



Briefing on Climate Change

December 18, 2019

Agenda

- Contract Scope and Drivers
- Climate Analysis and Projections
- Facility Vulnerability Assessment and Adaptation Planning
- Greenhouse Gas Reduction Progress (Mitigation)
- Outline of FY'20 Tasks
- Questions



Contract Scope and Drivers

Climate Change Vulnerability Assessment, Adaptation and Mitigation Plan



- Determine local climate change effects

Task A



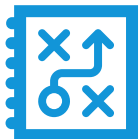
- Identify vulnerabilities and risks

Task B



- Assess impacts of climate change on local systems

Task C



- Identify resiliency and mitigation strategies

Task D

Status

Completed (years 1-4)

Task A - Determine local climate change effects

- Climate Projections
- Coastal and Riverine Modeling

For select riverine and coastal facilities

- Task B - Identify vulnerabilities and risks
- Task C - Assess impacts of climate change on local systems

Year Five (FY'20) Tasks

Tasks B and C for remaining facilities

Task D - Identify resiliency and mitigation strategies

Climate Analysis and Projections

Climate Change Threats

Rainfall, Extreme Storms, and Sea Level Rise



Precipitation Driven

Stormwater/ Drainage

2- to 10-year
storms



Localized flooding

Riverine

100-year
storms



Regional flooding



Coastal

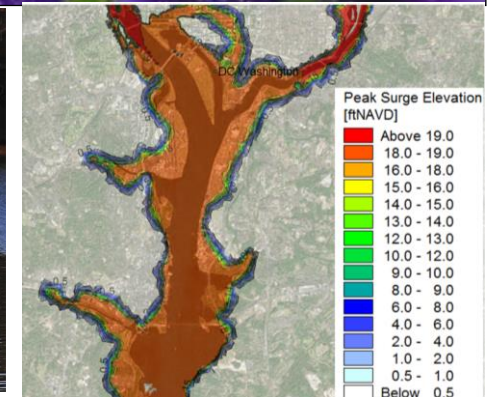
Sea Level Rise



Storm Surge



Flooding from
increased tide levels

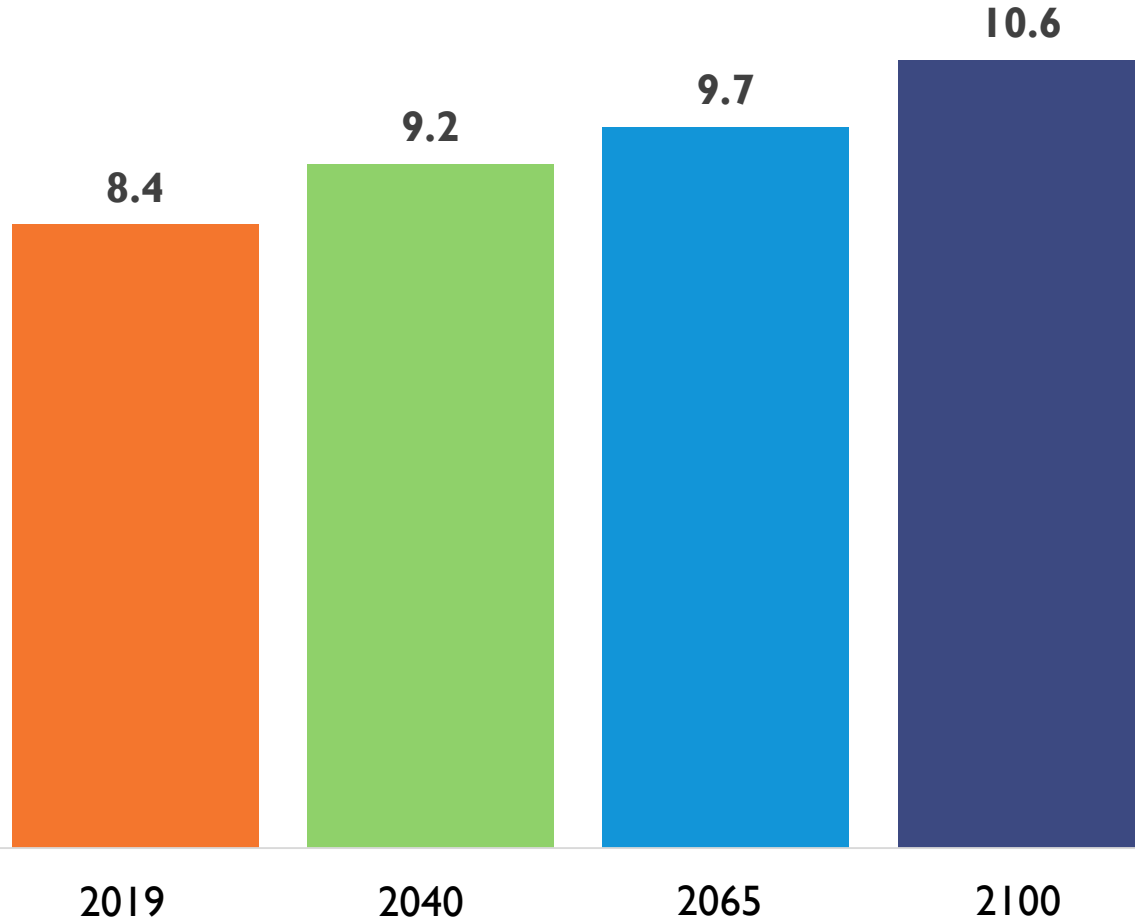


Coastal flooding

Riverine Climate Projections for WSSC Water Service Area (100 yr. storm)

24-hour rainfall depth projected to increase 15% by 2065

Rainfall depth (inches), 24-hr storm



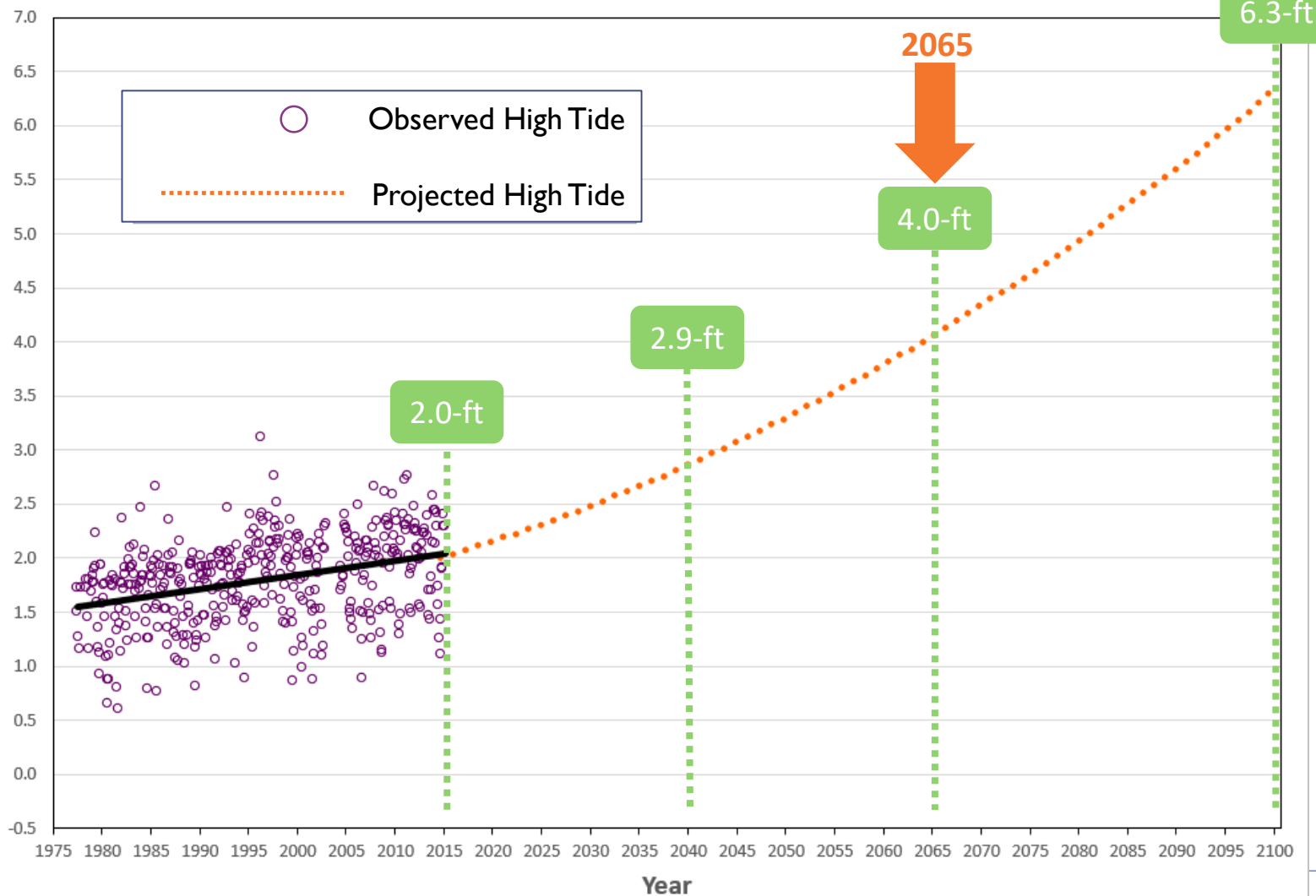
100-year storm increases:

- 7 percent for 2040
- 15 percent for 2065
- 23 percent for 2100

Coastal Climate Projections for WSSC Water Service Area

High tide projected to increase from 2.0 ft. to 4.0 ft. in 2065

Projected High Tide (ft) for Washington, DC

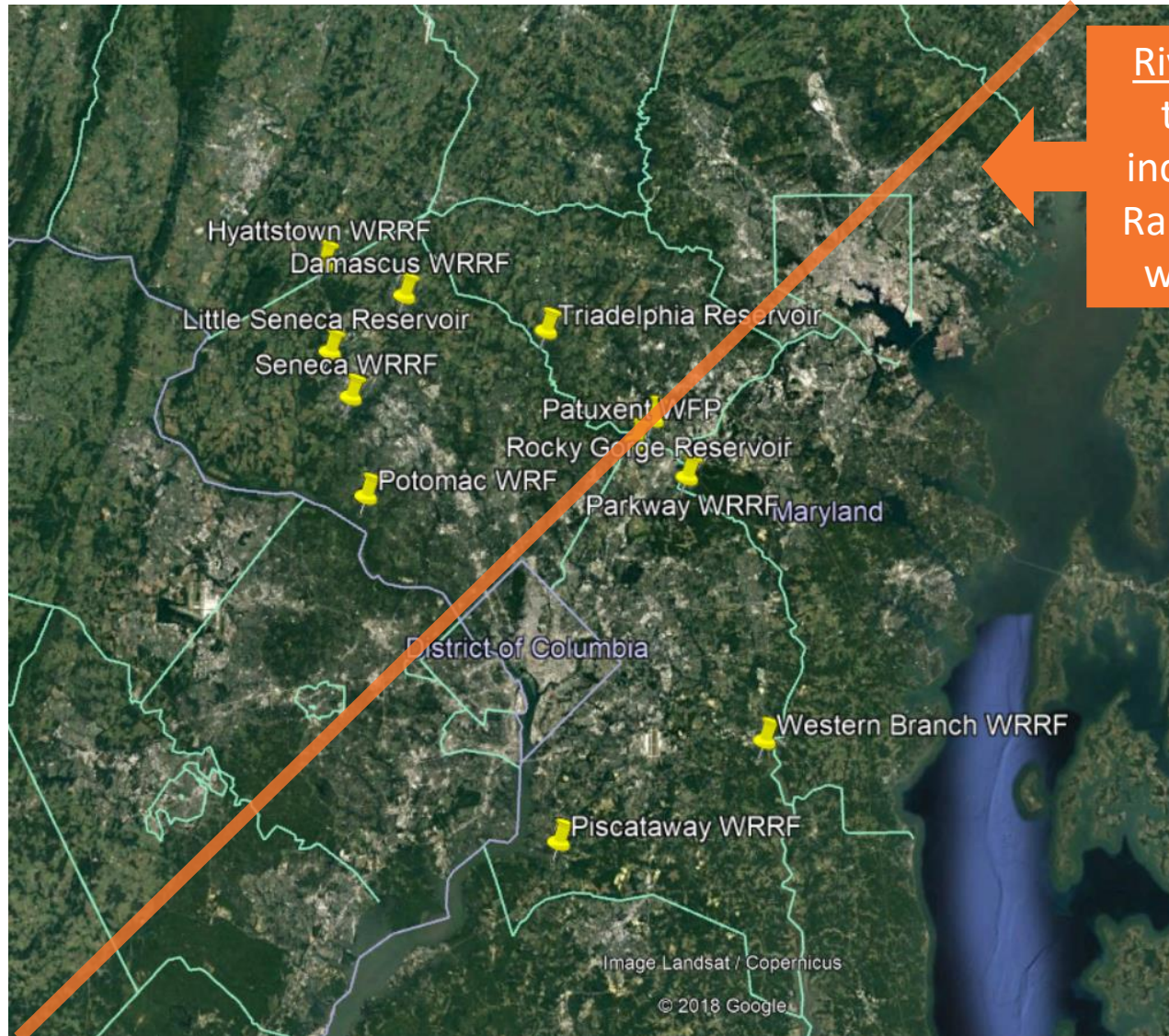


High tide projected to increase from 2.0 ft in 2015 to:

- 2.9 ft in 2040
- **4.0 ft in 2065**
- 6.3 ft in 2100

Facility Vulnerability Assessments and Adaptation Planning

Flood modeling completed for riverine and coastal facilities using climate projections



