

Work Order 1 Overview:
Blue-Green Stormwater Infrastructure,
Road Elevation Strategy, and
Neighborhood Prioritization

July 19, 2019

Presented to Miami Beach Sustainability Resiliency Committee

JACOBS

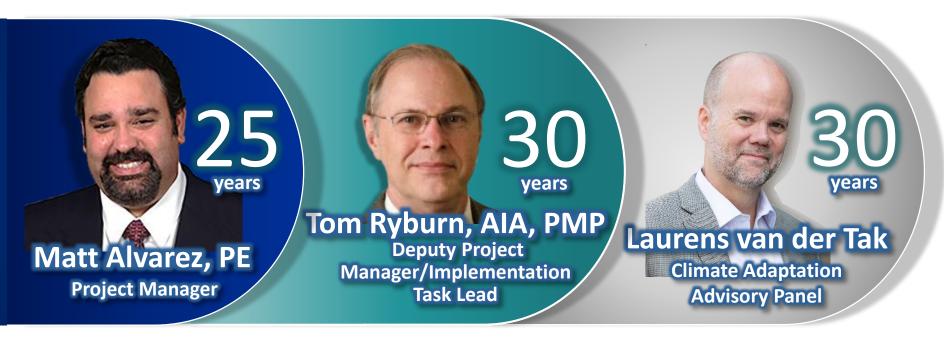
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Meeting Agenda

- Team Introductions and Meeting Objectives
- Overview of Task Activities and Schedule for Jacobs Work Order 1
- Public Meeting August 27th



Jacobs
Work Order 1
Leadership
Team



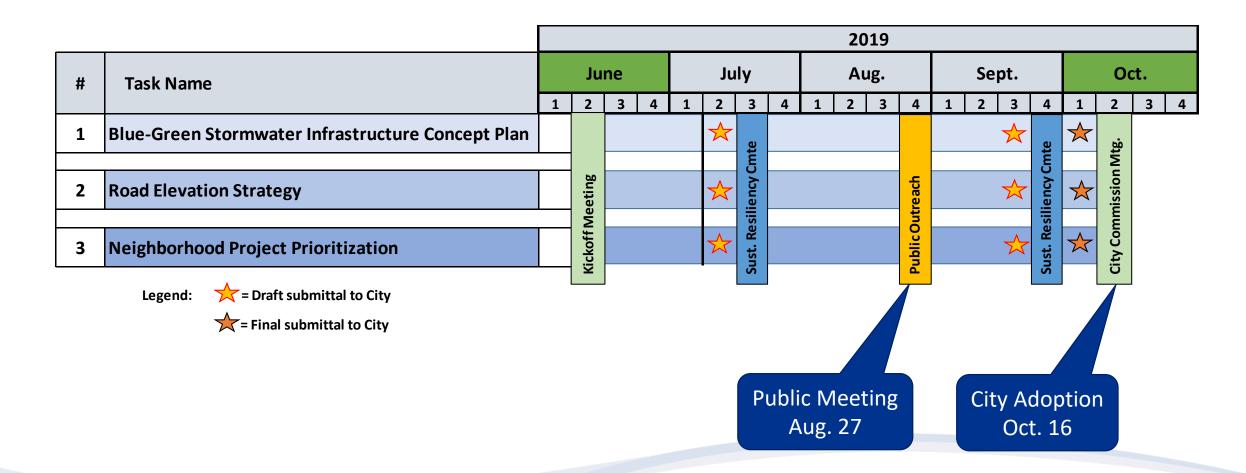


Overview of Work Order 1

- Focused on three tasks based on City's initial priorities:
 - Task 1: Blue-Green Stormwater Concept Plan
 - Task 2: Road Elevation Strategy
 - Task 3: Neighborhood Prioritization
- First steps to support ultimate development of Integrated Water Management Strategy, which would address longer-term goals articulated by Urban Land Institute (ULI) for integrated flood management solutions.
- Relies on available data and builds on work done to date.
- Aggressive 5 months schedule allows for implementation to start this year.



