

**Resiliency and
Sustainability
Advisory
Committee
Meeting**

February 13, 2020

Today's Agenda

1. Welcome and Moment of Silence
2. Sustainability Next Steps
 - a. Greenhouse Gas Inventory
 - b. Green Plan Audit
 - c. Climate Action Plan
3. SC Resilience Revolving Fund Act Update
4. Environmental Initiatives at the South Carolina Ports Authority
5. Earth Day 2020 Resolutions
6. Public Comment Period

Sustainability Next Steps

Greenhouse Gas Inventory

Greenhouse Gas Inventory

- Started January 2020
- Time length: 4-6 months

GHG Data Inventories

- 2002
- 2006
- 2010
- 2018 coming soon!



CHARLESTON GREEN PLAN INVENTORY & METRICS

2002 & 2006 City of Charleston Emissions Inventories
2009 Charleston Green Plan Reduction Metrics, Methodology & Analyses

Charleston Green Committee | City of Charleston

Download at: <https://www.charleston-sc.gov/DocumentCenter/View/1462/Green-Plan-Inventory-and-Metrics?bidId=>

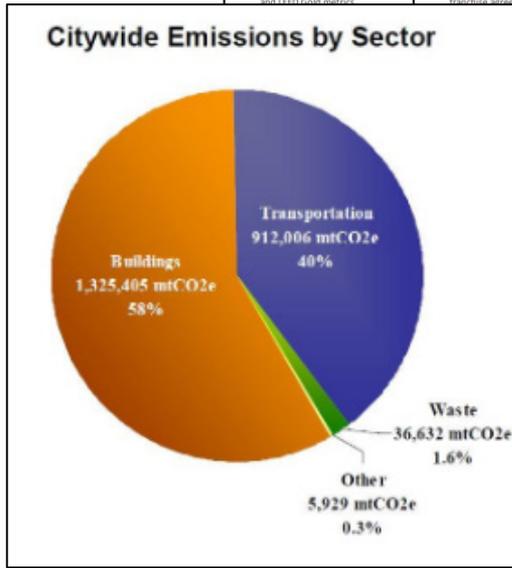
Sustainability Next Steps

Green Plan Audit

Green Plan Audit

Goal is to prioritize top initiatives from 2010 to consider for potential action

Focus first on sectors showing highest GHG emissions, Bldgs + Transp.



CHARLESTON GREEN PLAN INITIATIVES					
ID	BETTER BUILDINGS	CLEANER ENERGY	SUSTAINABLE COMMUNITIES	IMPROVED TRANSPORTATION	ZERO WASTE
A	Expand Resolution 2008-05 requiring all new City buildings and renovations meet LEED Gold or Charleston's new building	Establish an "Efficiency First" principle to guide all of City energy use decisions about buildings and land use.	Encourage compact, complete and mixed use communities.	Keep "vehicle miles traveled" within the City at the 2010 level, establish a method for quantifying VMT's.	Pass a Zero Waste Resolution that sets a goal to reduce the volume and weight of the City's waste to zero or near zero
B	Create a new standard for sustainable building in Charleston inspired by the 2030 Challenge and LEED Gold practice.	Encourage SCE&G to employ robust Demand-side Management (DSM) programs and review franchise agreement to encourage energy efficiency measures.	Encourage infill development and the retrofit of suburban areas.	Move the city toward a fully multi-modal transportation system by enacting a citywide multi-modal transportation plan	Work with Charleston County, other municipalities, and private businesses to create and maintain a solid waste system that places the highest value on waste reduction, recycling, and implement per-unit system for waste collection and disposal fees.
		Encourage Sustainable "Traditional Neighborhood Design", such as supporting biking, walking, and neighborhood retail and essential services being close by where people live.	Encourage Sustainable "Traditional Neighborhood Design", such as supporting biking, walking, and neighborhood retail and essential services being close by where people live.	Adopt and implement a Complete Streets Ordinance	Improve bulky trash collection.
		Ensure affordable housing is indistinguishable from, and as marketable as, other forms of housing.	Ensure affordable housing is indistinguishable from, and as marketable as, other forms of housing.	Support employer-based programs that encourage alternative transportation.	Require the City to purchase environmentally preferable products.
		Establish minimum thresholds for achieving diversity of housing types in new neighborhoods.	Establish minimum thresholds for achieving diversity of housing types in new neighborhoods.	Encourage vehicle-free tourism by restricting vehicle travel on certain streets, increased availability of bike rentals, enhancing public transit.	Improve data collection on waste, recycling, and composting.
		Encourage affordable and workforce housing by permitting accessory dwelling units (ADUs).	Encourage affordable and workforce housing by permitting accessory dwelling units (ADUs).	Require CARTA bus stops and sheds within new developments and redevelopments along current and proposed CARTA routes.	Facilitate composting and mulching of all organic waste.
		Encourage local, sustainable food production by protecting agricultural land, particularly beyond the Urban Growth Boundary.	Encourage local, sustainable food production by protecting agricultural land, particularly beyond the Urban Growth Boundary.	Establish a City policy stating that meeting and event sites should be within a five minute walk of CARTA or Tri-County Link route stops.	Improve recycling of hazardous and electronic waste.
		Encourage local, sustainable food production by allowing and promoting food production, and permitting food distribution in residential neighborhoods.	Encourage local, sustainable food production by allowing and promoting food production, and permitting food distribution in residential neighborhoods.	Adopt and implement a City bicycle and pedestrian plan.	Increase recycling of construction waste (created by private projects).
		Create farmers markets and support the creation of food-based gardens at schools, rooftops, parks, etc..	Create farmers markets and support the creation of food-based gardens at schools, rooftops, parks, etc..	Restripe corridors for bicycle use.	Increase recycling of construction waste (created by City projects)
		Offer incentives for landowners willing to farm in a holistic, sustainable way.	Offer incentives for landowners willing to farm in a holistic, sustainable way.	Apply for and acquire "Bicycle Friendly Community" status.	
		Encourage on-site generation of renewable energy (City property) by studying the technical and legal feasibility of on-site renewable energy sources including wind, solar, tidal, and wave energy.	Encourage on-site generation of renewable energy (City property) by studying the technical and legal feasibility of on-site renewable energy sources including wind, solar, tidal, and wave energy.	Provide incentives for City employees to commute or conduct business using bicycles.	Redesign incentives for City program for ergonomics and increased recycling.
K			Consider creating a development impact fee.		

Top Priorities from Green Plan

Improved Transportation:

- Support employer-based programs that encourage alternative transportation
- Set high standards for the purchase, use, and maintenance of City vehicles
- Create education programs both internally and with the public

Top Priorities from Green Plan

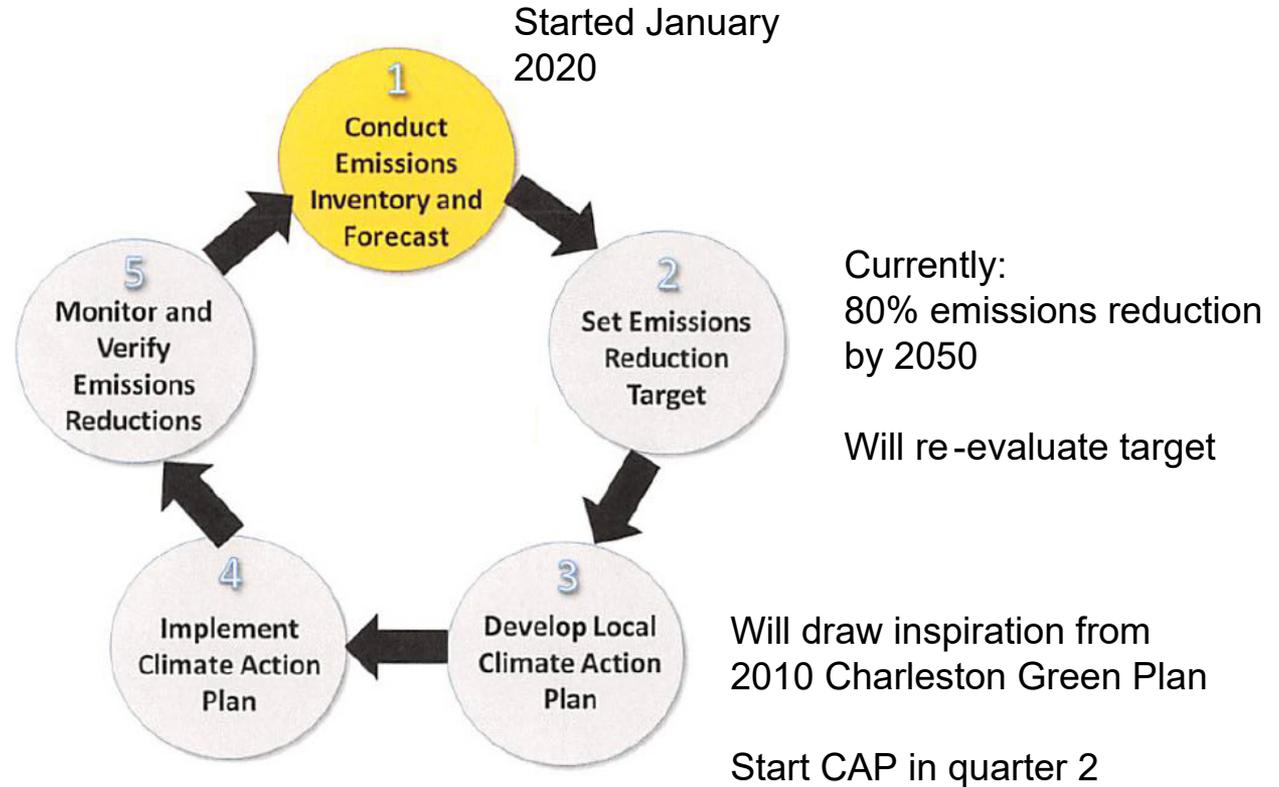
Better Buildings:

- New City buildings and renovations to meet LEED certification
- Incentivize private development to meet LEED certification
- Require private development to meet LEED certification or adopt stronger energy codes

Sustainability Next Steps

Climate Action Plan

Climate Action Planning



Earth Day Resolutions

50th Anniversary of Earth Day

April 22

Celebrations last all month long!

