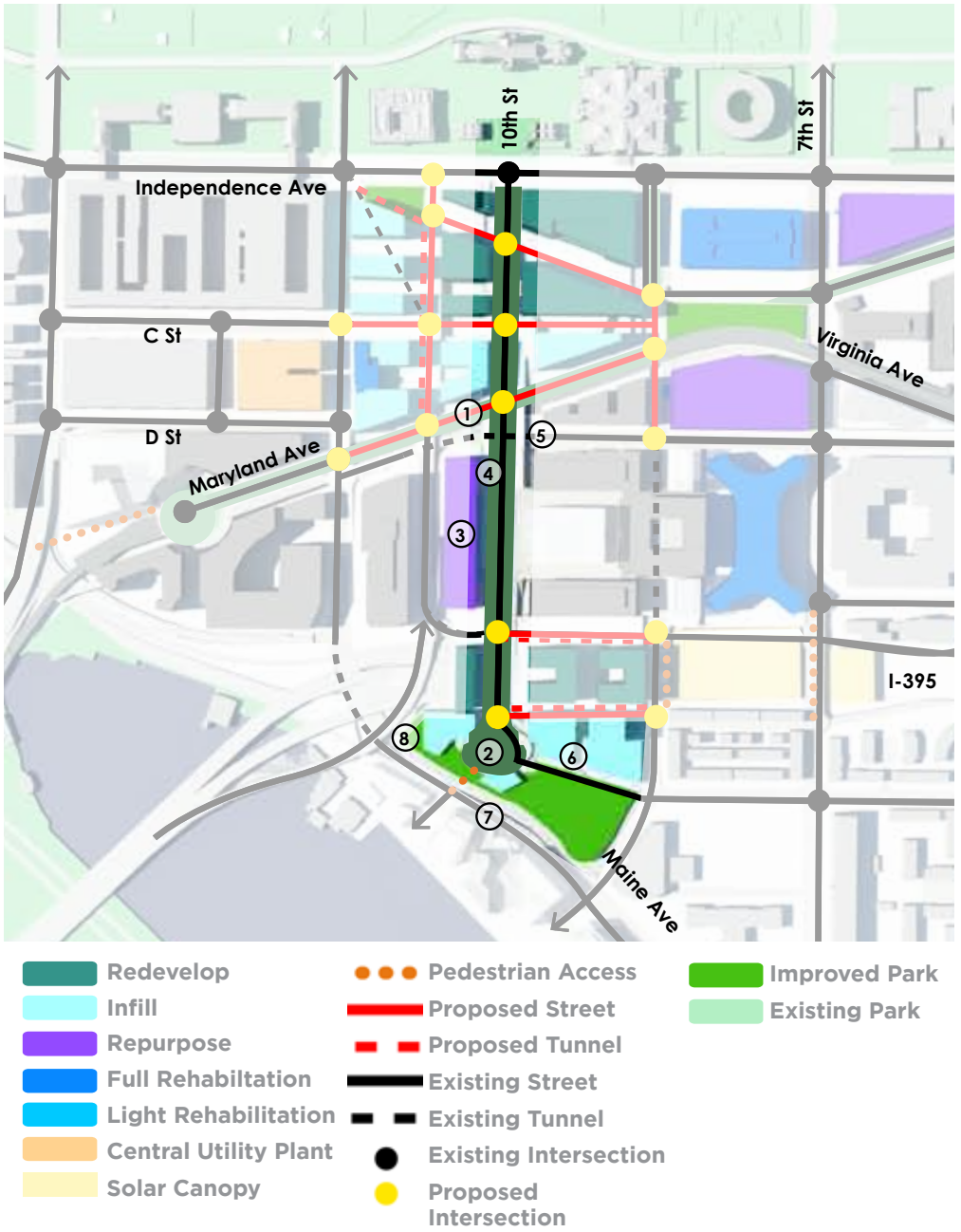
The development and infrastructure strategies to achieve the SW Ecodistrict goals are identified on the following pages.

RESULTS

Redesigning and activating the 10th Street corridor and improving the setting of Banneker Park as a national cultural destination will connect downtown and the National Mall to the waterfront. These recommendations will:

- Improve the setting and establish locations along 10th Street and at Banneker Park for up to four new museums and three memorials.
- Yield the potential for 1.2 million sq. ft. of new cultural facilities.
- Improve more than eight acres of usable public space (1.7 acres along the 10th Street median and 6.5 acres at Banneker Park).
- Reduce the perceived distance from the Mall to the waterfront.
- Establish a walkable corridor and improve pedestrian connectivity.
- Reintroduce nature into the city and improve urban ecology.
- Store up to 94 million gallons of rainwater for reuse to reduce potable water use.
- Provide new infrastructure to expand service of the Central Utility Plant resulting in lower greenhouse gas emissions.
- Allow tour bus parking on the lower level of 10th Street, SW.

SUMMARY PLAN



10TH STREET AND BANNEKER OVERLOOK - PROJECT RECOMMENDATIONS

		Summary Description	Phasing - Related Projects Near- Term Projects (3-10 years) Long Term Projects (5-25 years) Coordination with Other Projects	Potential Partners Federal - F District - D Private Sector - P Cultural - C
Building and Site Development				
1	**Intersection of 10th Street and Maryland**	Establish a civic node with retail at the intersection of 10th Street and Maryland Avenue with placement of commemorative works, public art, and public pavilions or facilities.	Near Term - Define and implement interim improvements as part of long term reconstruction strategy	F, D, P, C
2	**Banneker Park**	Program and design Banneker Park to support museums and commemorative works in a setting befitting a national cultural destination. Cluster development adjacent to the freeway and establish a signature landscape along Maine Avenue to serve as a gateway to the Mall from Maine Avenue. Locate and design buildings and structures to maximize reciprocal views between the Smithsonian Castle, Banneker Park, and the Potomac River and to respect the scale of nearby residential development. Locate, mass, and configure buildings and public spaces to streghten views to the river and create a sense of arrival and welcoming presence form the north and south. Design and program buildings to promote street life at the upper-am and lower-levels of Banneker Park on 10th Street and Maine Avenue respectfully. Improve pedestrian and bicycle access between Banneker Park, Maine Avenue, and East Potomac Park.	Near Term - Design and implement interim connection between Banneker Park and Maine Avenue in coordination with Waterfront redevelopment. Prepare a master site development plan for Banneker Overlook to define appropriate furture building sites at Banneker Park and related long term open space improvements and parking feasibility. If sub-surface parking at Banneker Park is determined appropriate, it should not limit, discourage, or prevent the development of future museums or commemorative works.	F, D, C
3	**U.S. Postal Service**	Rehabilitate the building to: 1. improve space and energy efficiency; 2. expand the building along 10th Street, where feasible, to incorporate ground floor educational and cultural uses and retail services; and 3. incorporate civic uses at the intersection of 10th and Maryland Avenue. Alternatively,repurpose it for mixed use development with an emphasis on residential or hotel uses.	Near Term - Develop interim street-level improvements in coordination with 10th Street redesign	F, D, P, C
Infrastructure, Streets and Public Space				
4	**10th Street**	Anchor 10th Street with cultural and institutional uses housed in signature civic buildings. Design and define 10th Street as a distinctive active green corridor with a series of diverse and flexible civic uses and spaces. Narrow the street to more closely reflect its original width in the L'Enfant Plan and to allow for maximum building heights and build-to-lines that improve pedestrian scale and are compatible with adjacent uses. Line and program the corridor with buildings, pavilions, and kiosk that engage and enliven street with commercial, cultural, institutional, or public uses. Prioritize the corridor for pedestrians, bicyclist, and bus transit. Rainwater Storage - Design the lower- and upper-level of 10th Street and surroundings landscapes to incorporate a bio-retention system that conveys, cleans, and stores rainwater for reuse. Subsurface Parking - Design the lower-level of 10th Street to accommodate tour bus parking. Locate and design potential underground parking and associated vehicular circulation to prevent busses from motoring through adjacent residential neighborhoods	Near Term - Develop interim streetscape enhancements Long Term - Implement re-design of 10th Street in coordination with redevelopment of Forrestal Complex, Post Office site, Maryland Avenue, L'Enfant Plaza improvements, and SW Freeway Air-rights redevelopment	F, D, P, C
5	**D Street**	Improve vertical connectivity between D Street and elevated 10th / 11th Streets with an attractive, pedestrian-friendly connection.	Coordinate with 10th Street Near and Long Term improvements	F, D
6	**G Street**	Design G Street and the 9th Street intersection to improve pedestrian access and experience and restrict commercial vehicle/bus circulation through the adjacent the residential neighborhood.	Coordinate with Banneker Park improvements	F, D, P, C
7	**Maine Avenue**	Design and program signature buildings, structures, and landscapes along Maine Avenue to respect the view corridors to the Washington Monument, strengthen the street wall, and activate the street.	Coordinate with Banneker Park improvements	F, D, P, C
8	**Sewer Mining Facility**	Ensure that the design of the utility system at Banneker Park does not impact views to the Washington Monument or any future cultural facility.	Coordinate with Banneker Park improvements	F, D, P, C
	All Projects	Construct and connect infrastructure systems and buildings to generate, convey, collect, store, and distribute thermal energy and recycled water throughout the district. Design and orient building footprints to maximize natural light and air ventilation		F, D, P, C

PRELIMINARY DESIGN CONCEPTS

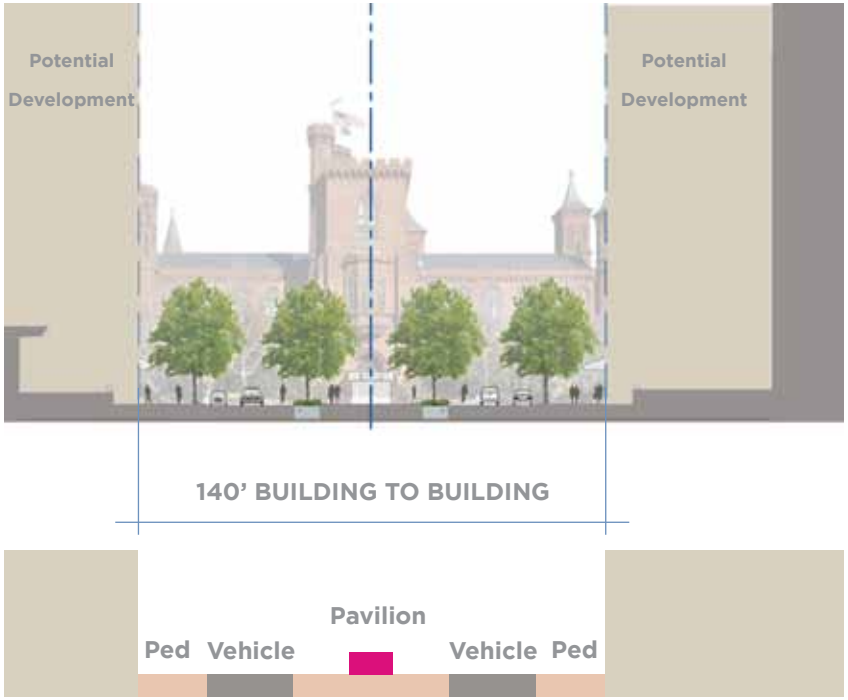
10TH STREET CORRIDOR

The Task Force has begun to study a range of interchangeable streetscape alternatives that could help achieve public space programming and design goals and objectives for 10th Street. These diagrams, illustrating a portion of the corridor, show a range of approaches and will be studied and developed in the next phase of work.