Riverine: Above the Fall Line, increased Flow / Rainfall Modeled with HEC-HMS

Coastal: Below the Fall Line, Storm Surge and Sea Level Rise Modeled with MIKE21

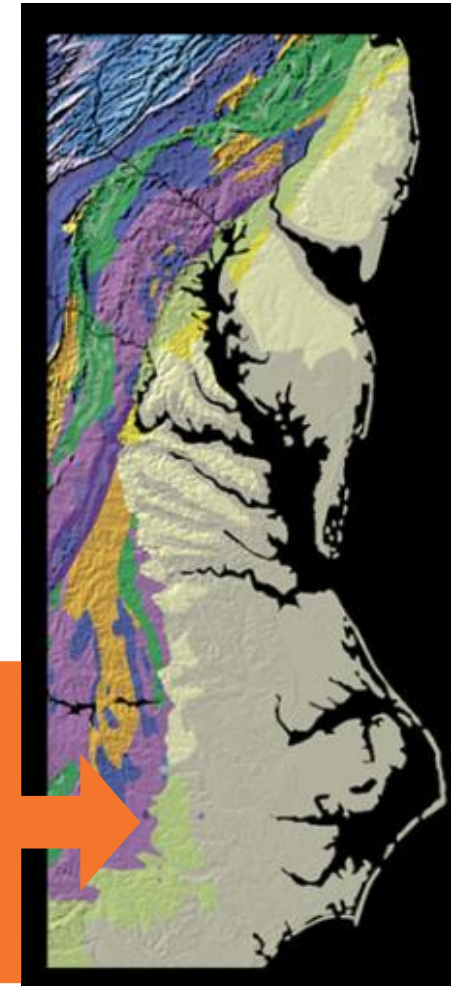


Photo credit: NationalAtlas.gov

WSSC Water Facility Vulnerability Assessments

49 out of 200+ WSSC Water facilities are located in or near a floodplain



19 facilities have been prioritized for future flood vulnerability assessments

Ten of 19 have been completed.
Remaining will be completed in 2020.