- West Ashley Farmers Market
- Downtown Farmers Market
- Tree Planting Event
- MUSC Local Food Fest
- County Paper Shred Events
- C of C Street Fair & Events
- Community Cleanups & Events with Keep Charleston Beautiful, Surfrider, DNR, Waterkeeper

Let's Make Earth Day Resolutions!

Past Resolutions to Update

- Recycling- blue bin items and printer cartridges
- Advertise CARTA routes on City events
- “Lights out in buildings at night” campaign
- City construction meets LEED certification
- Enforce the current idling ordinance
- Purchasing recycled paper for copiers
- Printing 2-sided, scrap paper pile
- Decrease plastic bag use

New Resolutions to Consider

- Recycling bulk mattresses & hazardous materials like batteries, light bulbs
- Fleet electrification transition and purchasing standards
- EV charging stations and EV ready parking
- Climate action pledge
- Eliminating styrofoam
- Promoting reusable bags
- Energy efficiency month- October
- Electric vehicle awareness

ALL IDEAS WELCOME and ENCOURAGED

SC Resilience Revolving Fund Act Update

By: Jason Crowley, Coastal Conservation League

South Carolina Resilience Revolving Fund S.259

If enacted, the “South Carolina Resilience Revolving Fund Act” will advance the ability to leverage state and federal funding to provide low interest loans to perform flooded-home buyouts and floodplain restoration, and authorizes the Disaster Recovery Office within the Department of Administration to undertake certain actions to effectively operate the fund.

Purpose and Need:

- South Carolina has faced four major flooding events between 2015 and 2018, which caused over one billion dollars in total damages, required hundreds of millions of dollars in state spending, and flooded thousands of homes.
- Flooding has affected all regions of South Carolina from the Upstate, to the Midlands, and throughout the Coastal Plain, and has harmed the property and health of residents in each of these regions.
- Neighborhoods and homes have been constructed in floodplains, and when these homes are inevitably flooded there are limited resources available to relocate residents out of the floodplain afterward.
- Many flooded homeowners are forced to rebuild in the same vulnerable location and are trapped in a cycle of repeated flooding and rebuilding.
- Homeowners without flood insurance or financial assistance are unable to rebuild at all.
- Federal funding to conduct flood mitigation typically requires a ratio match at the local level, and applications are more competitive when funding is available for this match, however, few local governments have the resources to readily provide funds for a match.
- Moving citizens out of the floodplain lowers State and local spending on recovery after a flood emergency, allows for the water-absorbing benefits of the floodplain to be restored, and reduces the risk to the rest of the community.
- There is a critical need for additional funds to buyout repeatedly flooded properties for homeowner voluntarily requesting assistance and restore the natural functions of the floodplain.
- Both actions are essential to the resilience of the State to future flood events and necessary to maintain a high quality of life for its residents.
- In order to carry out these purposes, the State must establish a funding source providing additional capital to execute buyouts of repeatedly flooded homes and ensure increased flood resilience in the State.

Revolving Fund Authority:

- The Department of Administration's Disaster Recovery Office would be the primary authority responsible for administering the fund. An annual report will be submitted to the Governor, Lt. Governor, State Treasurer, and General Assembly. The State Fiscal Accountability Authority will have final approval over any loan decisions.
- The authority is authorized to make and service below-market interest rate loans and grants as financial incentives to eligible fund recipients for the purchase of flooded properties and land to complete floodplain restorations. Eminent domain cannot be exercised.
- To operate the Fund, the authority will:
 - Prioritize the buyout of blocks or groups of homes so that no more than 15% of the funds disbursed in a fiscal year go toward single home buyouts (this would not prevent the fund for being used for individual home buyouts);
 - Prioritize buyout of single-family primary residences and multi-family residences;
 - Consider availability of additional funding sources leveraged by a project;
 - Prevent the use of the fund for homes built after July 1, 2020.

Loan Criteria and Conditions:

- Loans can be disbursed for buyouts of repetitive loss properties, buyouts of repetitive loss properties with land intended for floodplain restoration, and floodplain restoration in connection with buyouts funded through other mechanisms.
- Funds are prioritized for households making less than 125% of the median household income in an eligible fund recipient's area.
- Each recipient will be offered a package of grants and loans to fund the approved project which will carry a low overall effective interest rate— no higher than 40% of the market interest rate as defined by the 10-year US Treasury Yield Curve.
- The percentage of grants as an optional funding incentive can be no less than 5% and no greater than 25% of the total sum, and the grant percentage will be increased to promote applicants to incorporate beneficial flood mitigation into each project, including:
 - ensuring residents relocate outside of the floodplain
 - aiding residents in relocating outside of the floodplain and within the tax base
 - aiding residents in relocating outside of the floodplain and within an area designated as an Opportunity Zone
 - conducting floodplain restoration after the property is converted to open space to reestablish the full water storing benefits of the floodplain
 - completing a buyout of an area larger than 10 acres
- All acquired properties will be returned to open space and all future development on the parcel is prohibited in perpetuity through easement by requirement of the bill.
- No more than \$500,000 can be spent on each housing unit receiving loan funds.

Qualification for a Loan, Minimum Criteria:

- Any locality wishing to apply for this funding must submit a plan identifying the properties proposed for the project, how the properties qualify as repetitive loss properties, a plan outlining a timeline for returning the property to open space within 6 months following the completion of the buyout, a valid easement holder, an assessment showing the costs and benefits of the project, and any beneficial flood mitigation practices planned for the project.

Environmental Initiatives at the South Carolina Ports Authority

By: Mark Messersmith, South Carolina Ports Authority

SOUTH CAROLINA PORTS AUTHORITY

Environmental Initiatives

Mark Messersmith
Permitting Manager

Presented To:

City of Charleston

Resilience & Sustainability Committee Meeting

February 13, 2020



SC PORTS AUTHORITY

VISION & VALUES

TO BE THE
PREFERRED PORT
OF THE TOP 10
U.S. CONTAINER PORTS





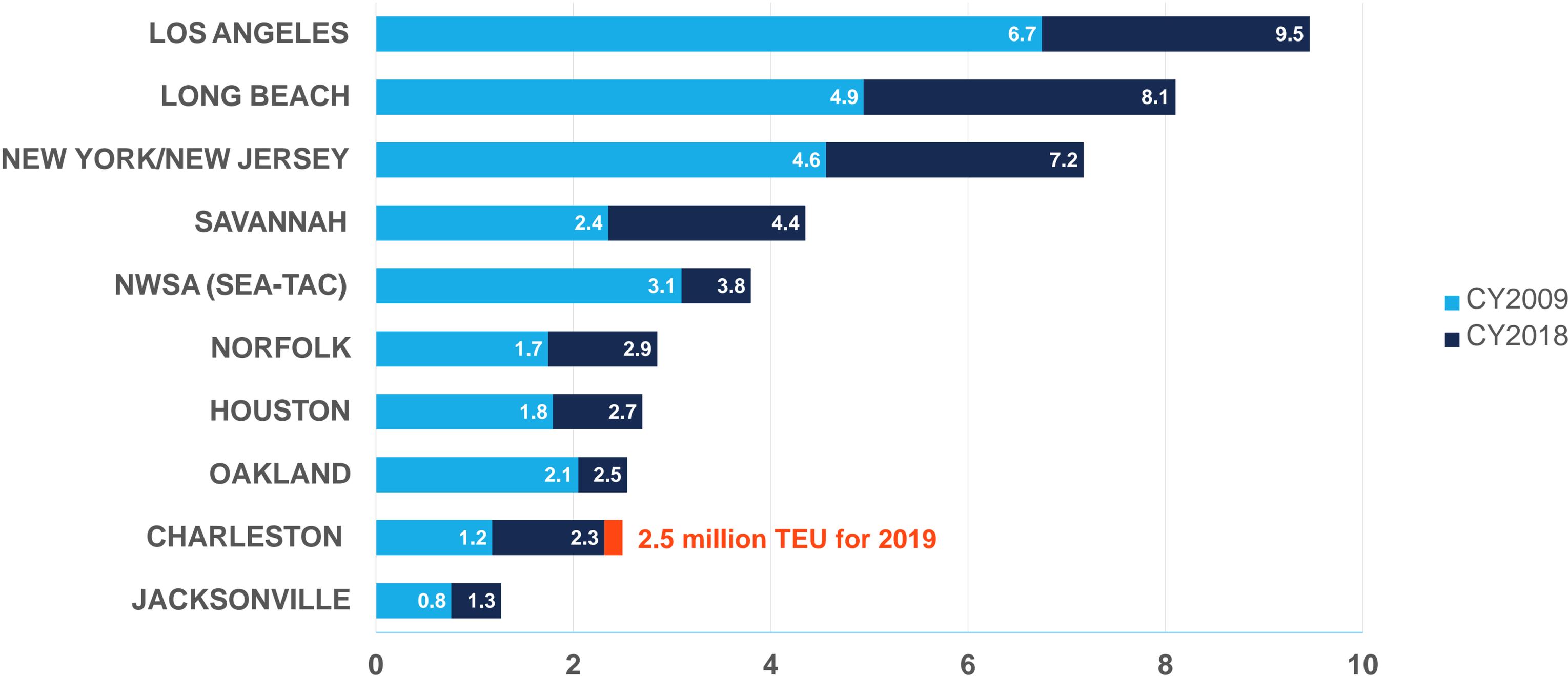
CHARLESTON HARBOR



TOP 10 U.S. CONTAINER PORTS

CONTAINER VOLUME

TEUS IN MILLIONS



SC PORTS OVERVIEW

**FASTEST GROWING
TOP 10 US
CONTAINER PORT**

2009-2019

8%

CAGR

- **Best Performing Port on All Standard Industry Metrics:**
 - 45 Minute Gate Turn Times Including Queue
 - 35 Moves per Hour Crane Productivity
 - 100 Moves per Hour Berth Productivity
 - Lowest Total Cost (stevedoring/terminal/assessments)
- **Wando Terminal Densification Leading to 2.4 million TEU Capacity by End 2020**
- **52 Foot Harbor Deepening Fully Funded and Construction Ongoing**
- **Phase 1 of Leatherman Terminal Opening March, 2021**
- **Significant Push into Retail Distribution and Export Resin Transloading = Cargo Base**
- **Robust and Effective Inland Port Development and Increasing Rail Volume**
 - 24% Intermodal Container Rail

OUTLINE

- Air Emissions / Energy Consumption
 - New Marine Container Terminal Innovations
 - Inland Ports
 - Dominion Energy – LED retrofit
 - Air Emission Monitoring and Reduction Efforts
- Habitat Creation Projects
- Responsible Landscape Scale Mitigation



Mobile Sources Include

- Ocean Going Vessels
- Cargo Handling Equipment
- Trucks
- Rail
- Harbor Craft (Tugs/Pilots/etc.)

SCPA Air Emission Reduction Efforts

- Inventories
- Electrification
- Repowers/upgrades
- Monitoring
- Clean Trucks
- Affiliations/Memberships
- Mitigation Efforts

AIR EMISSIONS



HUGH LEATHERMAN TERMINAL ENERGY INNOVATIONS

Installation of LED fixtures on street poles to provide supplemental lighting to high mast lighting and increase light levels only were needed.

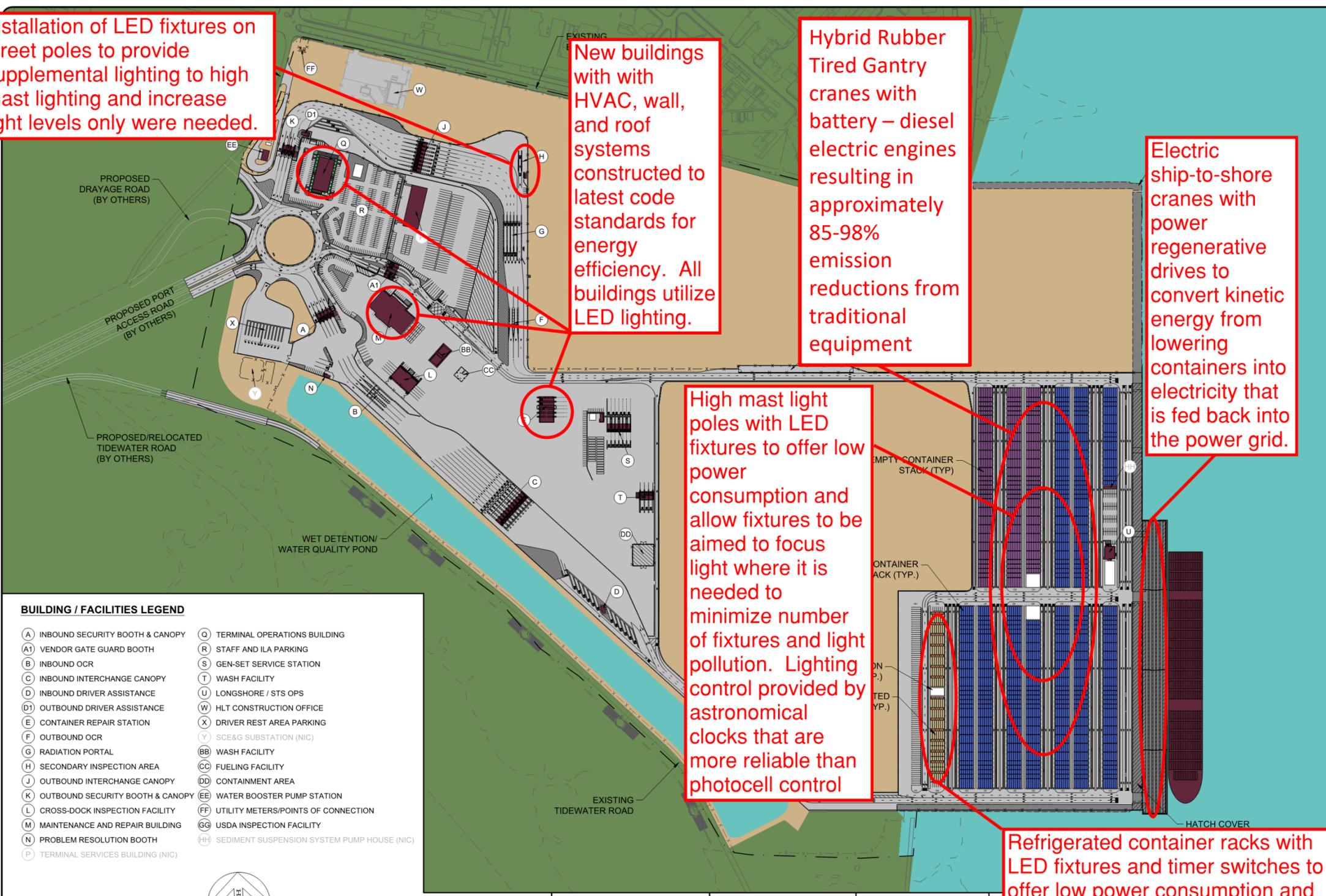
New buildings with with HVAC, wall, and roof systems constructed to latest code standards for energy efficiency. All buildings utilize LED lighting.

Hybrid Rubber Tired Gantry cranes with battery – diesel electric engines resulting in approximately 85-98% emission reductions from traditional equipment

Electric ship-to-shore cranes with power regenerative drives to convert kinetic energy from lowering containers into electricity that is fed back into the power grid.

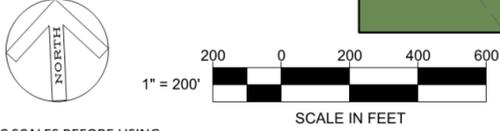
High mast light poles with LED fixtures to offer low power consumption and allow fixtures to be aimed to focus light where it is needed to minimize number of fixtures and light pollution. Lighting control provided by astronomical clocks that are more reliable than photocell control

Refrigerated container racks with LED fixtures and timer switches to offer low power consumption and avoid lights being left on all night when they are not needed.



BUILDING / FACILITIES LEGEND

(A) INBOUND SECURITY BOOTH & CANOPY	(Q) TERMINAL OPERATIONS BUILDING
(A1) VENDOR GATE GUARD BOOTH	(R) STAFF AND ILA PARKING
(B) INBOUND OCR	(S) GEN-SET SERVICE STATION
(C) INBOUND INTERCHANGE CANOPY	(T) WASH FACILITY
(D) INBOUND DRIVER ASSISTANCE	(U) LONGSHORE / STS OPS
(D1) OUTBOUND DRIVER ASSISTANCE	(W) HLT CONSTRUCTION OFFICE
(E) CONTAINER REPAIR STATION	(X) DRIVER REST AREA PARKING
(F) OUTBOUND OCR	(Y) SCE&G SUBSTATION (NIC)
(G) RADIATION PORTAL	(BB) WASH FACILITY
(H) SECONDARY INSPECTION AREA	(CC) FUELING FACILITY
(J) OUTBOUND INTERCHANGE CANOPY	(DD) CONTAINMENT AREA
(K) OUTBOUND SECURITY BOOTH & CANOPY	(EE) WATER BOOSTER PUMP STATION
(L) CROSS-DOCK INSPECTION FACILITY	(FF) UTILITY METERS/POINTS OF CONNECTION
(M) MAINTENANCE AND REPAIR BUILDING	(GG) USDA INSPECTION FACILITY
(N) PROBLEM RESOLUTION BOOTH	(HH) SEDIMENT SUSPENSION SYSTEM PUMP HOUSE (NIC)
(P) TERMINAL SERVICES BUILDING (NIC)	



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DRAWINGS MAY BE REDUCED. CHECK GRAPHIC SCALES BEFORE USING

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South Carolina PORTS AUTHORITY	ENGINEERING DEPARTMENT P.O. BOX 22287 CHARLESTON, SC 29413 Ph: (843)856-7048 FAX: (843)856-7067
	HUGH K. LEATHERMAN, SR. TERMINAL SITE DEVELOPMENT GENERAL ARRANGEMENT - PHASE 1
FILE NAME	GA001.DWG
DATE	JULY 2018
SCALE	GRAPHIC
PROJECT NUMBER	CIFCRT311
DRAWN BY	TNG
CHECKED BY	VA
APPROVED BY	PJH
SHEET NUMBER	GA001
REVISION NO.	0