Work Order #1 Proposed Schedule

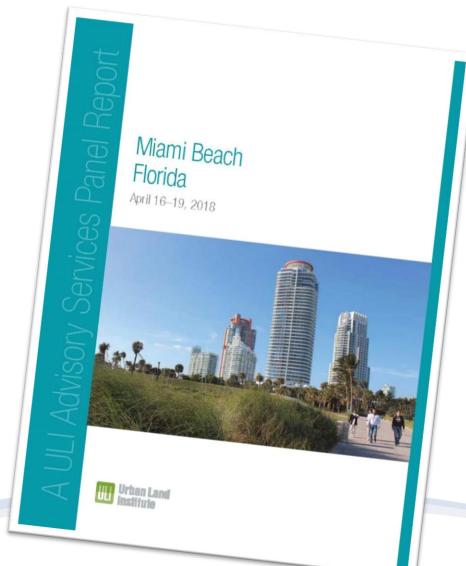




ULI Report: 43 Recommendations in 7 Categories and 10 Guiding Principles

ULI Guiding Principles:

- Maintain Urgency
- Use Incrementalism Phases and Evaluation
- Ensure Transparency
- Respecting the City's Ecological Endowment
- Exercise Financial Pragmatism
- Recognize Co-benefits
- Prioritize Social Equity
- Preserve Cultural Identity
- Living with Water
- Take a Long-Term and Regional Perspective

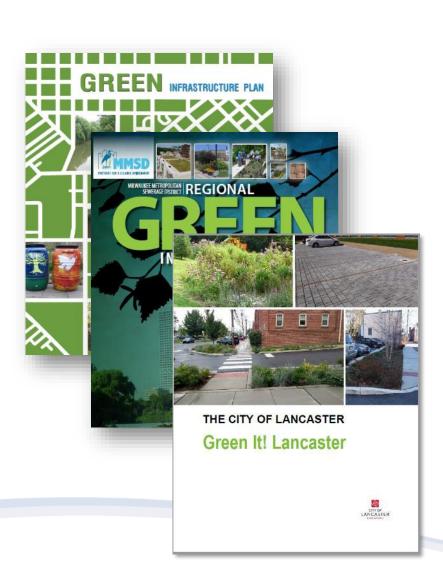


Blue-Green Stormwater Infrastructure Concept Plan

- Goals, Objectives, and Definitions
- BGSI Practices and Implementation Scenarios
- BGSI Concept Development
- Task Deliverable

Blue-Green Stormwater Infrastructure Goals/Definitions

- Strategic Goals
 - Water quality benefits
 - Flood mitigation (limited potential)
 - Groundwater recharge
 - Co-Benefits: social, environmental, economic
 - Living with Water: innovative urban design solutions
- Task Objectives
 - Blue-Green Concept Plan
 - Establish menu of applicable BGSI Practices & Strategies
 - Develop Miami Beach-specific project concepts and renderings that demonstrate how to achieve objectives
- Blue and Green Infrastructure Defined

















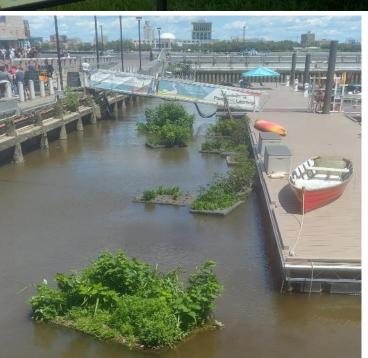
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Educational Center

Restored Cypress Swamp











Rotterdam Watersquare by De Urbanisten



Miami Beach Integrated Water Management ~ Rising to the Challenge

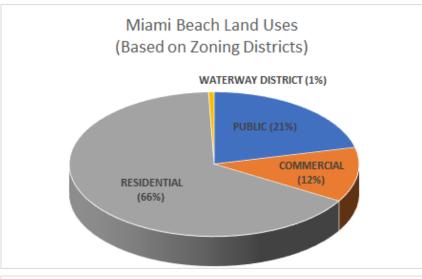
Gordon River

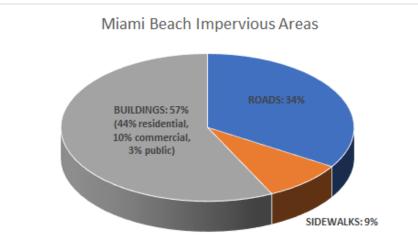
Wetlands

Potential Blue and Green Implementation

Scenarios

- Public
 - Parks/Open Spaces/Golf
 - Commercial Streets
 - Residential Streets
 - Schools and Other Facilities
- Commercial
 - Office
 - Parking
- Residential
 - Single-Family
 - Multi-Family