Vulnerability Assessments Completed to Date

Coastal Facilities

- Anacostia WWPS #1
- Anacostia WWPS #2
- Anacostia Storage Facility
- Broad Creek WWPS
- Western Branch WRRF
- Hyattsville WWPS
- Piscataway WRRF

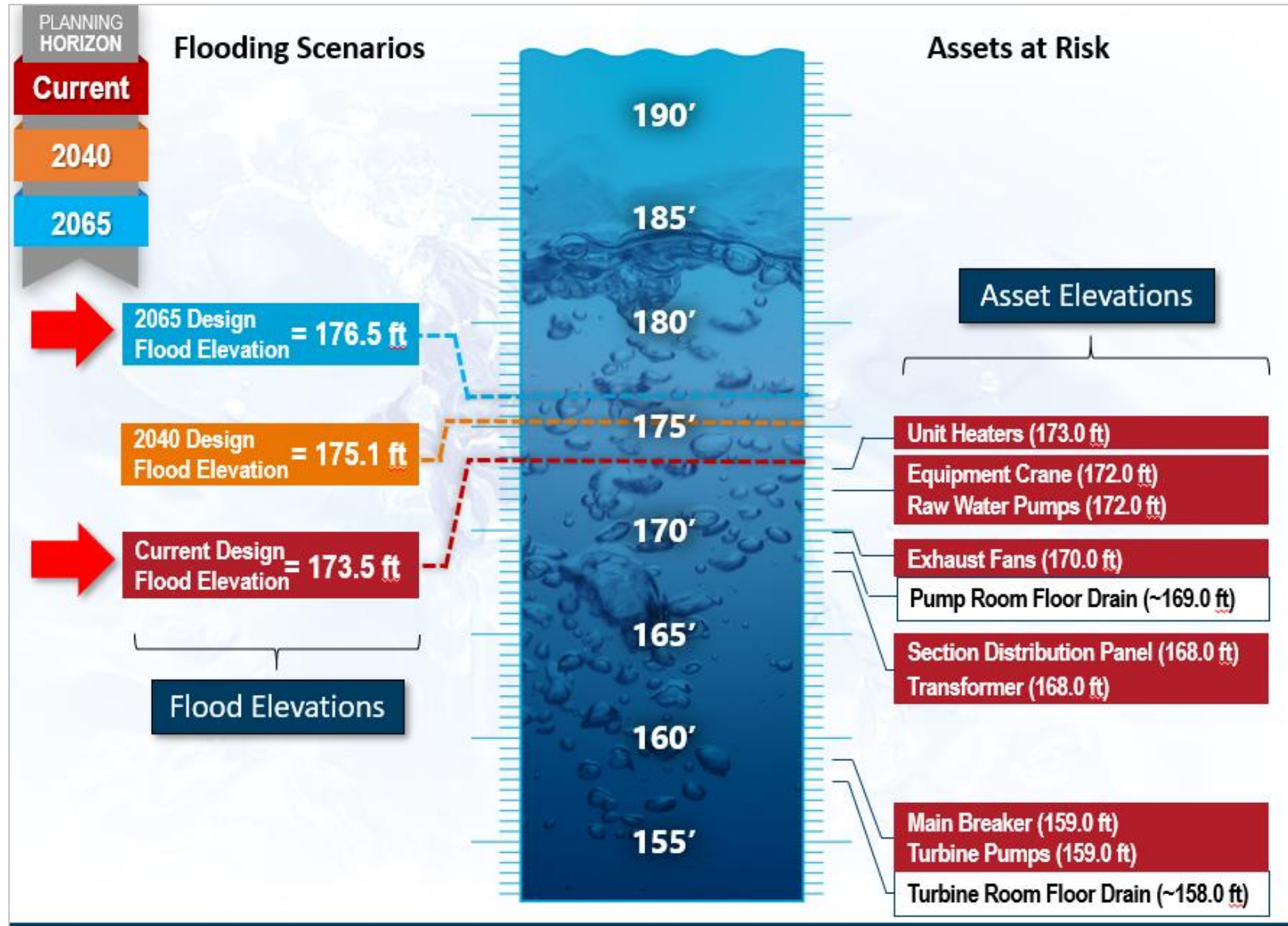


Riverine Facilities

- Hyattstown WRRF
- Parkway WRRF
- Rocky Gorge WPS



Sample Assessment: Rocky Gorge Water Pump Station



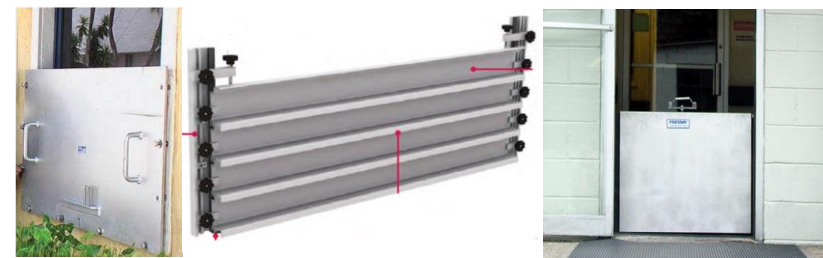
Adaptation Strategies for Plants and Pump Stations