EXISTING

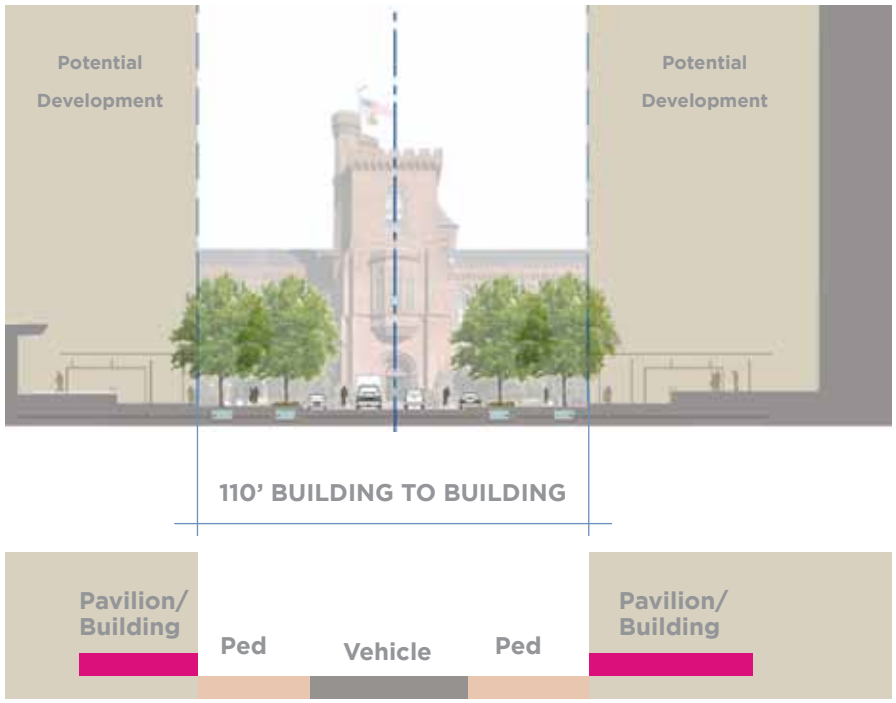
BOULEVARD

A boulevard with a large park-like median that prioritizes pedestrian activity along the primary central view corridor.



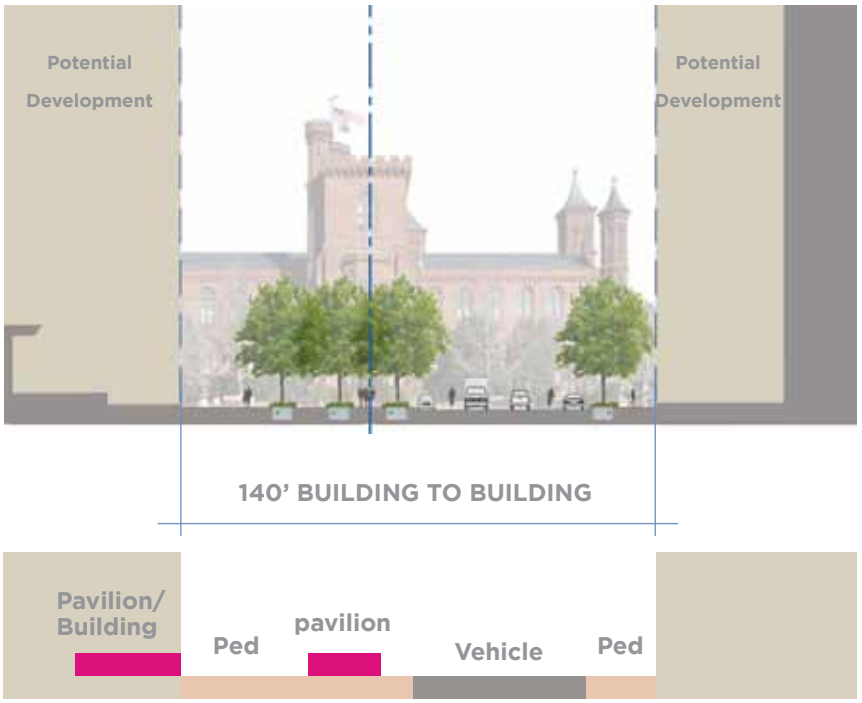
ROADWAY

A center roadway flanked by wide generous sidewalks, giving equal weight to motorized vehicles and pedestrians, reflects the section of a typical downtown city street.



PEDESTRIAN

An asymmetrical corridor that prioritizes the pedestrian-way along the primary view corridor and off-sets the roadway as a secondary corridor.



PRELIMINARY DESIGN CONCEPTS

BANNEKER PARK

Banneker Park presents the opportunity to become a lively national cultural destination considering its prime location and it designation as one of the top 20 memorial sites in Washington, The 6.5 acre site can accommodate a significant memorial or a museum or a concentration of museums and/or memorials in a signature landscape. A signature landscape in this location will become an important civic feature and an identifiable and welcoming southern gateway to the National Mall. This landscape can offer intimate, shaded seating areas, water features, public art, and unique opportunity for commemoration on various levels.

The elevation of Banneker Park presents an opportunity to build a structure or feature on axis with the Smithsonian Castle. This would visually and programmatically extend the civic qualities of the National Mall and Smithsonian Museums to this new destination. This structure would also serve as a pivotal point to extend this connection further, to the Washington Channel and East Potomac Park.

Banneker Park can be redesigned to improve vehicular and pedestrian circulation between the park and Maine Avenue. An innovative landscape design incorporating stairs, ramps, and garden terraces can seamlessly connect the 10th Street overlook and the waterfront at multiple locations. The important elements of the Kiley landscape can potentially be preserved, if it is determined eligible for the National Register of Historic Places or desirable to do so for other reasons.

The topography of Banneker Park also presents opportunities to unobtrusively incorporate a sewer-mining facility, or potentially a parking garage into the hill near the interstate. However, a parking garage for cars or tour buses will likely prevent sponsors from considering the site for a future museum or memorial. In addition bus routes must be design to keep them on city through streets and prevent them from traversing local streets through nearby neighborhoods

These diagrams, illustrating a portion of the corridor, are intended to show a range of approaches and will be studied and developed in the next phase of work.

(above) - view from the overlook at Banneker Park toward the Wharf and the Washington Channel on the Potomac River (Hoffman-Madison)

EXISTING CONDITIONS STUDY MODEL (2012)

(above) - Banneker Park existing conditions model.

POTENTIAL VIEW AXIS CONCEPTS MODELS

(top image) - Potential development with buildings adjacent to SW Freeway and expanded overlook at south end of 10th Street, SW.

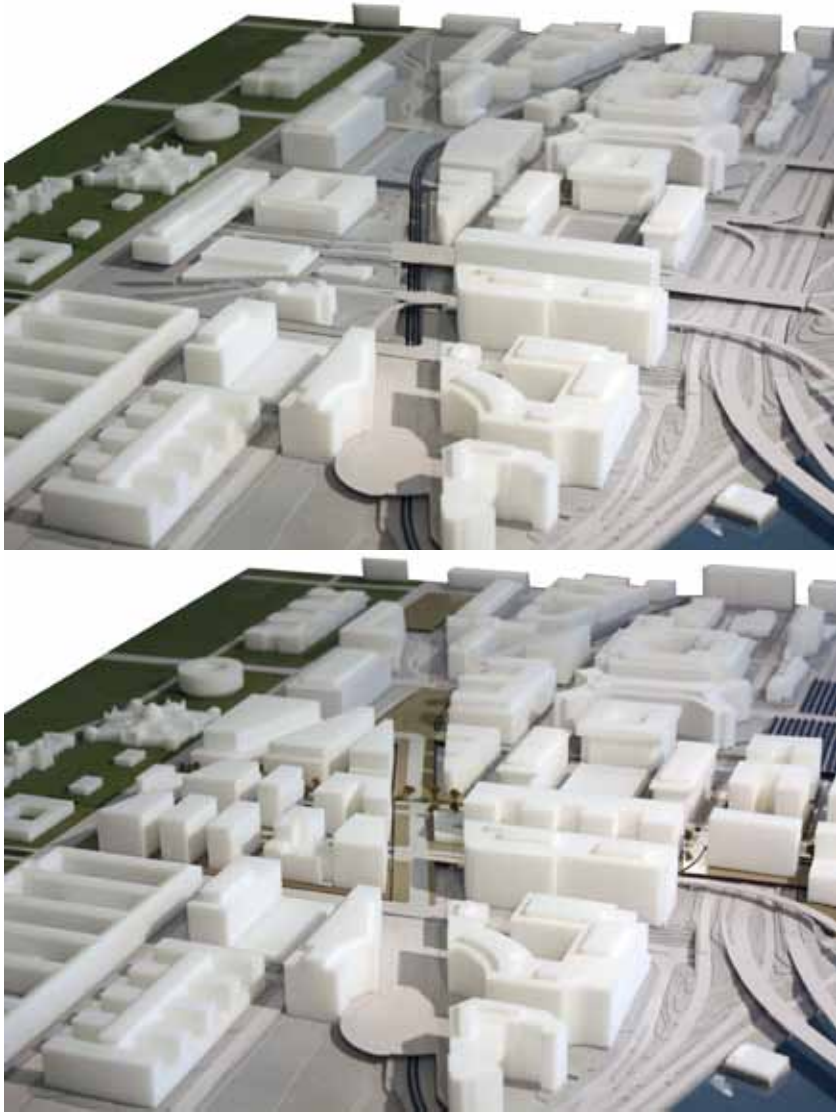
(lower image) - Potential development with buildings adjacent to SW Freeway and vertical memorial at south end of 10th Street, SW.

POTENTIAL MUSEUM BUILDOUT MODELS

(top image) - Potential development with buildings adjacent to SW Freeway and building at terminus of 10th Street. SW.

(lower image) - Potential development with buildings framing 10th St, SW, and fronting on Maine Avenue.

Maryland Avenue & 7th Street, SW Corridors



View of Maryland Avenue, SW from the south west

(top image) - Existing Conditions Study Model (2012)
(lower image) - Recommended Revitalization Scenario Study Model (2012)

REVITALIZATION OBJECTIVES

Establish Maryland Avenue as a prominent L'Enfant street with a series of civic spaces anchoring a new neighborhood. Expand transit capacity along the avenue and the 7th Street corridor, and improve Reservation 113 as a signature urban park at the center of a regional intermodal center. The primary objectives for this area are:

- Accommodate freight rail and maximize commuter rail along the CSX rail corridor.
- Deck the railroad line to establish Maryland Avenue and connect it to the street grid.
- Develop and program parcels along the corridor to establish a lively mix of uses.
- Protect and enhance the views to and from the US Capitol.
- Design the avenue to feature a series of urban parks that extend the civic qualities of the National Mall.
- Design and program Reservation 113 to be a signature urban square and neighborhood park.
- Expand L'Enfant Station and design streets around it to increase commuter rail transit capacity.
- Improve walkability and establish easily accessible connections between all modes of transit.