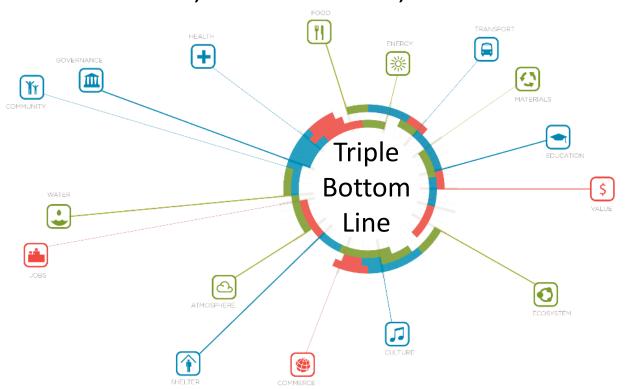






Delivering Blue-Green Solutions with Co-benefits

Social, Environmental, Economic



Innovative Urban Design



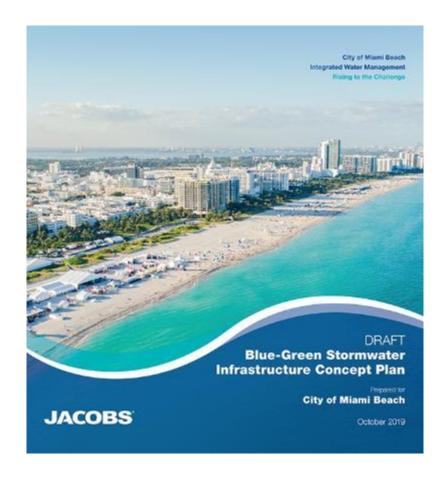


Outline of Blue-Green Concept Plan

- Introduction (Objectives, User's Guide)
- Miami Beach Context (land use, hydrology, topography, etc.)
- Blue-Green Infrastructure Practices and Strategies
 - Brief Description of Practices
 - Implementation Strategies / Scenarios
 - Practice selection process
- Site Concepts and Renderings
- Recommendations

Meant for a Wide Range of Users

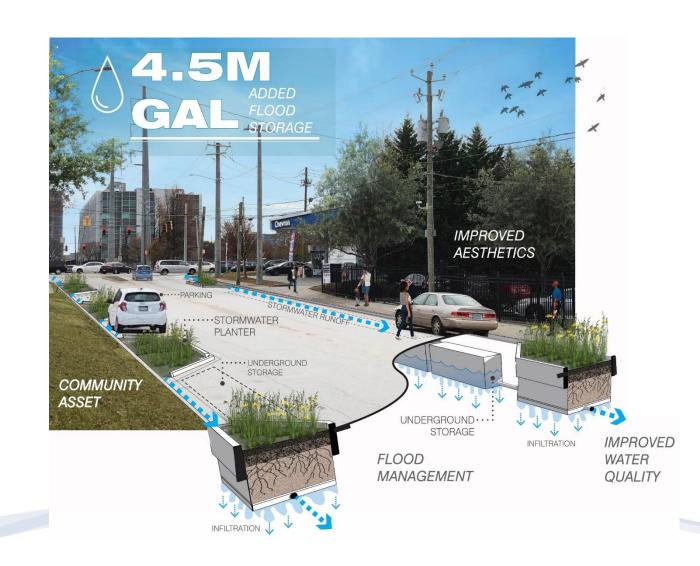
Intended to inform Master Planning, CIP Planning, Design Criteria Packages (DCPs), New Development and Other Policies





Summary and Next Steps for Blue Green

- Blue-green concept plan
 - Finalize practices and implementation scenarios
 - Develop example concepts for specific projects
- SRC feedback & endorsement
- Public engagement
 - City-wide public meeting on Aug. 27
- SRC in September
- Adoption by Full Commission in October





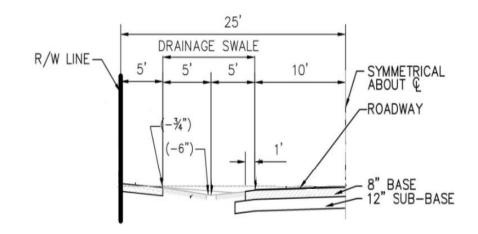
Road Raising Strategy

- Task Goals and Objectives
- Policy History and Changing Conditions
- Sea Level Rise Projections
- Importance of Flexible Policies to Harmonize with Existing Conditions



Road Elevation Strategy – Goals and Objectives

- Validate use of road raising as viable strategy to mitigate flooding
- Validate City minimum road crown elevation standard of 3.7 feet NAVD88 or other elevation(s) and associated design criteria
- Build on previous analysis; update with new sea level rise (SLR) projections
- Review and update private property harmonization approach
- Develop and recommend adaptive, flexible policy to meet community needs