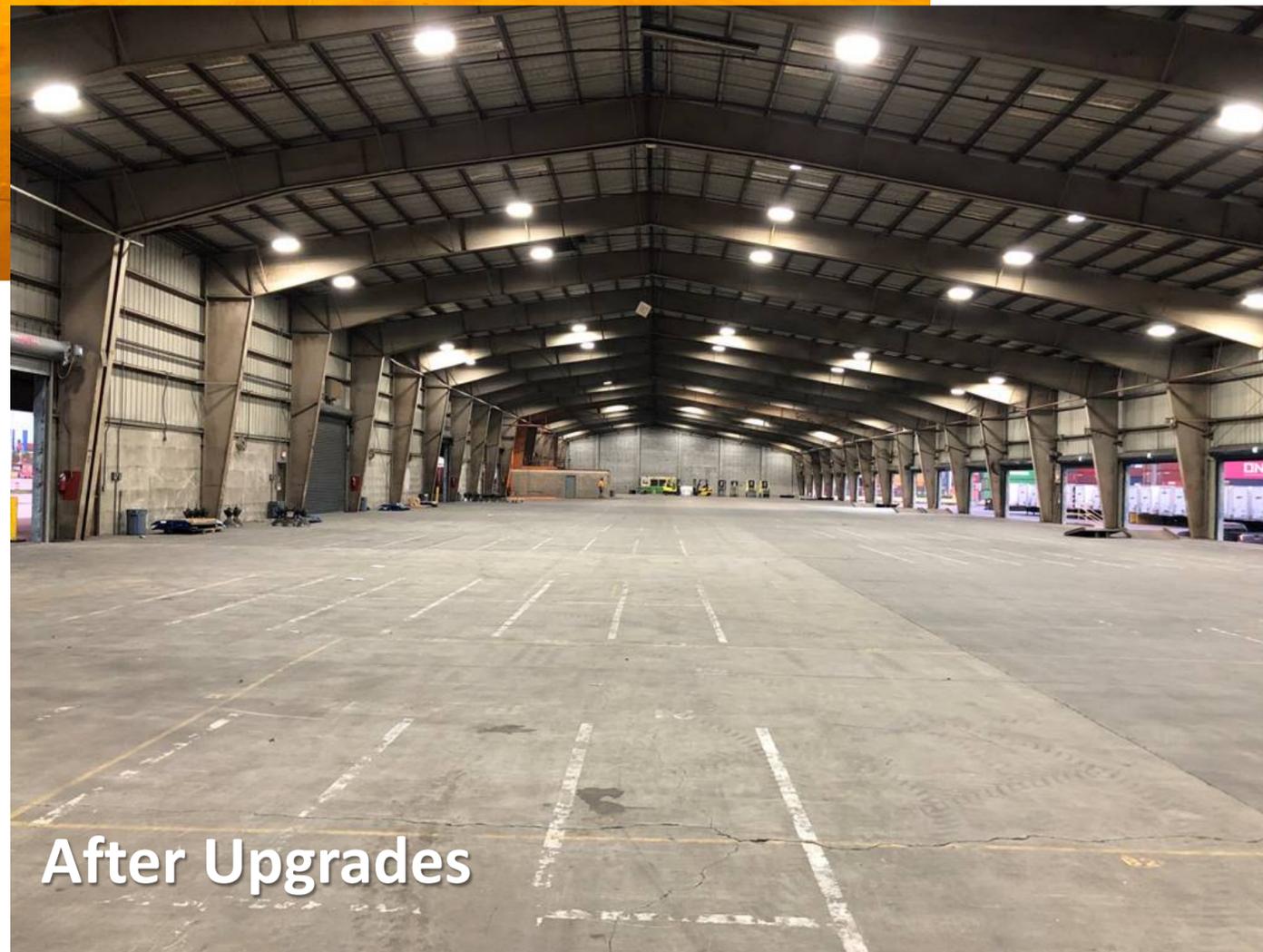


**Dominion
Energy[®]**

SCPA LIGHTING UPGRADES

- Dominion Energy's EnergyWise program
- ~\$70,000 in lighting incentives from Dominion
- New LED light fixtures
- Reduces energy consumption by ~77% or about 826,000kWh/year
- Delivers enhanced operations for customer

Before Upgrades



After Upgrades

SOUTH CAROLINA INLAND PORTS

INLAND PORT GREER

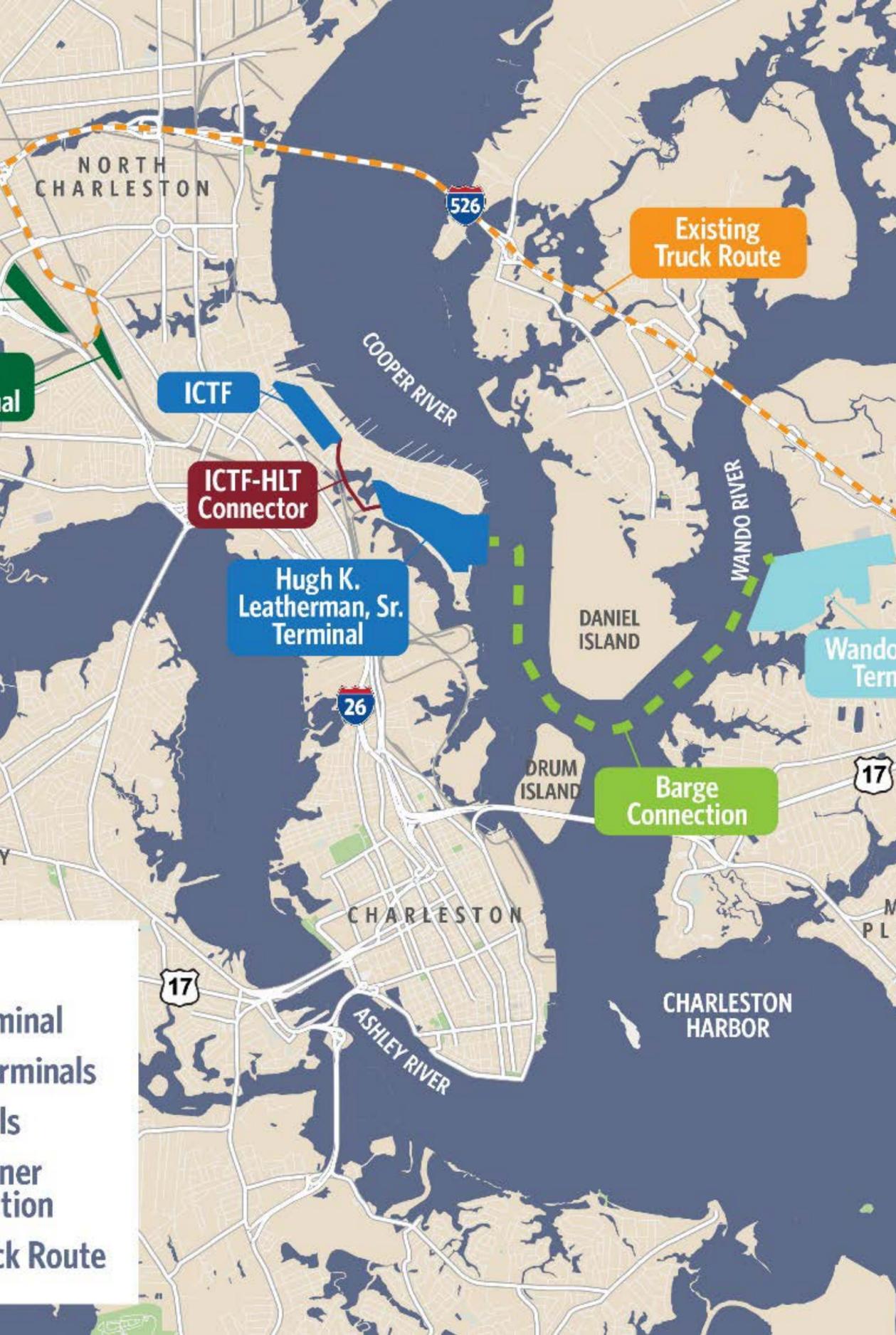


INLAND PORT DILLON



CONTAINER BARGE OPERATION

REDUCING EMISSIONS AND CONGESTION



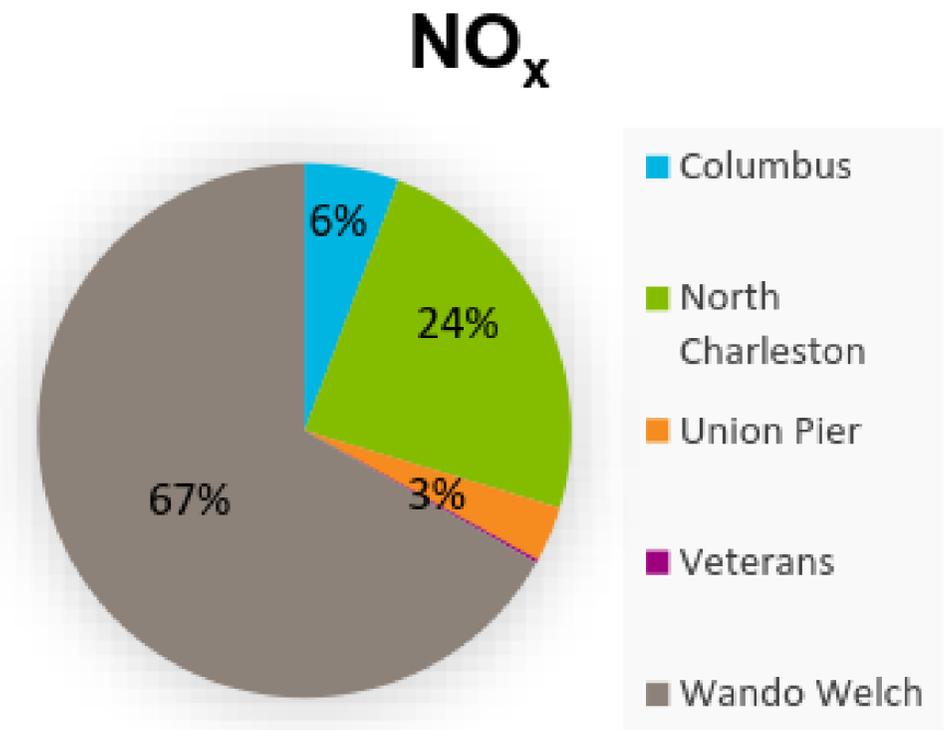
- Transport containers by barge between the Wando Welch Terminal (WWT) and the Hugh K. Leatherman, Sr. Terminal (HLT) for delivery to the Navy Base Intermodal Facility (NBIF) by private drayage road
- Provides cost-effective movement of cargo
- Reduces the number of truck trips to local rail yards resulting in:
 - **Reduced traffic congestion**
 - **Reduced potential for accidents**
 - **Reduced emission of air pollutants**
- Protects against increase in trucking costs and delays due to current and future driver shortage