TODAY

Today, Maryland Avenue is a disconnected series of unimproved public spaces and disconnected street segments interrupted by an open trench that serves the CSX Railroad, which is used for transporting freight and passengers along the eastern seaboard. From the south, the rail line consists of two tracks over the Long Bridge, and three tracks that run through a short tunnel between 12th and 14th Streets which daylight within the open trench between 9th and 12th Streets. Along this segment, there are oddly-shaped remnants of under-used land and the buildings turn their back to the corridor, establishing a barrier and industrial character within this area.

The rail line skirts by Reservation 113, an unimproved park sitting at the intersection of Maryland and Virginia Avenues and 7th Street, SW. In this area, the tracks ascend and cross over 7th Street and continue on an elevated track along the Virginia Avenue corridor, passing by the Virginia Rail Express (VRE) commuter rail platform located between 6th and 7th Streets near L'Enfant Station. The single platform is not easily accessible or connected to other transit services. Seventh Street is a heavily used local commuter bus route that traverses the length of the city from the waterfront to the State of Maryland.

The corridor is framed by a mix of federally and privately owned office buildings. There are no residential or hotel uses in the area. Many of the federal buildings include employee-only cafeterias and an office building at 600 Maryland Avenue, near the L'Enfant Plaza Metro Station, includes a limited amount of retail buried within the interior of the building.

CONSIDERATIONS

There are several considerations to be addressed as decisions are made to revitalize the area.

CULTURAL FACILITIES: On axis with the US Capitol, Maryland Avenue includes three important sites identified in the *Memorials and Museums Master Plan* for future commemorative works. Two are prime sites reserved for works of the highest national importance; one site is located at Reservation 113, the other is the proposed President Dwight D. Eisenhower Memorial at the intersection of Maryland and Independence Avenues. A third candidate site is located at the Portals development between 12th and 14th Streets.

HISTORIC PRESERVATION: Reservation 113 and the streets that reflect the historic city plan are listed as contributing elements of the L'Enfant Plan of Washington in the National Register of Historic Places (NRHP). Although planned as prominent avenues, the portions of Maryland and Virginia Avenues that are located in the Study Area are considered non-contributing elements to the NRHP listing because of alternations made to the corridors when the rail line was constructed in the mid-1800s. Several of the buildings along the Maryland Avenue and 7th Street corridors were built during urban renewal in the mid-20th century and are nearing the threshold for consideration for inclusion in the NRHP. The Robert Weaver Federal Building (U.S. Department of Housing and Urban Development) was listed in the NRHP in 2008. The Wilbur Wright Buildings (Federal Aviation Administration) and the Lyndon B. Johnson Building (Department of Education) have been formally determined eligible for listing in the NRHP and the DC State Historic Preservation Office has indicated that it considers the Orville Wright Building and the GSA Regional Office Building eligible for listing in the NRHP. Compliance with Section 106 of the National Historic Preservation Act will be required prior to the federal government implementing plans to alter, repurpose, or redevelop resources considered eligible for or listed in the NRHP.

HEAVY RAIL-FREIGHT AND COMMUTER RAIL: Within the Study Area, the CSX freight rail line shares its tracks with Amtrak and VRE. VRE passengers can embark and disembark at L'Enfant Station. Amtrak passengers board and disembark at Union Station, which is also the terminus for the Maryland Area Rail Commuter (MARC) service. VRE and MARC are either at or nearing their daily ridership capacity. Both rail lines have identified the need to improve operations and to expand their service to meet ridership demands and projected growth. MARC's desired plan is to extend service past Union Station into northern Virginia, providing a stop at L'Enfant Station. While this will place more demands on the shared tracks, it will have other benefits. It will provide access to jobs and tourist destinations, contribute to the regional economy, reduce congestion at the Metro Center and Gallery Place stations, and improve rider experience. Amtrak, VRE, and MARC are studying how to expand service at Union Station to accommodate significant increases in commuter and regional rail and high speed rail service over the next 20 years.

CSX's current National Gateway project proposes to improve the flow of freight between the Mid-Atlantic and the Midwest States. To increase the movement of freight through the corridor, CSX is proposing to expand and upgrade tracks, equipment, and facilities. To accommodate double-stack rail cars, CSX proposes to reconstruct the Virgina Avenue tunnel and lower the tracks through the Maryland Avenue corridor to accommodate vertical clearance. Although these projects will improve the movement of freight through the corridor, the two-track Long Bridge across the Potomac River will limit the movement of freight and passengers. Therefore, the city is undertaking a Long Bridge expansion feasibility study to evaluate how to increase capacity through the corridor. The track work within the Maryland Avenue right-of-way provides the opportunity to increase the number of tracks and increase the clearance necessary to deck the corridor to construct a new at-grade Maryland Avenue.

Some of the constraints and competing needs that need to be addressed to improve freight and commuter rail service within the area include:

- bottlenecks caused by constrained infrastructure along the corridor: two-track capacity across the Long Bridge, the three-track rail corridor; and the single platform at L'Enfant Station that requires two-way trains to share one track and a single-loaded platform to board and disembark passengers;
- train propulsion methods (electric vs. diesel) which require different infrastructure systems;
- pedestrian transfer operations between systems (vertical and horizontal access) and access to trains and platforms (the number, length, and elevation of the platforms).

The L'Enfant Plaza Metro Rail Station entrances are located near or within the Maryland Avenue and 7th Street corridors. With four Metro rail lines —Green, Yellow, Orange, and Blue—converging at L'Enfant Plaza Metro Rail Station, it is one of the busiest in the system with 23,000 daily riders exiting the station during the weekday and 5,000 riders exiting on the weekend. The Green Line is one of its heaviest used routes. The nearby Smithsonian Station—Orange and Blue Lines— logs an average of 16,000 riders exiting on a weekday. WMATA's 2040 Regional Transit System study is considering a range of new lines, stations, and inner-line connections to add capacity to meet growing ridership demands on both track and station infrastructure. These improvements will help to relieve congestion on the Green Line and at L'Enfant Station and provide the opportunity to improve Metro access for residents and visitors south of the Southwst Freeway.

The number of transit services that converge in the Study Area and the proximity of L'Enfant Station to Union Station create an unparalleled opportunity to make L'Enfant Station a regionally important transit hub. There are two metro entrances within a block and 7th Street is a surface transit corridor for local and commuter bus, as well as a planned dedicated street-car line. In addition, the expansion of Amtrak service at Union Station will limit the ability for VRE and MARC to expand their Union Station service. Therefore, improving L'Enfant Station to accommodate expanded VRE and MARC service will help to maximize regional commuter rail transit capacity.

DECKING THE RAIL LINE TO ESTABLISH MARYLAND AVENUE: Decking the rail line to establish the avenue and reconnecting the street grid will require changing the vertical profile of area streets and public spaces. This will require an innovative and thoughtful design to mitigate elevation changes at Reservation 113, at the Orville Wright Building, and along 9th Street between Independence Avenue and D Street. In addition, the privately-owned building at the southeast corner of Maryland Avenue and 10th Street was constructed encroaching into the historic Maryland Avenue right-of-way. The alignment of Maryland Avenue will need to be adjusted in this area and provisions made to ensure that the building retains light and ventilation as appropriate.

View of Maryland Avenue, SW from the north east

(top image) - Existing Conditions Study Model (2012)
(lower image) - Recommended Revitalization Scenario Study Model (2012)

RECOMMENDATIONS

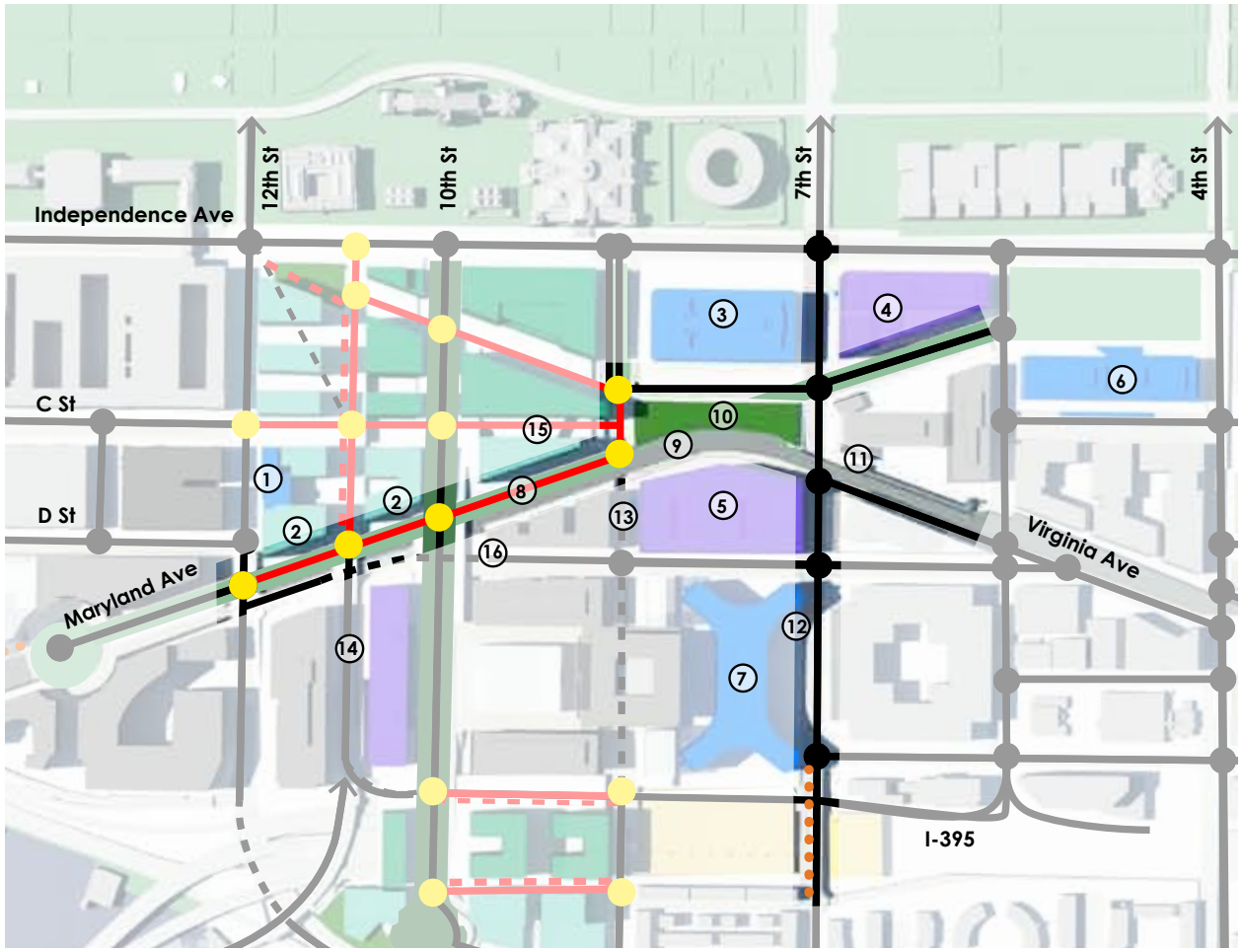
The development and infrastructure strategies to achieve the revitalization scenario, and a summary of the *Maryland Avenue Small Area Plan*, are identified on this and the following pages.