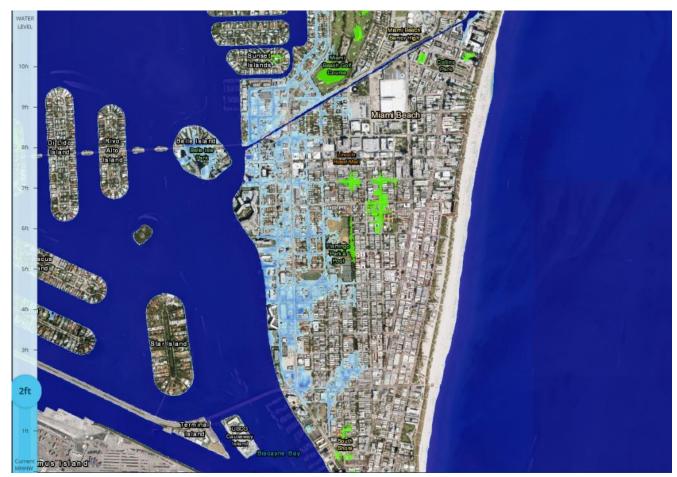


Road Raising Strategy – Policy History and Changing Conditions

- Established in 2014 based on tide records and previous SLR projections
 - 2013 king tides (1.7 ft) + 1.0 ft SLR (30-year planning horizon) + 1.0 ft for road base = 3.7 ft NAVD
- Conditions and Projections have changed:
 - Extreme tidal events in recent years that exceed 1.7 ft NAVD
 - Updated SLR projections: 0.5-ft increase (2012 vs. 2017 NOAA int. high curve)
- Task will evaluate how the higher boundary condition and new SLR projections may influence the policy



Sea Level Rise Projection Update

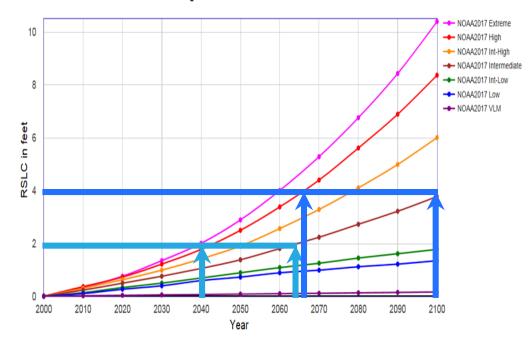


NOAA 2017

Updated SLR Projections:

- NOAA 2017
- SE FL Climate Compact 2015 (updates anticipated in late 2019)

NOAA et al. 2017 Relative Sea Level Change Scenarios for : MIAMI BEACH



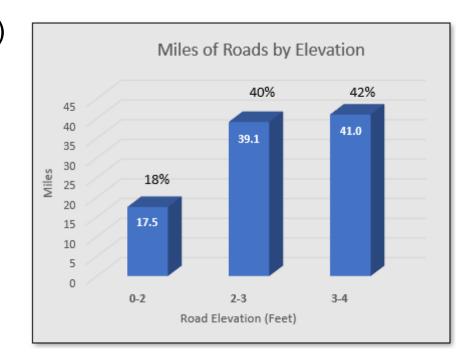
Flexible Policies for Existing Condition Harmonization

Considerations for road raising policy:

- Road type (residential, commercial, light vs. heavy duty)
- Road classification (arterial, collector, local, county, state)
- Pavement service life (asphalt wear course resurfacing)
- Increased MHHW tidal elevation and sea level rise
- Adjacent property types, topography and drainage situation

Flexible design considerations:

- Alternative materials (black base, concrete, soil cement)
- Adaptive capacity design approach (incremental elevation)





Complete Property Flooding

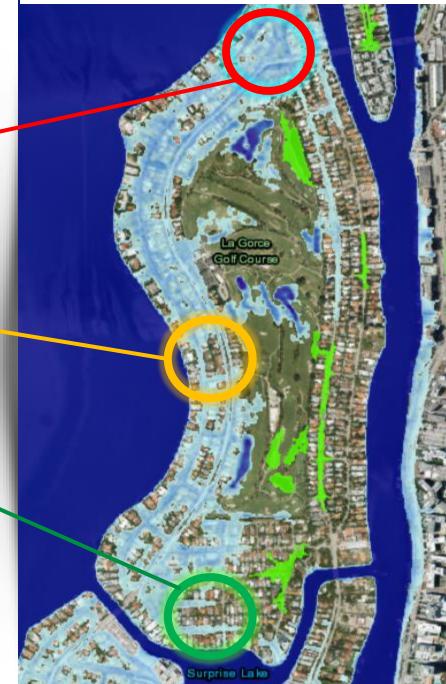
(12+ inches)