SCPA AIR MONITORING



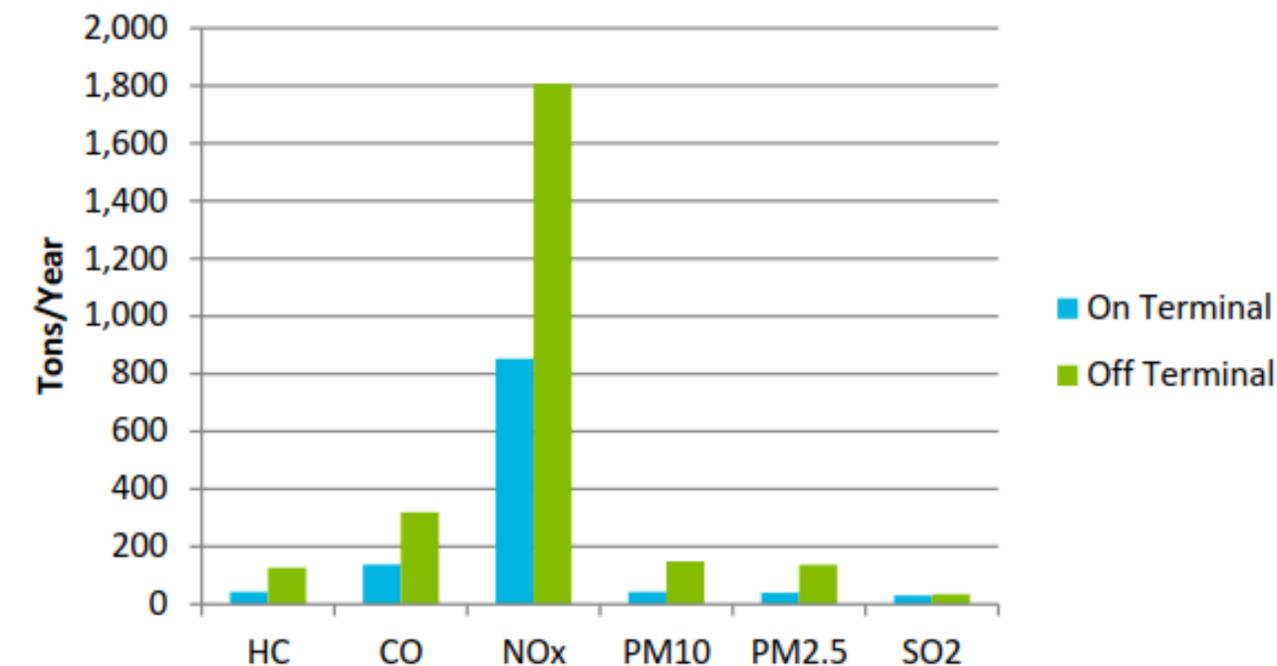
2017 SCPA Emissions Summary

Source Category	NO _x	CO	PM ₁₀	PM _{2.5}	HC	SO ₂
Ocean Going Vessels	1,775.4	217.5	150.8	138.9	120.2	62.6
Tug Boats	94.0	18.7	1.9	1.9	5.9	1.8
Heavy Duty Vehicle - Trucks	633.1	173.3	32.1	29.5	37.2	1.1
Rail	37.6	6.1	0.8	0.8	2.1	0.0
Container Handling Equipment	119.7	41.0	5.3	5.2	7.9	0.2
Total	2,659.8	456.5	190.9	176.3	173.3	65.7



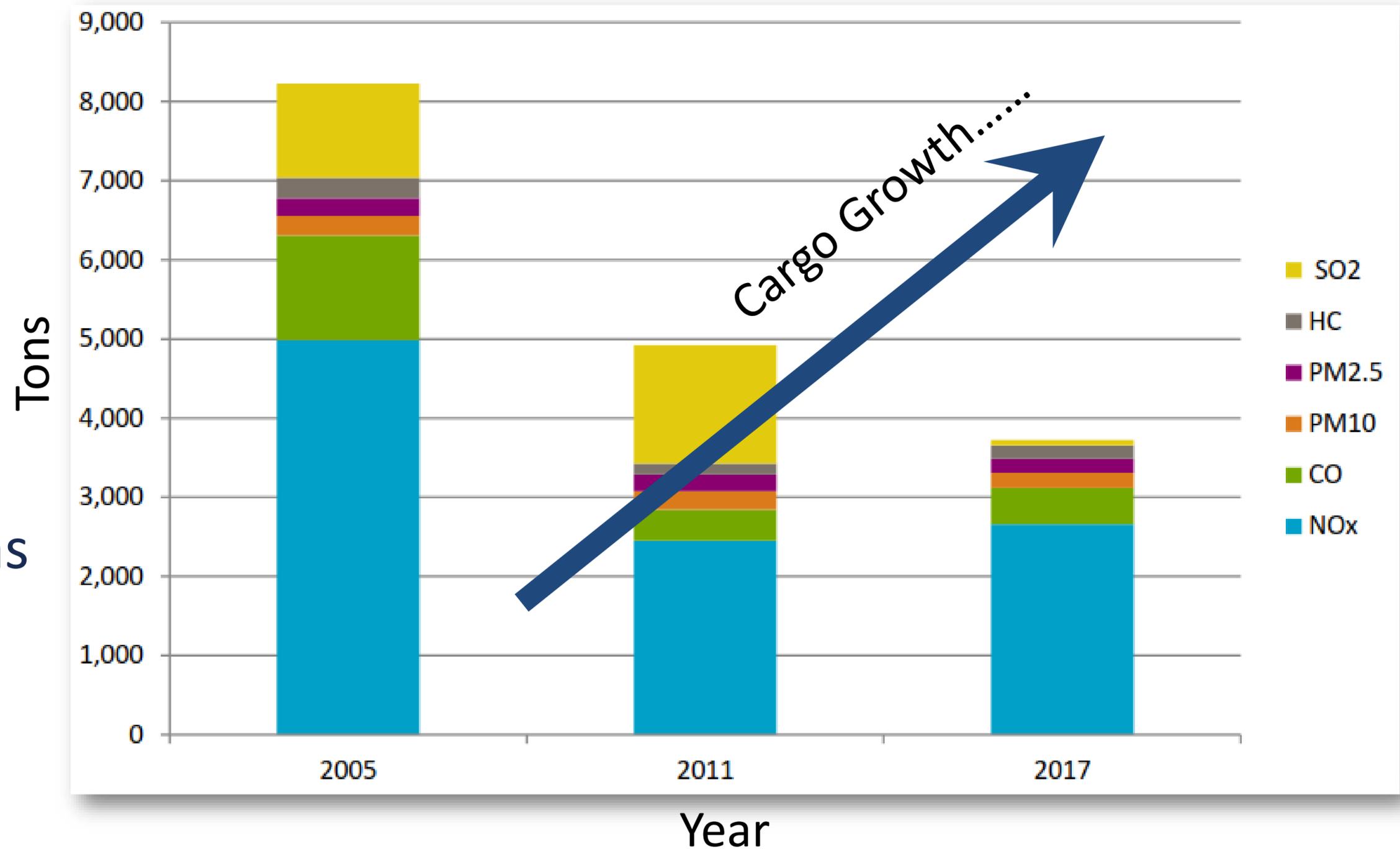
- NO_x emissions are the largest among the pollutants quantified.
- Wando Welch Terminal accounts for the majority of the emissions.
- Ocean Going Vessels account for the largest percentage of emissions.