RESULTS

Realigning and increasing the number of train tracks, decking the rail line, and expanding L'Enfant Station will create a new regionally important intermodal hub and establish Maryland Avenue as a prominent and distinctive city street. These recommendations will:

- Establish Maryland Avenue as a new destination and a prestigious address for new residential, hotel, and office development.
- Create a new signature urban park at Reservation 113.
- Create a connected series of civic spaces along Maryland Avenue.
- Improve transit capacity within the region.
- Reestablish three new intersections to improve walkability and mobility.
- Strengthen 7th Street as a local commuter route and increase access to transit to complement the expansion of L'Enfant Station.

SUMMARY PLAN



MARYLAND AVENUE & 7TH STREET CORRIDOR - PROJECT RECOMMENDATIONS

		Summary Description	Phasing - Related Projects Near- Term Projects (3-10 years) Long Term Projects (5-25 years) Coordination with Other Projects	Potential Partners Federal - F District - D Private Sector - P Cultural - C
Building and Site Development				
1	**Cotton Annex***	See Independence Quarter	Coordinate with adjacent infill or redevelopment	F, D, P, C
2	**GSA Parcels 1-3**	Develop under used parcels along Maryland with a mix of uses, incorporating residential development where possible. Consider increasing the size of these parcels by aggregating with adjacent lands where feasible.	See Maryland Ave Focus Area Potential to Coordinate with Forrestal Complex Redevelopment	F, D, P
3	**FAA (Orville Wright Building)***	Rehabilitate the Orville Wright building to conserve energy and water use. Increase space efficiency to accommodate additional employees.	Coordinate with strategy for Wilbur Wright Building, and construction of Maryland Avenue, 9th Street and C Street	F, D
4	**FAA (Wilbur Wright Building) & GSA Parcel 4***	Consider repurposing the Wilbur Wright building and develop the infill parcel along Maryland Avenue for cultural or mixed-use development.	Coordinate with strategy for Orville Wright Building	F, P, C
5	**GSA (Regional Office Building)***	Consider repurposing the GSA building to increase the height, modify the floor plate to improve light and ventilation, and potentially change the use to cultural or mixed-use development; reorient the building to engage with Reservation 113.	Coordinate with CSX re-alignment and Reservation 113 improvements	F, P, C
6	**Dept. of Education Building**	Rehabilitate Dept. of Education to conserve energy and water use, and increase space efficiency to accommodate additional workers.	Near Term Project	F
7	**HUD Building**	Rehabilitate HUD to conserve energy and water use, and increase space efficiency to accommodate additional workers. Consider reconnecting to the Central Utility Plant.	Near Term Project	F
Infrastructure, Streets and Public Space				
8	**Maryland Avenue**	Deck the CSX rail between 9th and 12th Street to establish an important park-like Boulevard with the civic decorum of L'Enfant's radial avenues and mixed-use vitality of the city. Minimize the physical and visual impacts caused by the varying grade changes and conditions along the Avenue. Design the Avenue as a prominent green street with a strong street wall that respects the historic 160-foot monumental view-shed to the US Capitol. Maximize street network connections, and design a dignified and cohesive walkable streetscape that connects a series of signature civic spaces. Maximize stormwater capture, filtering, and storage.	Near Term - Improve streetscape along existing road segments Long Term - coordinate with existing improvements	F, D, P, C
9	**Rail Line Corridor**	Realign the CSX rail line to accommodate a four track system to maximize the corridor's freight and passenger services carrying capacity for CSX, Amtrak, VRE, and MARC. Consider opportunities for long-term electrification of the passenger rail lines for MARC and Amtrak service. Deck and design the rail line to minimize grade changes and inconsistent design conditions along the avenue. Incorporate piezoelectric technology into the rail corridor to showcase sustainable practices.	Near Term - Depress and realign Rail	F, D, P
10	**Reservation 113***	Program and design Reservation 113 as a signature urban park that supports transit activity and provides flexible space for local and national events, temporary and permanent commemorative works, and passive recreation activities.	Coordinate with CSX Rail improvements	F, D, C
11	**Transit Enhancements**	Create an Intermodal Hub - Expand and establish a signature intermodal transit hub to support freight and commuter rail services for VRE, and MARC. Lengthen and expand the number of platforms to increase transit capacity. Construct a photo-voltaic canopy to showcase sustainable practices. New Metro Entrances – Construct new metro entrances at or near 7th Street just north of the Freeway, D and 7th Streets, and Virginia Avenue and 6th Street. Pedestrian Access -Improve access between all modes of transit. Provide vertical and horizontal connections between the VRE platform, Metro station, and 6th and 7th Streets to enhance access for all modes of transit. Prioritize transit connections and pedestrian access along the 6th and 7th Street corridors.	Near Term - Develop Implementation Strategy for Long Term improvements	F, D
12	**7th Street**	Redevelop 7th Street into a retail corridor and intermodal commuter hub. Design it to be an active, complete street. Maximize the ability to accommodate bus, street car, and vehicles to increase mobility for all modes of transport within and beyond the SW Ecodistrct. Improve the pedestrian connection at the rail under-pass.	Near Term - Define interim improvements as part of long term enhancements	D
13	**9th Street (South of Maryland)**	Deck the I-395 tunnel ramps and build a street or a linear park and pedestrian connection between Maryland Ave and D Streets, SW.	Coordinate with Maryland Ave	F, D
14	**11th Street**	Construct 11th Street between Maryland and Independence Avenues, improving mobility, and providing access to buildings for daily functions (loading, parking, entries).	Coordinate with Forrestal Complex Redevelopment	F, D, P
15	**C Street**	Design C Street to serve as an extension of the park and a cohesive link to Maryland Avenue and design a pedestrian-friendly plaza at the Orville Wright Building to mitigate C Street grade changes.	Coordinate with Forrestal Complex Redevelopment, Maryland Avenue & Orville Wright rehab	F, D, P, C
16	**D Street**	Retain D Street as part of the street network and improve pedestrian connections between the lower level D Street and the elevated 10th Street.	Coordinate with 10th Street improvements	F, D
	All Projects	Construct and connect infrastructure systems and buildings to generate, convey, collect, store, and distribute thermal energy and recycled water throughout the district. Design and orient building footprints to maximize natural light and air ventilation.		F, D, P, C

* The potential effects of any alterations will be fully considered in the NHPA Section 106 process.

MARYLAND AVENUE SMALL AREA PLAN

The DC Office of Planning prepared the *Maryland Avenue, SW Small Area Plan* in coordination with the Southwest Ecodistrict Task Force and NCPC. The recommendations of this Focus Area incorporate and build upon the Maryland Avenue Plan recommendations.

The *Maryland Avenue Plan* identifies the aspirations, complexities, and guidelines to be considered when revitalizing the avenue. The *Maryland Avenue Plan*:

- Assesses the financial and physical feasibility of decking above the CSX rail line.
- Provides a guiding framework for the residential mixed-use development along the northern boundary of the avenue, as well as other opportunity sites along the avenue.
- Provides recommendations on how to improve the public realm and pedestrian experience, such as maintaining the 160 foot wide vista to the US Capitol.
- Lays out the benefits associated with expanding transit opportunities around L'Enfant Commuter Rail Station, in relation to Union Station and Long Bridge planning efforts.

The *Maryland Avenue Plan* concluded that the four infill development parcels adjacent to the avenue will not yield the development potential to pay for constructing the avenue or the number of residential units needed to create an adequate concentration for a residential community. The *SW Ecodistrict Plan* recommendations include areas for additional residential development that can help to meet the District of Columbia's housing goals for this area as well as other potential opportunities to leverage federal and private funds to contribute to the construction of the avenue.

Maryland Avenue Small Area Plan
DCOP, plans and illustrations by AECOM

(top image) Illustration of a park-like Maryland Avenue

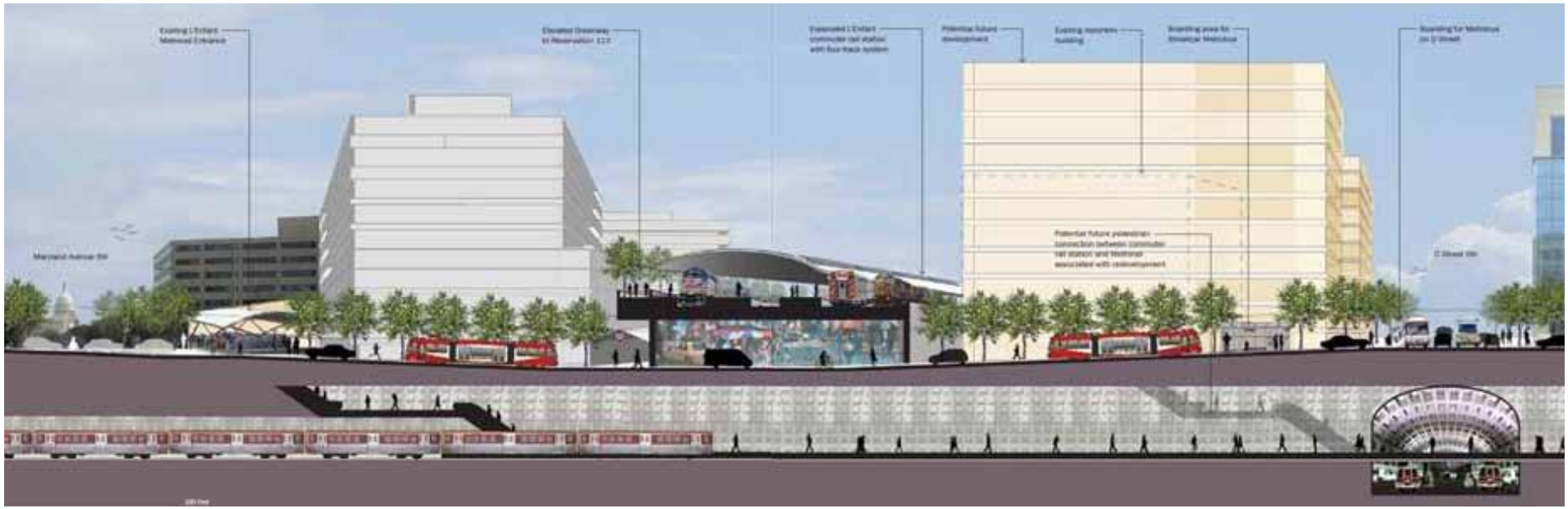
(image above) Maryland Avenue Plan (w/key at right)

(image at left) Section of the rail corridor lid supporting a new Maryland Avenue

Maryland Avenue SW Master Plan

Illustration of proposed Maryland Avenue and potential adjacent infill/redevelopment