Strategy	Resiliency Level
No Action	No Protection
Sandbagging	Low
Temporary Barriers	Moderate
Seal Building/ Control Room	Moderate/ Medium
Construct Static Barrier	High
Flood-proof Equipment	High
Elevate Equipment	Very High

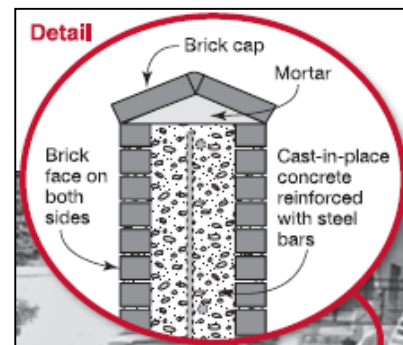
Sandbags



Temporary Barriers



Static Barrier



Elevate Equipment



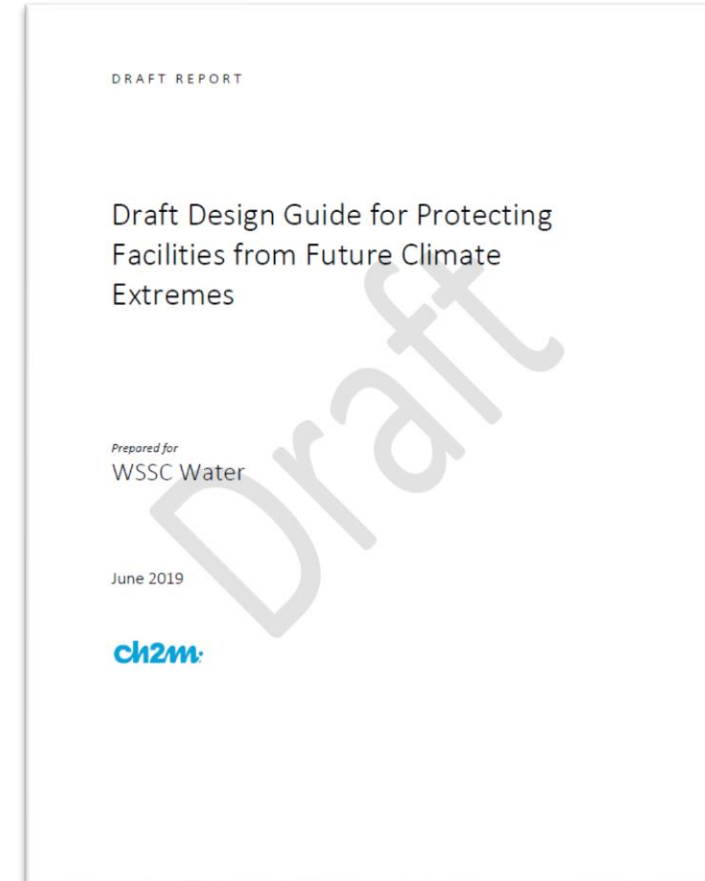
Design Guide for Protecting Facilities from Future Climate Extremes