On/Off Terminal Emissions



Emissions Trends

- 96% SO₂ reduction (primarily from OGV)
- 18% reduction in PM
- Significant overall reduction in emissions since 2005 inventory



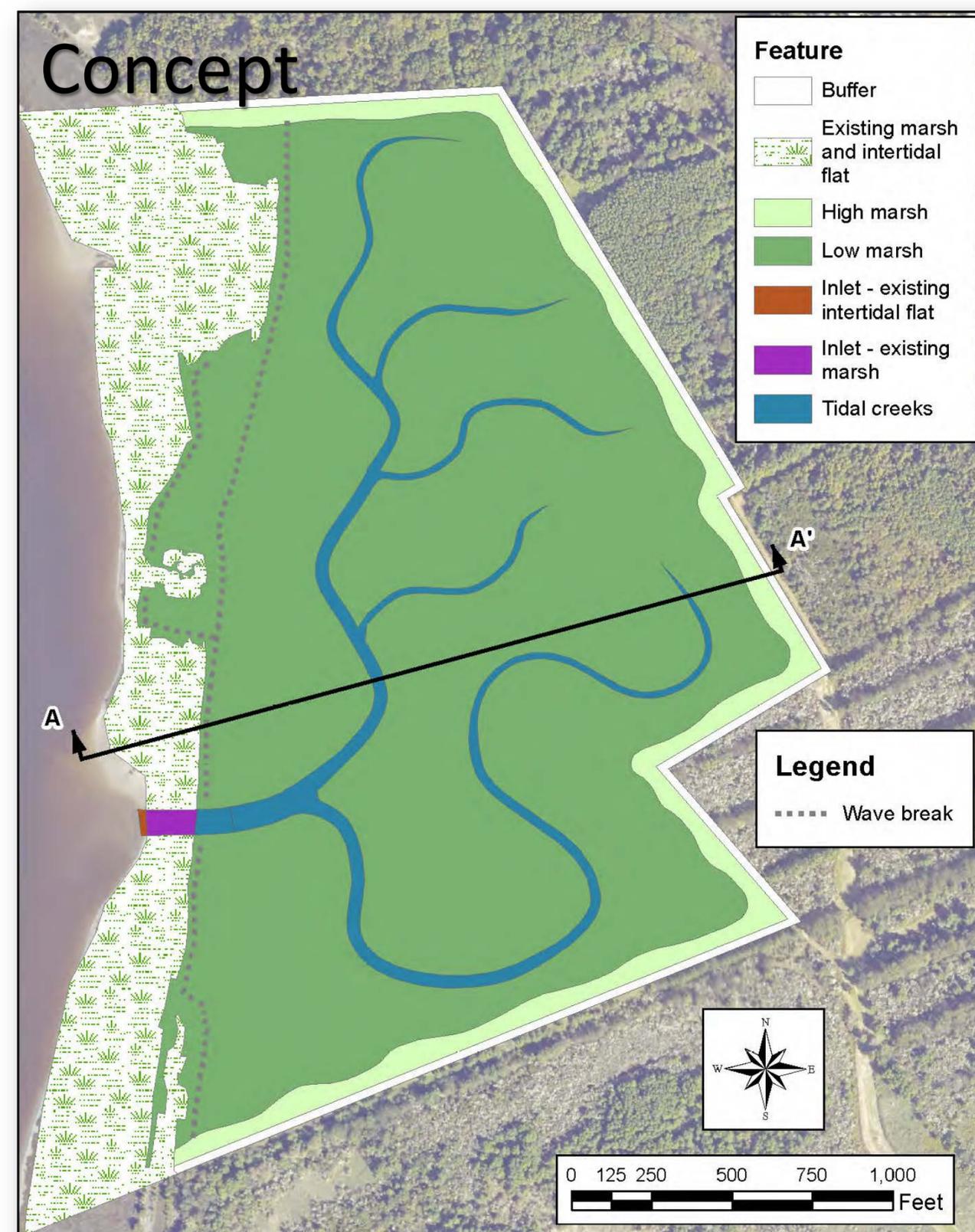
2019

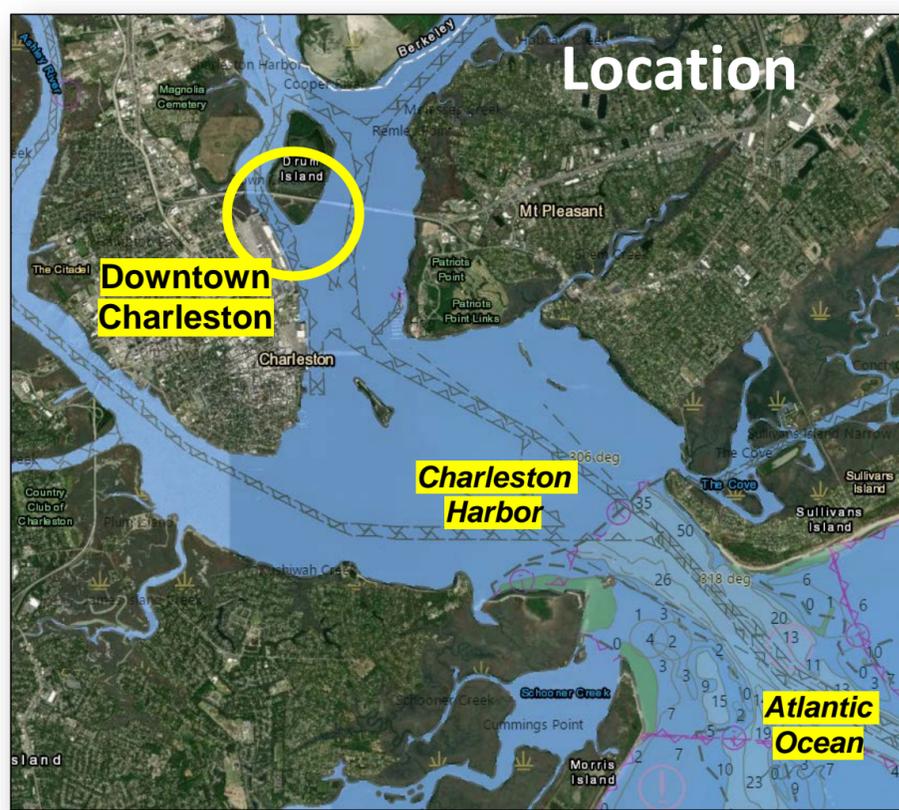
DIESEL EMISSION REDUCTION ACT GRANT FUNDING

- Repowers 12 Tier 2, single speed diesel genset powered RTG's
- Provides 12 brand new EcoCrane Hybrid Systems
 - Tier 4 variable throttle hybrid battery/genset systems
- Significant emission reduction (tons)
 - Annual – 0.987 HC ; 4.13 CO ; 21.43 No_x ; 0.856 PM_{2.5}
 - Lifetime – 9.87 HC ; 41.27 CO ; 214.28 NO_x; 8.56 PM_{2.5}