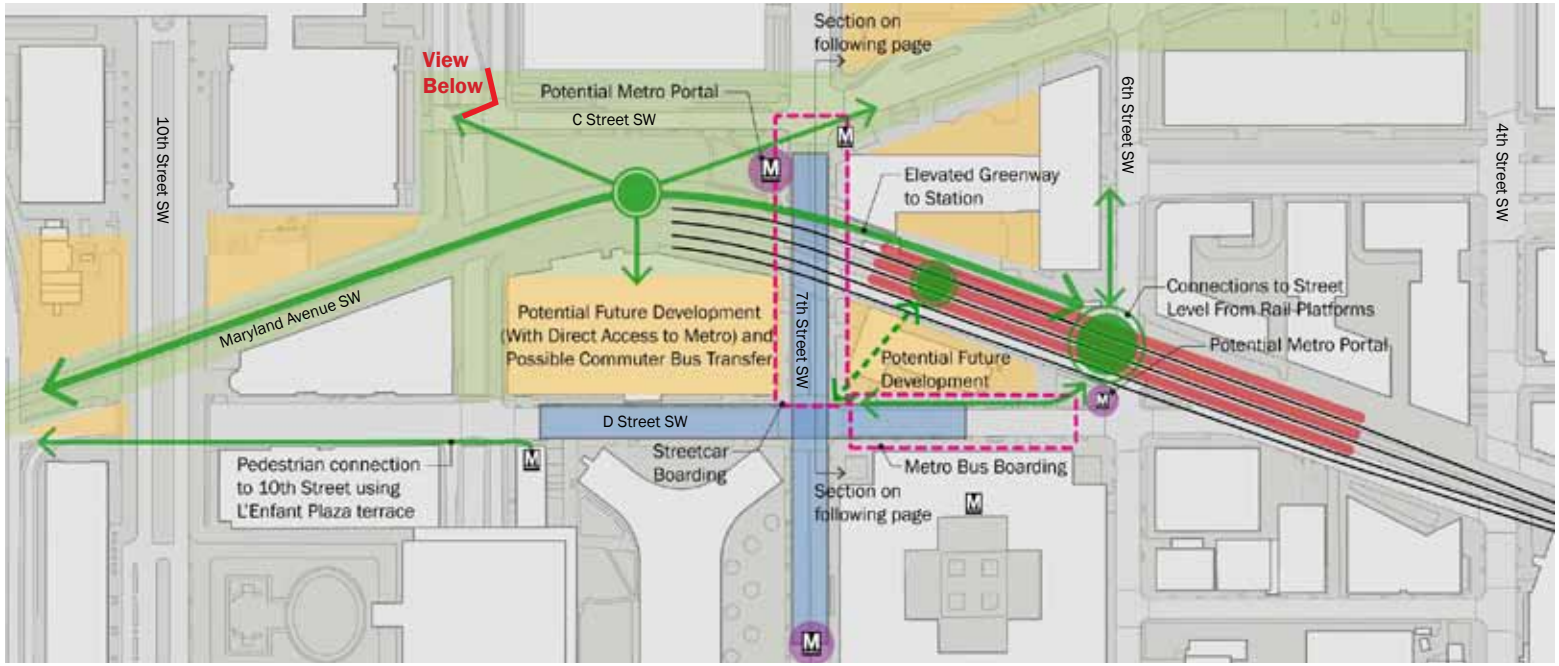
- Existing Buildings
- Potential redevelopment of the Forrestal Building - under study by NCPC
- Potential development along Maryland Avenue SW
- Existing Metrorail entrance



Potential Transit Connections

Diagram illustrating a potential scenario for intermodal transit connections. For study by WMATA and transit providers

- Existing Metro Portal
- Potential Metro Portal
- Pedestrian Node
- Potential New Development
- Underground Metro Rail Station
- Street level Metro Bus and Streetcar boarding areas
- Potential passenger platforms
- Railroad Tracks
- Primary pedestrian circulation
- Additional pedestrian connection associated with redevelopment



(top image) Illustration of potential Intermodal connections

(image at right) Diagram of potential intermodal connections (key above)

Southwest Freeway

View of Southwest Freeway from the west

(top image) - Existing Conditions Study Model (2012)
(lower image) - Recommended Revitalization Scenario Study Model (2012)

REVITALIZATION OBJECTIVE

Decking and developing the Southwest Freeway air-rights will contribute to the neighborhood's use mix, add to the area's renewable energy supply, and improve connections between the National Mall and waterfront. The primary objectives are:

- Balance the office, residential, and institutional use mix.
- Improve connectivity between the National Mall and waterfront.
- Provide pedestrian connections east-west between 7th and 10th Streets.
- Increase opportunities for private development.
- Buffer nearby residential and office uses from the freeway.

TODAY

Today, the 10-lane Southwest Freeway and its ramps and frontage access roads slices through the area; the street grid has been elevated to cross over the freeway and ramps have been constructed to provide access to all streets between 6th and 12th Streets except for 10th Street. The freeway and the tangle of ramps are unattractive and create a physical and psychological barrier, making it difficult and unpleasant to traverse south and north of the freeway between the waterfront and the Mall.

CONSIDERATIONS

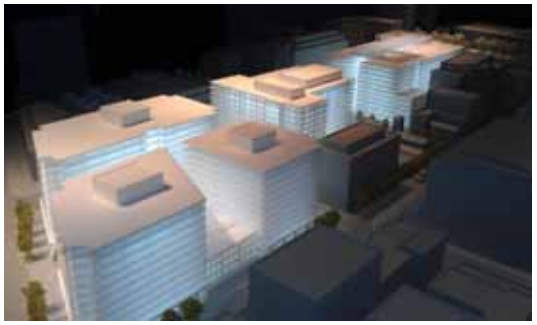
Several considerations must be addressed as decisions are made to deck and develop over the freeway. .

DECKING AND AIR-RIGHTS DEVELOPMENT The freeway is a non-contributing element of the L'Enfant Plan of Washington. Decking the freeway to allow for construction of new buildings and streets will restore the street grid and the block configuration established by the L'Enfant Plan to help improve north-south connectivity A similar project is underway over the Center Leg Freeway, a segment of 1-395 in highway in Northwest, DC. In 2010, the District approved a 2,100,000-sq. ft, $425 million office, residential, and retail project will restore the original street grid to improve east-west connections.

Due to the elevation and grade changes along the freeway, the vertical distances between the freeway and overpasses varies along its length. Between 7th and 9th Streets, the vertical clearance will not accommodate a deck for developing buildings on the air rights above it. However, this area could accommodate a solar panel canopy and benefit from enhanced pedestrian connections, including a new east-west elevated walkway between 7th and 9th Streets and sidewalk extensions north-south across 7th Street and portions of 9th Street.

Preliminary assessments indicate that the vertical clearance and the horizontal geometry of the freeway between 9th and 12th Streets will accommodate a deck and the support system necessary for air-rights development. Decking this area will require reconfiguring the freeway entry/exit ramps into tighter urban interchanges. It will also provide the opportunity to construct new streets to link 9th and 10th Street to help reconnect the grid and provide access to the new development.

SOLAR CANOPY AND RESIDENTIAL DEVELOPMENT The rear yards of the row houses at Capital Square are bordered to the north by the freeway. Installation of a glare-resistant solar canopy could face to the south and help to buffer freeway noise, and provide a source of renewable energy for the SW Ecodistrict. Installation of a solar canopy will also provide an opportunity to construct east-west pedestrian connections between 7th and 9th Streets and to improve the streetscape and pedestrian experience north-south along these streets.



Example Projects

(top) - Freeway Park in Seattle, WA

(middle) - Railway tunnel with solar panels adjacent to freeway, Antwerp, Belgium

(bottom) - proposed Capitol Crossing project over I-395 in Washington, DC (Property Group Partners)

RECOMMENDATIONS

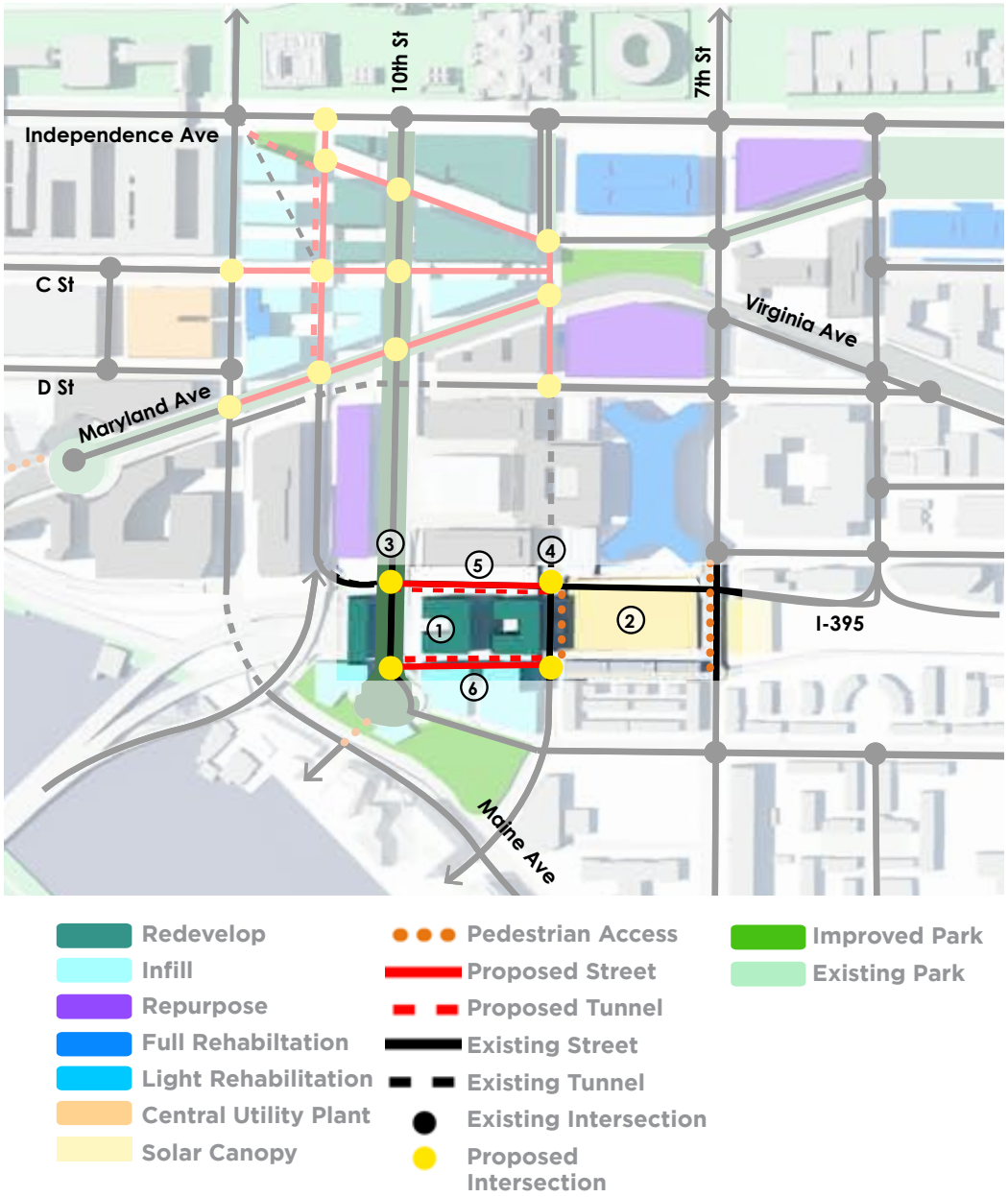
The development and infrastructure strategies to achieve the revitalizaiton scenario are identifed on the following pages.