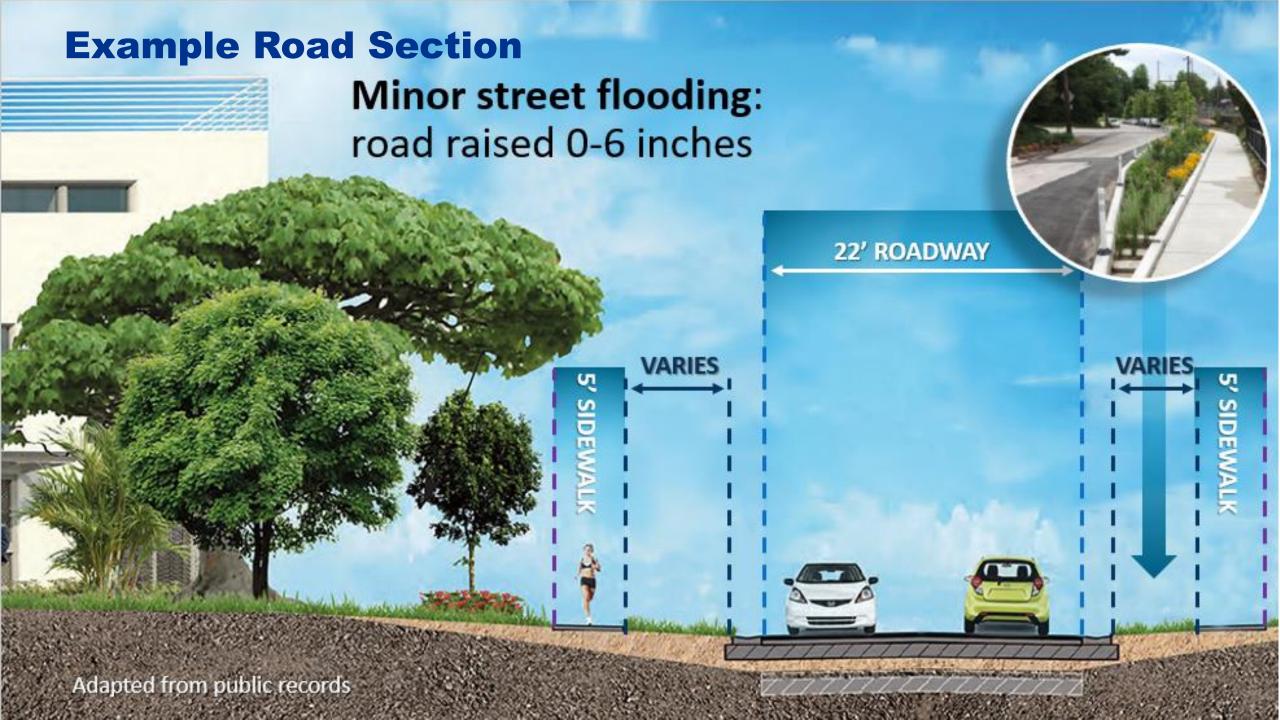
Partial Property Flooding (6–12 inches)

Street Flooding (0-6 inches)

- Phasing & prioritization
- Technical, financial, ecological and community rationale

High tide with 3 ft of sea level rise







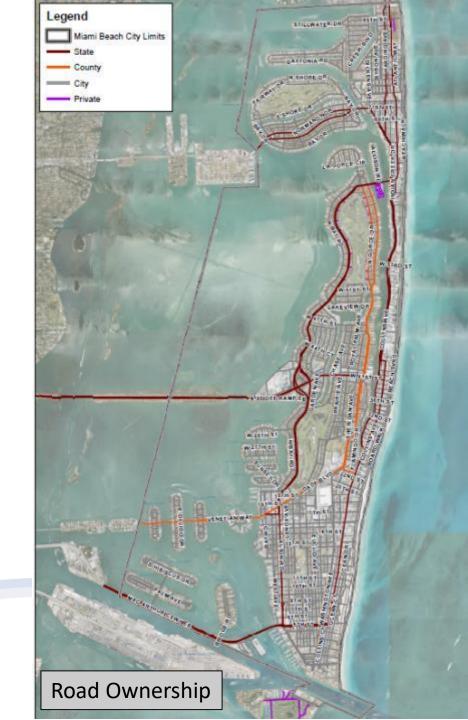
Neighborhood Project Prioritization

- Task Goals and Objectives
- Unbiased Process to Develop and Apply Methodology
- Example Metrics to be Considered