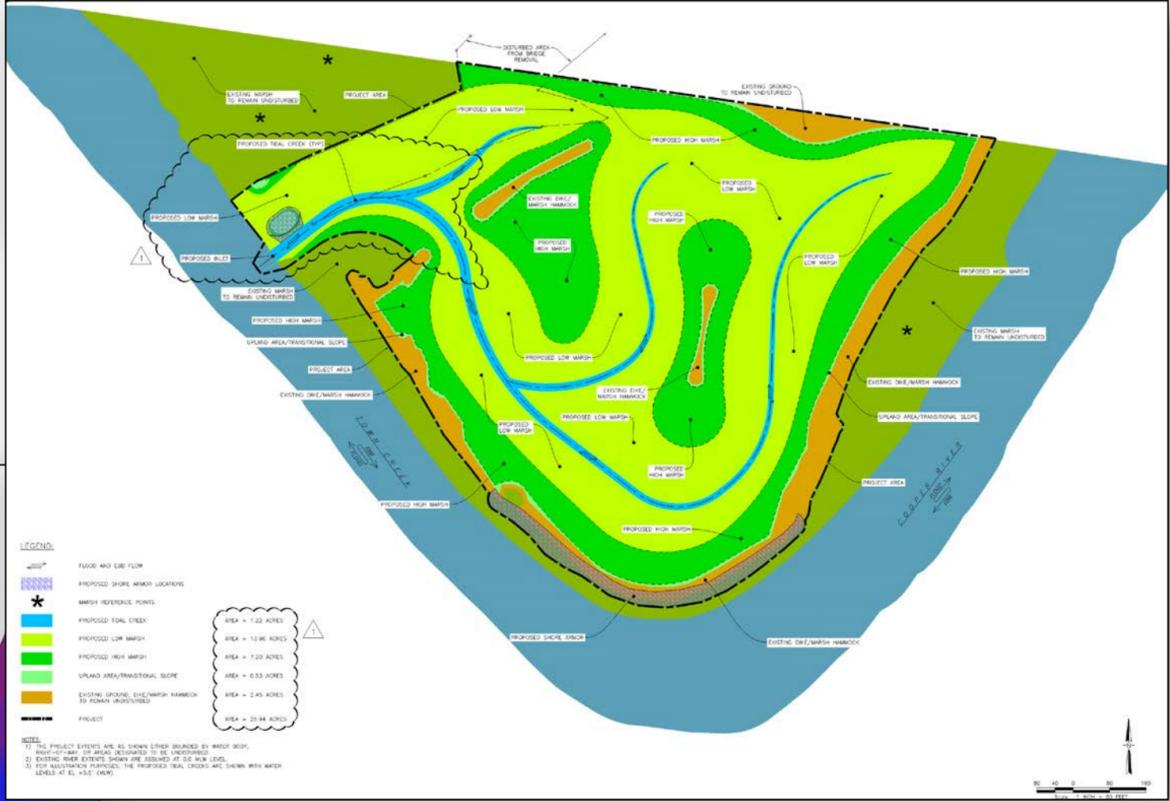
Daniel Island Saltwater Mitigation Bank





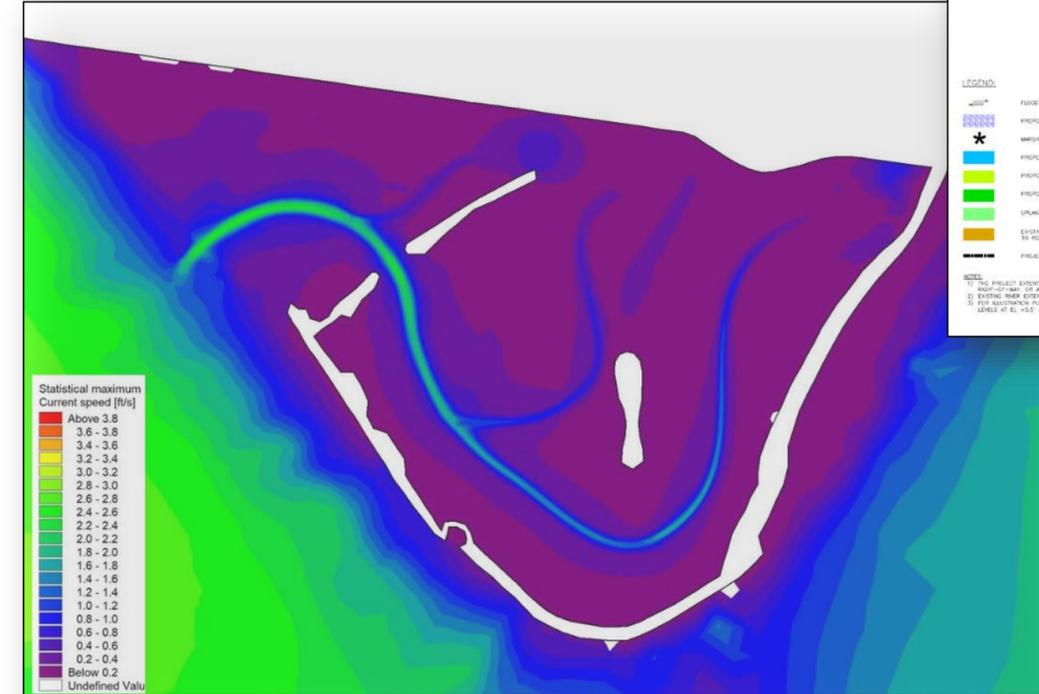
DRUM ISLAND MARSH RESTORATION

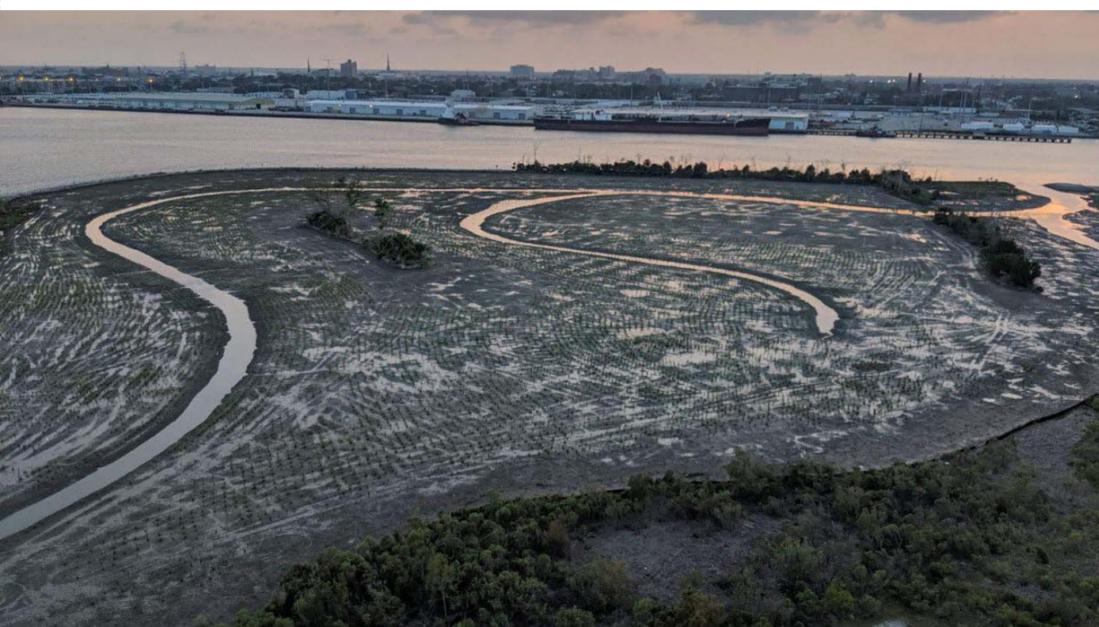
Construction Plans / Redesigns



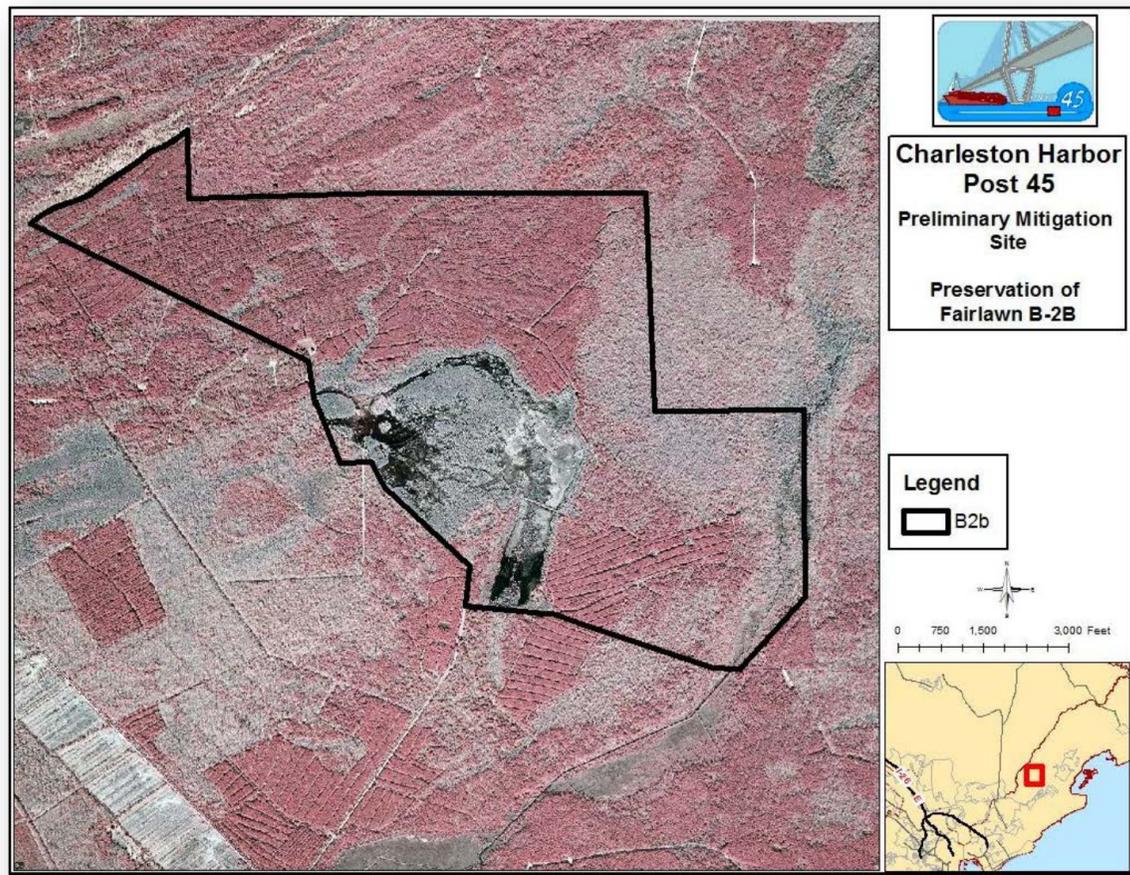
- True saltwater tidal wetland restoration (22+ acres)
- Part of the HLT mitigation package
- 110,519 CY soil removed
- 106,171 native plants
- \$3.4M construction cost