RESULTS

Decking and developing the freeway with air-rights development is important to fully transform the 10th Street corridor and to improve the setting of Banneker Park. These recommendations will:

- Yield more than 400,000 sq. ft. of new places to live, work, and visit.
- Improve walkability along 10th Street between the National Mall, Smithsonian Museums, and Banneker Park. Improve north-south and east-west pedestrian connections for residents, workers, and visitor traversing between Maine Avenue, L'Enfant Plaza, Metro rail stations, and the Mall.
- Increase the capacity to use solar power as a renewable energy source.
- Increase the efficiency of the Central Utility Plant by improving the use mix to balance energy loads.
- Provide locations with signature views to the Jefferson Memorial, the Tidal Basin, and the Potomac River for private development.

SUMMARY PLAN



SOUTHWEST FREEWAY - PROJECT RECOMMENDATIONS

		Summary Description	Phasing - Related Projects Near- Term Projects (3-10 years) Long Term Projects (5-25 years) Coordination with Other Projects	Potential Partners Federal - F District - D Private Sector - P Cultural - C
Building and Site Development				
1	**Air-Rights Development**	Develop air rights parcels for private development between 7th street and the 12th Street ramp, where freeway clearances will allow.	Long Term - Redevelop Site	F, D, P
Infrastructure, Streets and Public Space				
2	**Solar Canopy**	Construct a glare resistant solar panel canopy over the freeway between 7th and 9th Streets where freeway clearances will not accommodate a decking structure.	Near Term - Develop Demonstration Project	F, D, P
3	**10th Street**	Enhance 10th Street. Air-rights development vehicular access should be provided on east-west streets, not 10th Street.	Near Term - Develop interim streetscape enhancements Long Term - Incorporate streetscape improvements with air-rights development	F, D, P
4	**9th Street**	Redesign the 9th Street and I-395 interchange to accommodate new development and improve vehicular and pedestrian access over the highway to L'Enfant Plaza.	Coordinate with Air-rights development	F, D, P
5	**F Street**	Construct a new F Street between 9th and 11th Streets and a pedestrian walk between 7th and 9th Streets to improve access between SW neighborhoods and the Study Area	Coordinate with Air-rights development	F, D, P
6	**Elevated Streets**	Improve the 7th, 9th, and 10th Street freeway spans to accommodate planting area that will buffer the freeway and enhance the pedestrian experience.	Coordinate with Solar Canopy and Air-rights development	F, D, P
	Freeway Ramps	Design freeway access ramps as urban intersections to connect to the street grid, allow air-rights development, and reduce the freeway's footprint.	Coordinate with Air-rights development	F, D, P
	All Projects	Construct and connect infrastructure systems and buildings to generate, convey, collect, store, and distribute thermal energy and recycled water throughout the district. Design and orient building footprints to maximize natural light and air ventilation		F, D, P, C

Model of the Revitalization Scenario - View from the Southwest

5 A Successful Partnership

IMPLEMENTATION

The *SW Ecodistrict Plan* identifies the urban infrastructure and development recommendations necessary to achieve the unified, sustainable vision for the Study Area. Implementing the recommendations will require executing projects, additional planning and real estate analyses, developing new policy, and new governing initiatives, carried out by various entities over the plan's 25-year time horizon. Each is important to achieve the vision—there is no one entity, project, or financing tool that can do it alone.

This section provides a framework for coordinating, prioritizing, and programming future actions and projects, recognizing that individual near-term efforts, such as establishing new zoning provisions, or making near term rail improvements, or amending policies to allow stormwater to be managed across property lines, must support and lay the foundation for more complex and expensive infrastructure and development projects. The section also summarizes the governing initiatives, policies and financing tools needed to make projects happen.

The implementation framework has five parts:

ECONOMIC FINDINGS: The cost and benefits of implementing the Revitalization Scenario, including why district-scale planning makes economic sense.

HIGH PRIORITY PROJECTS: The catalytic near- and long-term projects that initiate the Revitalization Scenario.

GOVERNANCE INITIATIVES: Three initiatives to bring together multiple property owners, coordinate and champion infrastructure and development projects, and establish the SW Ecodistrict identity.

POLICIES, DIRECTIVES, AND REGULATIONS: A summary of the existing and proposed policies and directives necessary to implement the recommendations.

FINANCING TOOLS: An array of financing tools and partnership opportunities available to the federal government, the District of Columbia, the private sector, and other stakeholders.

Economic Findings

DISTRICT-SCALE PLANNING MAKES ECONOMIC SENSE

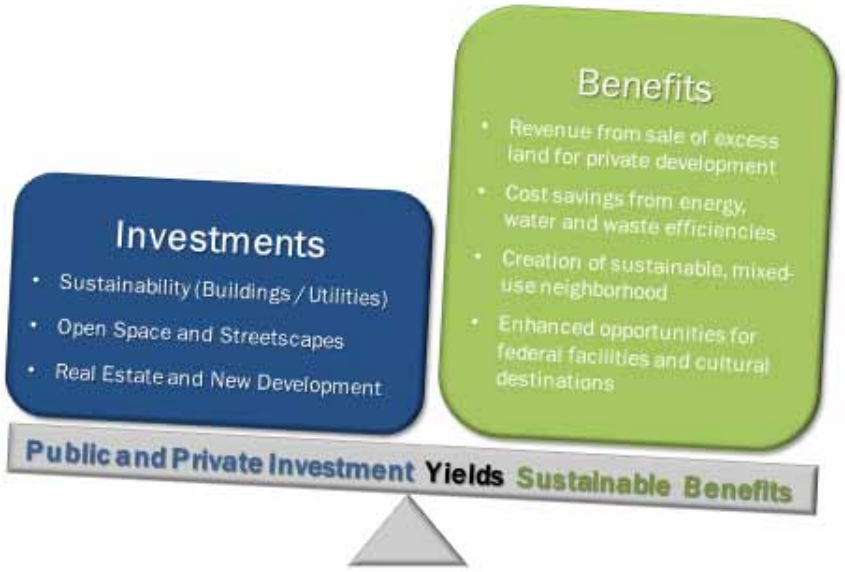
The SW Ecodistrict Plan provides measurable and intangible economic, social and environmental benefits for the federal government, the District of Columbia, and other public and private stakeholders. The plan recognizes that achieving this vision requires strategic public and private investments.

A high-level economic analysis was prepared to help the SW Ecodistrict Task Force understand the public and private investments necessary to transform the study area into the SW Ecodistrict. These investments include:

- Typical life-cycle investments needed to maintain the existing facilities;
- Investments necessary to increase the development density in the study area;
- Infrastructure and public space investments needed to support the increased density; and
- Additional investments needed to achieve the sustainability goals identified in Executive Order 13514;

A range of benefits will be realized in exchange for these investments. These benefits and the beneficiary stakeholders include:

- **Federal:** Land sale revenues, reduced operating expenses and lease rent saving from efficient space utilization.
- **District:** Land sale revenues reduced operating expenses, and incremental new tax revenue.
- **Private Owner:** Reduced operating expenses, increased rent revenue, increased net operating income and value of new development creation. Although modest due to Washington's strong office market, sustainability investments by the private sector will yield a rent premium from lower tenant operating expenses, enhanced brand and improved workplace conditions.



The overall benefits of the SW Ecodistrict Plan include additional qualitative aspects that are more difficult to quantify. Some benefits are unique to the nation's capital, while others enhance the reputation of the city, the federal govern-ment, and private properties. These benefits include:

- Establishing locations for future nationally-significant cultural facilities and public spaces while preserving the historic landscape of the National Mall.
- Physically, visually, and psychologically connecting the National Mall to the Potomac River and Southwest Waterfront, and positioning Banneker Park and the 10th Street corridor as a nationally significant cultural destination and lively downtown destination.
- Creating a national showcase for sustainability, inspiring development at federal campuses and communities nationwide.
- Establishing a high quality employment center that attracts the next generation of federal and private sector workers, offers live-work opportunities, and showcases high-productivity worksites.
- Providing environmental benefits through cleaner rivers, reduced carbon footprint, lower per capita energy and water use, and enhanced urban ecology.
- Leveraging public and private investments to maximize benefits, and provide a template for reuse of federal properties that offers private sector land and development opportunities while ensuring federal operations and mission are fully maintained.

This early-stage economic analysis is encouraging, and the quantitative and qualitative benefits that can be achieved by working together to implement the SW Ecodistrict Plan are substantial. The economic analysis estimated the return on investment assuming a 25-year life-cycle for the improvements. The analysis concludes that the measurable and intrinsic benefits from transforming the study area into the SW Ecodistrict can exceed the investments required to do so.

This plan acknowledges that further study is required to fully understand the value of investing in the SW Ecodistrict. Because each of the proposed projects in the plan would impact or benefit a range of stakeholders differently, additional work will be needed to identify funding gaps, and how to prioritize investments based on their benefit/cost ratio and timing. Future studies could also identify opportunities and challenges to monetize future benefits to pay for initial investments through a variety of potential mechanisms, including tax increment financing, payments in lieu of taxes, special assessments, negotiated exactions, and impact fees.

BEST PRACTICES - DISTRICT PLANNING EXAMPLES

THE CASE FOR DISTRICT WATER

While the exact value proposition for a district-wide water system requires detailed research, it is clear that storm-water-related fees for property owners will become increasingly more expensive. DC Water's Clean Rivers Impervious Area Charges (IAC) and the District Department of the Environment's (DDOE) stormwater fees are projected to grow significantly between 2012 and 2018. The IAC helps fund DC Water's investment to reduce pollution in the Anacostia and Potomac Rivers and Rock Creek. It applies to all lots, parcels, properties, and private streets within the District of Columbia. DDOE assesses a stormwater fee to control pollution from stormwater runoff. This fee is based on the average amount of impervious surface on properties.

In 2012 federal property within the area paid approximately $6,800/month in combined fees. This is projected to increase to approximately $32,000/month or $384,000/year by 2018. Together, federal and private development in the area would pay approximately $48,000/month or $576,000/year by 2018.

Both programs are looking at ways to provide credits and rebates for property owners who manage their stormwater. DDOE is currently developing a stormwater fee discount program that will provide the opportunity to receive up to a 55 percent discount off the stormwater fee to rate-paying property owners who implement measures to manage and reduce stormwater runoff. While rebates alone may not justify the initial infrastructure necessary for a district-water system, the savings from reduced potable water use and associated reduction in energy use could make this project economically feasible.

THE CASE FOR DISTRICT ENERGY

District energy helps communities reduce their operating costs and keep more energy dollars local by reducing the need to import fuel for heating and cooling. The environmental impacts of heating and cooling systems are significantly reduced because these district-wide systems improve efficiency. Developing district energy/central heating plant systems can help ease the transition of the power sector as older, polluting coal plants are shut down and removed from the grid. District cooling can cut peak electrical demand that typically occurs in the late afternoon, thus reducing strain on the grid and avoiding expensive peak power costs. (Environmental and Energy Study Institute)

CENTRAL BUSINESS DISTRICT – ST. PAUL, MN

District Energy St. Paul provides heating to more than 80 percent of St. Paul's central business district and cooling to more than 60 percent. District Energy St. Paul meets 70 percent of its customers' annual heating from a biomass central heating plant which reduces greenhouse gas emissions by over 200,000 tons annually.

DOWNTOWN CLEVELAND

Cleveland Thermal's district energy network provides 30 percent of the heating and cooling needs of the city's business district. The pipeline spans more than 30 million square feet, bringing steam and chilled water to commercial, institutional, and municipal buildings in downtown Cleveland. Customers reduced their peak power demand, thereby reducing their cost per kilowatt hour.