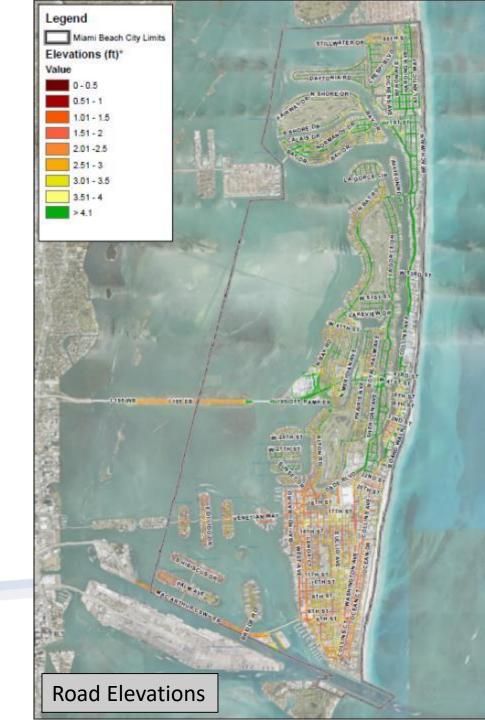
Project Prioritization - Goals and Objectives

- Identify neighborhood vulnerabilities and needs
- Define neighborhood/project boundaries
- Align with City Capital Improvement Program (CIP) and ongoing initiatives
- Develop evaluation matrix for project prioritization
- Inform capital investment and phasing



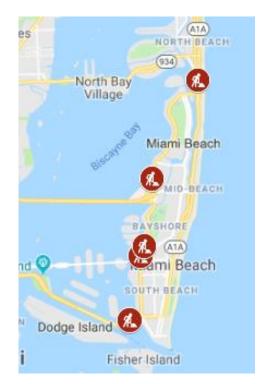
Example Neighborhood Prioritization Metrics

- Flood exposure (frequency & severity)
- Coordination with ongoing/planned projects:
 - Potable water distribution system
 - Wastewater collection system
 - Roadway projects
 - Streetlight improvements
- Roadway pavement (condition & repaving schedule)
- Emergency ingress/egress routes (evacuation)
- Critical facility access (hospital/emergency operations)
- Overall neighborhood needs



Project Prioritization – Unbiased Prioritization Methodology

- Establish and validate objective evaluation metrics
- Develop metric weighting based on alignment with City objectives
- Project review and boundary development & phasing
- Document and adopt methodology
- Apply methodology to projects for ranking and prioritization
- Develop implementation plan aligned with CIP



FDOT projects

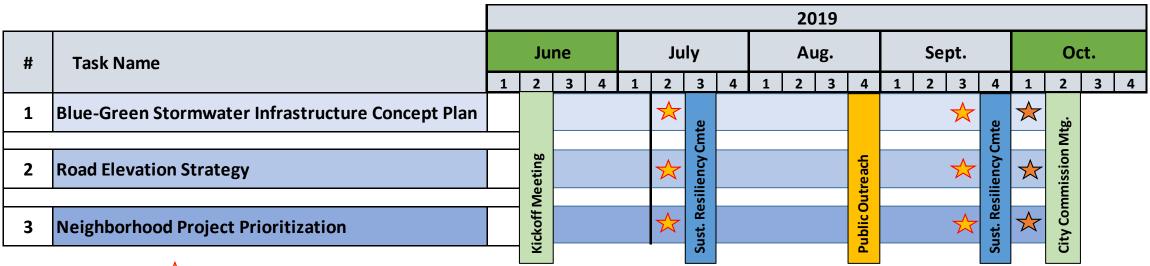


City-Wide Public Meeting

Meeting Planned for August 27th



Public Meeting Details



Legend: = Draft submittal to City
= Final submittal to City

- Provide overview and solicit public ideas and concerns
- Public Meeting Planned in Commission Chambers on August 27, 6:00 pm
- Virtual town hall through social media for remote participation and comments

- Comment period open for 1 week after meeting
- Advertised 3 weeks in advance, with twice-weekly blast
- Key message: product is a policy framework that can be addressed at a local level during project implementation



Questions?

Presented by Jacobs Engineering:

- Matt Alvarez
- Laurens van der Tak
- Andy Potts
- Jason Bird