Extensive Modeling





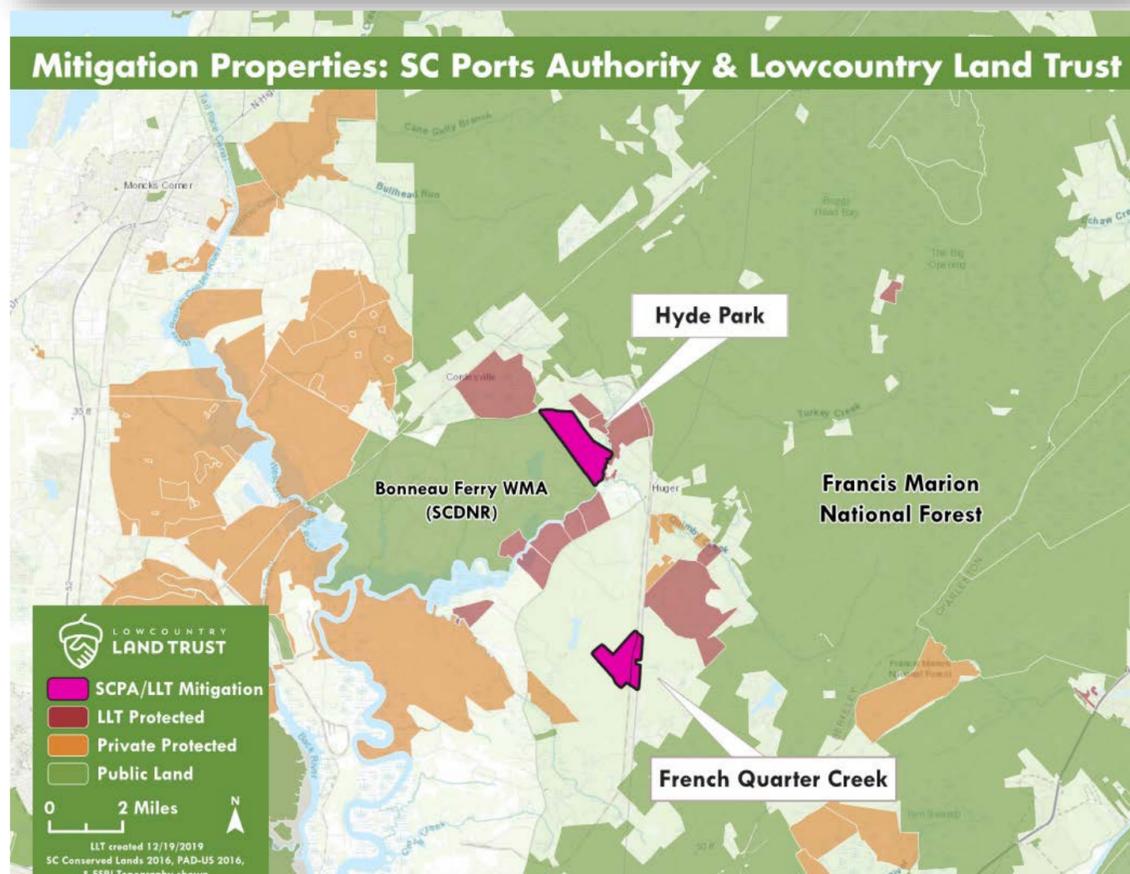
DRUM ISLAND MARSH RESTORATION



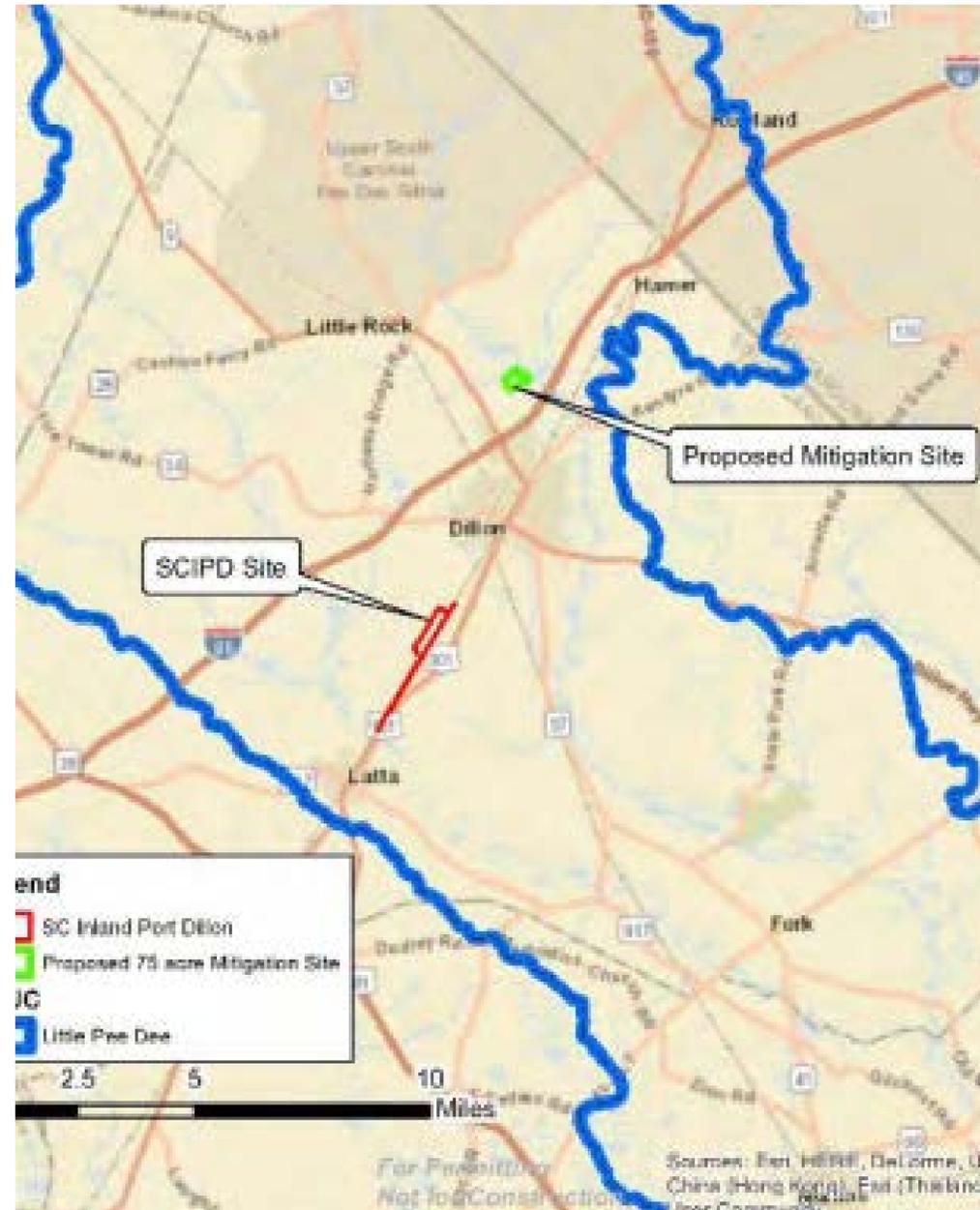
LAND PRESERVATION AND RESTORATION

More than *2250 acres* of land preserved/restored since 2016

- Fairlawn Plantation
 - Part of the Charleston Harbor deepening project mitigation
 - Preserves freshwater wetlands to mitigate for indirect wetland impacts associated with harbor deepening
 - Restoration of longleaf pine plantation
 - Conveyance to US Forest Service for inclusion in Francis Marion National Forest
- Lowcountry Land Trust Partnership
 - Hyde Park Plantation
 - French Quarter Creek



INLAND PORT DILLON WETLAND PRESERVATION



- 78 acres
- Restored wetland connectivity
- Long Term Stewardship – Pee Dee Land Trust



South Carolina's Watershed Resources Registry

VALUE-BASED
MAPPING

BROAD
SECTORS

BUILT

NATURAL

SOCIAL

VALUE
CRITERIA

WATER

ENERGY

FORESTRY

AGRICULTURE

CONNECTIVITY

DEVELOPMENT

**ENVIRONMENTAL
CONSERVATION**

RECREATION

**CULTURAL
RESOURCES**

TOURISM

MEASURABLE
METRICS

- WATER**
- PUMPICATION
 - QUANTITY
 - RELIABILITY
 - FLOOD ZONE DESIGNATION
 - SALTWATER INTRUSION
 - DRINKING WATER INFRASTRUCTURE
 - WASTEWATER INFRASTRUCTURE

- ENERGY**
- LOCATION VALUE
 - PIPELINE INFRASTRUCTURE
 - TRANSMISSION INFRASTRUCTURE
 - INCLUSIVE POWER GENERATION
 - RENEWABLE ENERGY RESOURCES
 - CAPACITY
 - POWER GENERATION

- FORESTRY**
- CARBON SEQUESTRATION
 - FLOOD STORAGE
 - TIMBER VALUE
 - ECONOMIC VALUE
 - SUSTAINABILITY
 - SPECIES DIVERSITY
 - WATER QUALITY AND QUANTITY

- AGRICULTURE**
- SOIL ANALYSIS
 - CROP YIELD/YIELD VALUE
 - SUNOFF
 - CERTIFIED SC BROWN FARMS
 - SUPPLY/DEMAND
 - DISTRIBUTION/PROCESSING
 - WATER RESOURCES

- CONNECTIVITY**
- WATERWAY NAVIGABILITY
 - ROADWAY INFRASTRUCTURE
 - BROADBAND
 - AIRPORTS
 - TRAILS
 - RAILWAYS
 - MASS TRANSIT

- DEVELOPMENT**
- EXISTING INDUSTRY AND BUSINESS
 - IDENTIFIED SITES
 - IMPERVIOUS SURFACES
 - ZONING
 - PERMITTING PROCESS
 - MITIGATION OPPORTUNITIES
 - GEOTECHNICAL
 - BROWNFIELDS/SUPERFUND SITES

- ENVIRONMENTAL CONSERVATION**
- WILDLIFE HABITATS
 - ENDANGERED SPECIES
 - PROTECTED LANDS

- RECREATION**
- PROTECTED LANDS
 - TRAILS
 - BEACHES
 - SPECIFIC RECREATION SPOTS
 - GARDENING PLOTS
 - BIRDING

- CULTURAL RESOURCES**
- PRESERVATION VALUE
 - HISTORIC LANDS
 - CEMETERIES
 - ARCHAEOLOGICAL SITES
 - ARTISTIC LANDMARKS
 - HISTORIC AND CULTURAL MARKERS/SITES
 - HISTORIC TRAILS

- TOURISM**
- ECOTOURISM
 - FESTIVALS
 - HOTEL ROOMS
 - CAMPSITES
 - ACCOMMODATION TAX
 - AIRPORTS
 - AGRI-TOURISM
 - WINERIES, BREWERIES, DISTILLERIES

**OPTIMAL
LAND USE**



STRIVING TO BE THE GREENEST
PORT IN THE SOUTHEAST



**SOUTH
CAROLINA
PORTS**

THE WORLD CONNECTS HERE

THANK YOU.

Public Comment Period