THE CASE FOR GREAT PUBLIC PARKS

Streetscape and open space improvements will increase property values, boost rents, and establish a more attractive setting for future cultural and residential uses. Case studies show that development in proximity to signature parks can increase property values between 15-50 percent. Enhancements to Manhattan's Bryant Park increased adjacent property values by 50 percent. Studies show that improvements to Chicago's Millennium Park boosted nearby property values by 25 percent. In Philadelphia development within 2,000 feet of a signature park increased rent premiums by 15 percent.

The High Priority Projects

Some projects within the Redevelopment Scenario can be achieved in the near-term at relatively low cost, while others are more complex, costly, or dependent on other projects. Some projects are inter-related, so it is important to understand and coordinate sequencing and timing. There are four priority projects that can act as catalysts to fulfill the SW Ecodistrict vision. Two near-term projects will quickly demonstrate tangible change within the Study Area:

- **Interim streetscape improvements to 10th Street, SW** (1) will improve the pedestrian experience and provide a walkable connection to the waterfront. These improvements will signal to employees, visitors, and future residents that the Study Area is on the cusp of change.
- A **new business model for the central utility plant** (2) that incorporates existing and future federal and private development can rapidly put the Study Area on the path toward significant greenhouse gas reduction.

Two long-term revitalization projects will be catalytic in the Study Area's transformation:

- Potentially **redeveloping of the Forrestal Complex** (3) will offer increased federal and private sector development opportunities, reconnect the National Mall and Smithsonian Institutions with the Southwest Waterfront, introduce a mix of uses, and create highly sustainable buildings, including a new Department of Energy headquarters as described in the Independence Quarter Focus Area.
- **Decking Maryland Avenue, SW** (4)will restore a preeminent boulevard, visually and physically reconnect the study area to the US Capitol, and create opportunities for future private development. This project is summarized in the Maryland Avenue and 7th Street Corridor Focus Area and further detailed in the District's *Maryland Avenue, SW Small Area Plan*.

Governance Initiatives

Some of the projects described in Chapter 4 could advance today with existing tools and authorities available to the public and private sectors. For example, federal and private building owners can make energy efficient improvements to their buildings, and GSA has the authority to redevelop buildings and land for which it is responsible. To advance other projects will require new or amended authorization in the form of policy or legislative action. In addition, several key infrastructure and development projects will require significant coordination across multiple stakeholders and a forum for that coordination to take place. These include:

- Managing and paying for district-wide infrastructure projects including water, energy and roads.
- Coordinating the multiple transportation modes at L'Enfant Station.
- Organizing public and private development activity within the Ecodistrict to ensure that the District of Columbia and federal government's broader goals are achieved.

While there are a variety of governance models that could serve as a coordinating body, such as a redevelopment agency or a special purpose entity for infrastructure development, three governance initiatives are recommended for the SW Ecodistrict:

- Developing a partnership agreement between the federal and District governments that outlines individual commitments.
- Creating a governance entity similar to a business improvement district, passing legislation that will specify special authorities or actions necessary to carry out the recommendations, or a combination of these two strategies. .
- Expanding the authorities of the Union Station Redevelopment Corporation to include coordinating multi-modal activity at both Union Station and L'Enfant Station.

Each of the suggested individual governance initiatives are described in detail on the following pages:

DEVELOP A PARTNERSHIP AGREEMENT BETWEEN THE DISTRICT AND THE FEDERAL GOVERNMENT

The *SW Ecodistrict Plan* will only succeed if the federal government and the District of Columbia are committed to its vision and take actions to advance its recommendations. A partnership agreement would serve as a good faith commitment by both. Many federal and District of Columbia agencies helped to develop the plan recommendations, and each plays a critical and distinct role in successfully implementing the recommendations. A partnership agreement would provide a tool for coordination and outline individual commitments to achieve the *SW Ecodistrict Plan* recommendations, such as zoning or development regulations, or federal contributions to district-wide projects.

CREATE A GOVERNANCE ENTITY TO PROVIDE DISTRICT-WIDE COORDINATION, FINANCING AND MANAGEMENT

Creating a governance entity managed by a board of public and private representatives will provide the coordination, advocacy, financing, and management necessary to achieve the SW Ecodistrict goals. The entity could be similar in structure to a business improvement district but would also have a large role in developing the sustainable infrastructure of the SW Ecodistrict. Or, an entity could be established through special legislation with the appropriate authorities to carry out actions necessary to implement the recommendations. Some of the key functions of this governing entity could include:

- Develop a district-wide plan that addresses streetscape, public space, stormwater management, and infrastructure improvements, in coordination with GSA's current efforts.
- Implement district-wide programs to manage stormwater and reduce energy use, wastewater, and potable water.
- Champion and coordinate renewable energy improvements, including solar installations, above the Southwest Freeway and at buildings.
- Coordinate with the District on the prioritization of tax increment financing funds (TIF) or low impact development (LID) property tax assessment funds (generated by the Ecodistrict) for environmental and/or transportation related projects.
- Finance, construct, and maintain district-wide green infrastructure improvements (this could be done using a combination of LID/TIF funds or through the involvement of a private partner).
- Administer a green power purchasing program and a stormwater credit program.
- Define a district identity through marketing and branding strategies, and develop a plan that reflects the Ecodistrict's sustainability goals.

While this entity may not ultimately manage all of the projects, such as the district-scale water and energy systems, it would provide the leadership and coordination to initiate the projects and develop and carry-out the necessary public-private partnerships.

COORDINATE REGIONAL TRANSIT INVESTMENTS

Union Station and L'Enfant Station are the two busiest transportation hubs in the city. Both stations are working to address how to accommodate increased ridership. Conflicts arise not only with passenger congestion but also with track capacity, train movement, and storage. Any solutions to these challenges will need coordination amongst stations. There is no single entity to manage this effort. The existing Union Station Redevelopment Corporation is charged with managing all transportation and real estate activity at Union Station and could have its authorities expanded to include transportation planning for L'Enfant Station.

Policy Tools and Requirements

EXISTING

The federal government and the District have a range of existing legislative tools and regulations that can be used to effectively implement the SW Ecodistrict Plan's recommendations. Development on private land in the District is guided by policies in the Comprehensive Plan's District Elements and regulations in the zoning code. The federal government is guided by Comprehensive Plan's Federal Elements, a number of executive orders, existing laws, and policies that encourage the federal government to advance livable and sustainable communities. These policies encourage federal land and facilities to contribute to the civic life of local communities.

Policies and regulations that guide GSA to promote the use of federal space to strengthen cities, encourage a mix of uses within federal buildings, and encourage programming and landscaping of public spaces include:

- Federal Space Management, Executive Order 12072
- The Public Buildings Cooperative Use Act of 1976
- The Good Neighbor Program
- The First Impressions Program
- The Public Buildings Act

Policies and regulations applicable to all federal agencies for sustainability improvements with regard to greenhouse gas re-ductions, energy, waste, and water efficiencies, and public transportation include:

- The Energy Independence and Security Act of 2007
- Strengthening Federal Environmental, Energy, and Transportation Management, Executive Order 13423
- Federal Leadership in Environmental, Economic, and Energy Performance, Executive Order 13514

Policies and regulations that promote the protection and use of historic buildings for federal occupancy and permits (with consultation) the long-term leases and adaptive reuse for places listed on the National Register Historic Places include:

- Federal Facilities on Historic Properties, Executive Order 13006
- Section 106, National Historic Preservation Act of 1966, as amended by 36 CFR, Part 800, Protection of Historic Properties
- Section 110, National Historic Preservation Act of 1966
- Section 111, National Historic Preservation Act of 1966
- Preserve America Executive Order 13287 and the White House's Preserve America Initiative

District policies and regulations that promote sustainability on District-owned and privately-owned sites include:

- The Green Building Act of 2006
- Clean and Affordable Energy Act of 2008
- Distributed Generation Amendment Act of 2011

The Mayor's 2012 Sustainability Vision to become the greenest and most livable city in the nation is resulting in the development of new policies and regulations to promote sustainability on District-owned and privately-owned sites. These include:

- Energy Efficiency Financing Act of 2010
- Community Renewables Energy Act of 2012
- Renewable Energy Incentive Program Amendment Act of 2012
- 2012 District of Columbia Construction Code
- District of Columbia Stormwater Regulations related to Municipal Separate Storm Sewer System (MS4) Permit
- The Green Area Ratio and other sustainability measures in the District of Columbia Zoning Code update

PROPOSED

While the federal government and the District of Columbia already have a robust set of policies and regulations that will guide redevelopment activity in the Study Area, additional policies and regulations related to operations and development are needed to ensure that all of the recommendations for this area can be implemented.

EXPAND GSA'S AUTHORITY WITH REGARD TO THE CENTRAL UTILITY PLANT

Modeling studies conducted to develop the SW Ecodistrict Plan recommendations concluded that expanding the number and types (uses) of public and private buildings served by the central utility plant would dramatically reduce the area's greenhouse gas emissions. It could also help finance operations and maintenance. GSA does not, however, have the authority, to expand the central utility plant's operations to private buildings. This plan recommends that GSA seek authority to examine the environmental and financial implications of expanding the service of the central utility plant to private buildings in the area. This would include studying the environmental and financial impact of federal buildings disconnecting from the plant. Based on the conclusions of this study, a new policy expanding GSA's authority with regard to the plant should be considered.

ACTIVATE FEDERAL BUILDING FRONTAGES AND PUBLIC SPACES

Street life around federal buildings is minimal because the only ground floor activities are security checkpoints and interior commercial services available exclusively to employees, such as cafeterias and gyms. While building security checkpoints are important and the commercial uses offer some convenience to employees within the building, neither contributes to the neighborhood's vibrancy. As federal buildings are rehabilitated or redeveloped, ground floors should be programmed to include educational, cultural, commercial, or retail establishments accessible directly from the public sidewalk and available to everyone. This will activate the streets and provide opportunities for businesses to expand their customer base.

MANAGE STORMWATER ACROSS PROPERTY LINES

Several of the stormwater management recommendations impact the Ecodistrict's overall energy and water use. Currently, the District Department of the Environment policy does not allow stormwater to be managed across multiple property lines. For example, a building owner must capture and manage stormwater within their property boundaries; however, in many cases, the amount of stormwater may exceed the site's capacity. A good solution (especially in Washington where the right-of-ways can be exceedingly wide) is to manage some of the property's stormwater within the public right-of-way (either the sidewalk or the street). Current policy restricts managing stormwater within the public-right-of-way because this area is reserved for potential future transportation related improvements. New policies and regulations could balance both objectives.

DEVELOPMENT REGULATIONS

The Comprehensive Plan's District Elements and the zoning regulations do not apply to federal land. However, if the federal government were to dispose of land, these policies and regulations would apply. It is important that the regulations necessary to implement the SW Ecodistrict Plan be in place prior to any federal disposal or long-term lease. The District, in coordination with the federal government, will need to update the Comprehensive Plan's District Elements and zoning regulations for this area to reflect the recommendations in the SW Ecodistrict Plan.

Financing Tools

The federal government, the District, and private interests can use a variety of funding tools to implement components of the Ecodistrict recommendations. In some cases, it may be appropriate to use an agency's existing funding resources. However, it is more likely that implementing the *SW Ecodistrict Plan* recommendations will require new funding approaches. Given the largely public ownership interests in the area, a combination of any number of partnerships among the federal government, the District, another public entity like WMATA, and the private sector offer significant opportunities to leverage resources. This is possible because the plan's recommendations achieve broad benefits that extend to the federal government, to the District, its workers and residents, and to existing property owners in the area. Potential financing mechanisms include:

FEDERAL GOVERNMENT FUNDING SOURCES

- Capital budgets: Agencies could prioritize projects in annual budgets.
- Congressional appropriations: Congress could appropriate money for individual projects.
- Land dispositions: GSA is allowed to use money from the disposition of federal land to reinvest in GSA buildings and sites.
- Federal grants: The federal government offers grants to state, regional and local jurisdictions and to public and private entities. These grants include the Better Buildings Initiative (DOE), the Sustainable Communities Initiative (DOT/EPA/HUD), and TIGER Grants (DOT).
- Federal payment to a BID: The federal government can make payments to business improvement districts (as it does with the Downtown BID) to receive services provided by the BID.
- Federal bonds: Build America Bonds program expired in 2011 but other programs could exist in the future.

THE DISTRICT

- Capital budgets: Agencies could prioritize projects in annual budgets.
- Tax Increment Financing (TIF): TIF creates funding for public projects by borrowing against the future increase in property-tax revenues. The District of Columbia uses the TIF tool for projects that create a public benefit such as the Great Streets Program or affordable housing.
- Payments in Lieu of Taxes (PILOT): Pilot funds allow the District to collect funding that replaces lost property tax revenues on federally owned property or other non-taxable entities. PILOTs can also be made with private entities as part of public/private partnerships for development.
- Freeway air rights Title 23 funds: If the FHWA approved the sale of the air rights over the Southwest Freeway, the District is allowed to use the money from the sale to reinvest in Title 23 eligible projects (i.e. road infrastructure).
- Local Improvement District (special assessment district): see "partnership" section below.

PRIVATE

- Private development: New construction could be financed by private investors.
- Energy saving performance contracts: A company pays the upfront investment for energy-efficiency renovations and retrofits in a building in exchange for payments from energy savings over time.
- Special purpose entity for Water/Energy Systems: A privately- owned entity could build, own, and operate a district-scale water or district-energy system (with revenue coming from energy/water sales and local credits).

PARTNERSHIPS

- Public private partnerships for site redevelopment: The federal government could partner with the private sector to develop a new federal building in exchange for federal land.
- Enhanced-use Leases: A company is allowed to develop government land with renewable energy or other projects in exchange for payment or in-kind services such as reduced-rate energy.
- Local Improvement District Tax Assessment: A special assessment could be levied against property within the Ecodistrict to fund infrastructure/ public realm projects in the ecodistrict. The basic principle is that it is a charge imposed upon property owners who receive special benefits from the improvement beyond the rest of the community. While federal government land cannot be assessed, an alternate form of payment could be considered.
- Special purpose entity/partnerships for energy and water systems: This model would be a shared district system between the local and/ or federal government and a private entity.

Plan Applicability

The SW Ecodistrict Plan serves as a flexible tool for federal, District, and private entities to inform future facility and infrastructure planning and development decisions. It is not a prescriptive master plan; rather, it identifies opportunities to coordinate development, public space, infrastructure, and transportation improvements. The strategies, guidelines, recommendations, illustrations, and diagrams as presented are intended to communicate planning and design principles to guide future development proposals and infrastructure projects that will advance the SW Ecodistrict goals.

The plan will guide future programming, planning, design, and development decisions for federally owned property under the jurisdiction of individual federal agencies, such as the General Services Administration or the National Park Service. Although not applicable to District-owned or privately-owned land; participation by the District and private property owners is vital to achieving the goals of the plan.

Individual projects that benefit one agency could be led by a single entity; however, other projects may exceed the scope of a single federal or local agency's mission and operational budget. Some initiatives will only be considered when the useful life of a facility or infrastructure system is close to its end, although they may warrant detailed feasibility studies to begin sooner. The near- and long-term project recommendations will require additional detailed planning, evaluation, and design to comply with the National Environmental Policy Act, the National Historic Preservation Act, and other requirements.

Projects can be pursued as funding becomes available either through public-private partnerships or congressional appropriations, particularly for those recommendations that have far-reaching public benefits. The plan identifies the potential partnerships necessary to carry the projects out, as well as the possible legislative tools and governance ap-proaches that may help move the projects toward implementation.

NCPC will advise federal agencies, and encourage District and private property owners, to use the plan as a guide when programming, planning, and designing future development proposals in the SW Ecodistrict. In addition, NCPC will also use the Plan to:

- Evaluate and comment on:
- (1) Development proposals that go beyond the routine maintenance of public buildings; and
- (2) Proposals for improvements to parks, public spaces, and public transportation systems.
- Guide input on federal, local, and private planning studies and reports.
- Inform future updates of NCPC's Strategic Plan that describes the Commission's mission, values, and vision, and conveys the agency's goals over a specified time period.
- Develop or amend future NCPC planning studies and reports, including the Comprehensive Plan for the National Capital: Federal Elements and the Federal Capital Improvements Program.

Acknowledgements

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SW ECODISTRICT TASK FORCE AND WORKING GROUP

- National Capital Planning Commission, Chairman and Presidential Appointee
- District of Columbia Office of Planning, Director
- District of Columbia Deputy Mayor for Planning and Economic Development, Deputy Mayor
- District of Columbia Department of the Environment, Director
- District of Columbia Department of Transportation, Director
- Federal Aviation Administration, Director of Facilities
- National Park Service, Associate Deputy Regional Director for Lands, Resources, and Planning
- Smithsonian Institution, Director, Office of Facilities Engineering and Operations
- U.S. Commission of Fine Arts, Secretary
- U.S. Congress, Architect of the Capitol
- U.S. Department of Agriculture, Director of Facilities
- U.S. Department of Education
- U.S. Department of Energy, Director of Facilities
- U.S. Environmental Protection Agency, Assistant Administrator Office of Administration and Resource Management
- U.S. Department of Housing and Urban Development, Director of Facilities
- U.S. General Services Administration, Public Buildings Deputy Administrator
- U.S. General Services Administration, Director of Planning and Design
- U.S. Postal Service, Director of Facilities

TASK FORCE MEMBERS AND REPRESENTATIVES

Dan Amon, Stephen Ayers, Terry Bellamy, Cathy Berlow, Troy L. Brown, L. Preston Bryant, Jr., Robert E. Byrd, Brian Costlow, John Hart, Jamie Henson, Victor Hoskins, Bruce Kendall, Bruce Lawson, Thomas Luebke, Peter May, Brandon Mitchell, Peter O'Konski, Robert Peck, Tom Samra, Desa J. Sealy, Brendan Shane, Richard Smith, Harriet Tregoning, Christophe Tulou, Curtis Wilburn, Mina Wright

WORKING GROUP REPRESENTATIVES

A Working group of Task Force agency representatives were joined by representatives from the Washington Metro Area Transit Authority and the State Historic Preservation Office.

Dawud Abdur-Rahman, Nina Albert, Dan Amon, Dan Barry, Cathy Berlow, Melissa Bird, Catherine Broad, Troy Brown, Drew Campbell, Laine Cidlowski, Chris Dickersin-Prokopp, Fred Fanning, Frank Giblin, Robert Goo, Dan Guilbeault, Karen Handsfield, Jamise Harper, Jamie Henson, Jennifer Hirsch, Thomas Hoffman, Chris Hudson, Stephen Hurley, Joseph Imamura, Arlova Jackson, Doug Jacobs, Mark Kellogg, Andrew Lewis, Andrea Limauro, Steve Lorenzetti, Jennifer MacDonald, Jason Marcinkoski, Michael McAvinn, Rebecca Montoya, Rodney Moulden, Christine Saum, Robin Snyder, Jeffrey Seltzer, Deborah Smith, Richard Smith, Joseph Steller, Ann Trowbridge, Matthew Troy, Jacob Weisman, Danielle Wesolek, Meredith Upchurch, Eliza Voigt, Karen Waldvogel, Allen Whitley, Nancy Witherell, Patricia Zingshiem

PROJECT TEAM

Components of the project were jointly funded by NCPC, GSA, CFA, and the USDA. NCPC had primary responsibility in oversight of the *SW Ecodistrict Plan* and its principal consultant, ZGF Architects. GSA had primary responsibility in oversight of the Building Modeling Component and its principal consultant, Onuma Inc. The District of Columbia Office of Planning funded and led the planning effort for the *Maryland Avenue Small Area Plan* with oversight of its primary consultant, AECOM. The Maryland Avenue corridor lies within the SW Ecodistrict and is an integral component of the Task Force's recommendations.

NCPC EXECUTIVE STAFF

Marcel Acosta, Executive Director
Barry Socks, Chief Operating Officer
William Dowd, Director, Physical Planning Division
Julia Koster, Director, Office of Public Engagement
Anne Schuyler, General Counsel

NCPC PROJECT TEAM

Elizabeth Miller, Project Manager
Diane Sullivan, Lead Sustainability Planner
Core Team: Sarah Moulton, Amy Tarce, Ken Walton
Contributors: William H. Herbig, Jennifer Hirsch, Paul Jutton, Stephen Staudigl, Scott Sowers, Roszonna Whitsett, David Zaidain

GENERAL SERVICES ADMINISTRATION PROJECT TEAM

Brett M. Banks, Real Estate Portfolio Coordinator
Stephen Hagan, Building Information Modeling Coordinator
Contributors: Stephanie Leedom, Hallie Futterman, Frank Palermo, Greg Westphal, Nancy Witherell

DISTRICT OF COLUMBIA PROJECT TEAM (MARYLAND AVENUE SW PLAN)

Vincent C. Gray, Mayor
Harriet Tregoning, Director of the Office of Planning
Rosalynn Hughey, Deputy Director, Citywide & Neighborhood Planning
Geraldine Gardner, Associate Director, Neighborhood Planning
Joyce Tsepas, Project Manager
Alan Harwood and Ryan Bouma, AECOM Consultants
Core Team: Melissa Bird, Arlova Jackson, Andrea Limauro, Andrew Lewis, Jamie Henson, Jared Kahn, Dan Guilbeault
Contributors: Eulois Cleckley, Dan Emerine, Art Rodgers

TASK FORCE CONSULTANTS

ZGF ARCHITECTS LLP

Otto Condon, Principal
Charles Kelley, Architect/Urban Designer
Design Team: Jason Kasparek, Greg Matto, Robert Petty, Elizabeth Schultz, Meghan Spigle

ARUP

Fiona Cousins, Principal
Engineering Team: Deepak Kandra, Jack Mahoney

HR+A ADVISORS

Candace Damon, Partner
Economic Team: Kumar Kintala, Lionel Lynch

KITTELSON & ASSOCIATES, INC.

Ed Myers, Senior Principal
Yolanda Takesian, Lead Planner
Conor Semler, Planner

ONUMA INC. AND ATKINS

Kimon Onuma, Principal
Core Team: Thomas Dalbert, Finith Jernigan, Kerry Himes, Yong Ku Kim, Ken Kost


SW Ecodistrict


National
Capital
Planning
Commission