Guidance for flood protection criteria

- Criteria for design of new facilities and protection of existing facilities
- Outfall tailwater design elevations for treatment process
- Site stormwater design guidance based on climate projections

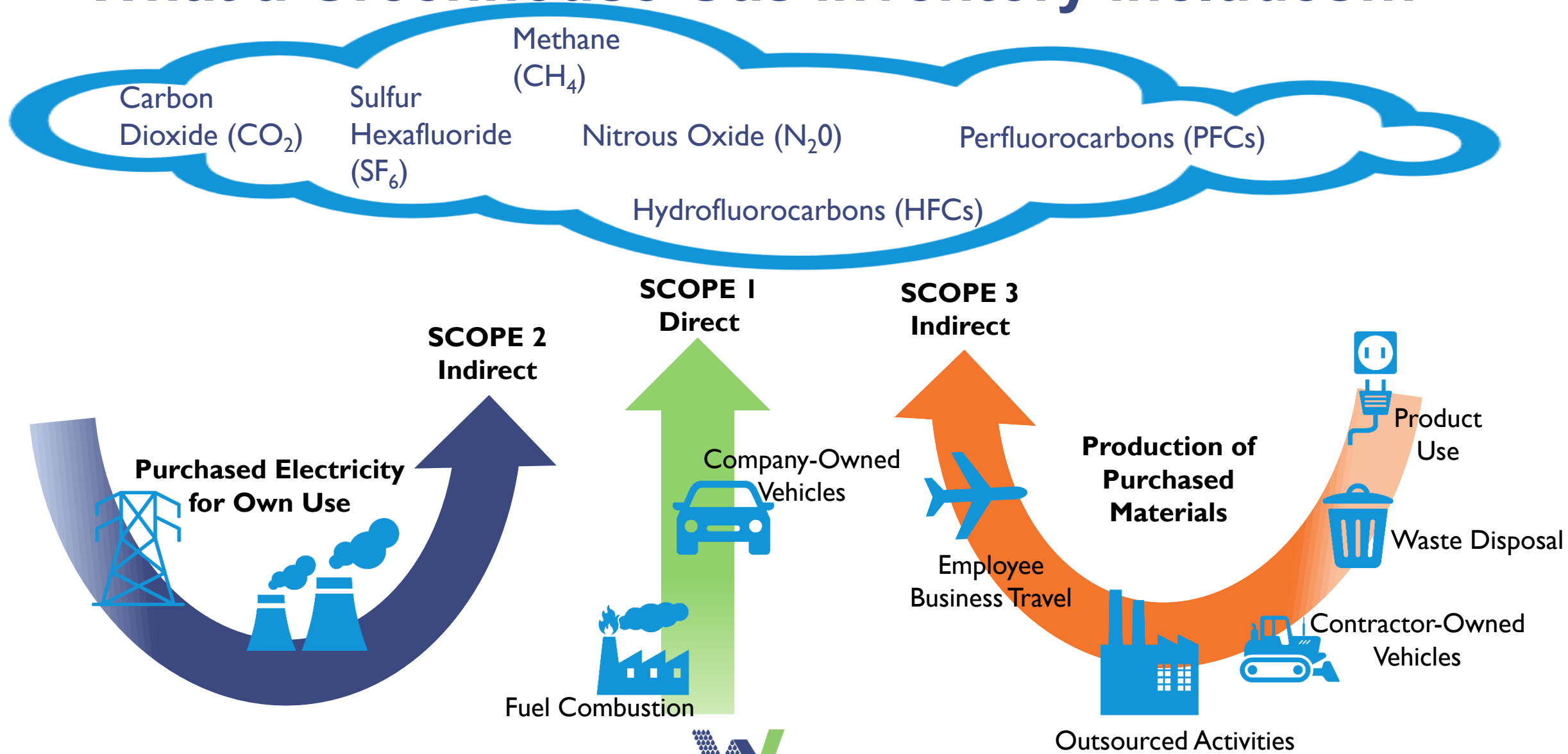
Guidance for resiliency of electrical and Instrumentation & Controls systems

Greenhouse gas emissions reporting guidance for new projects



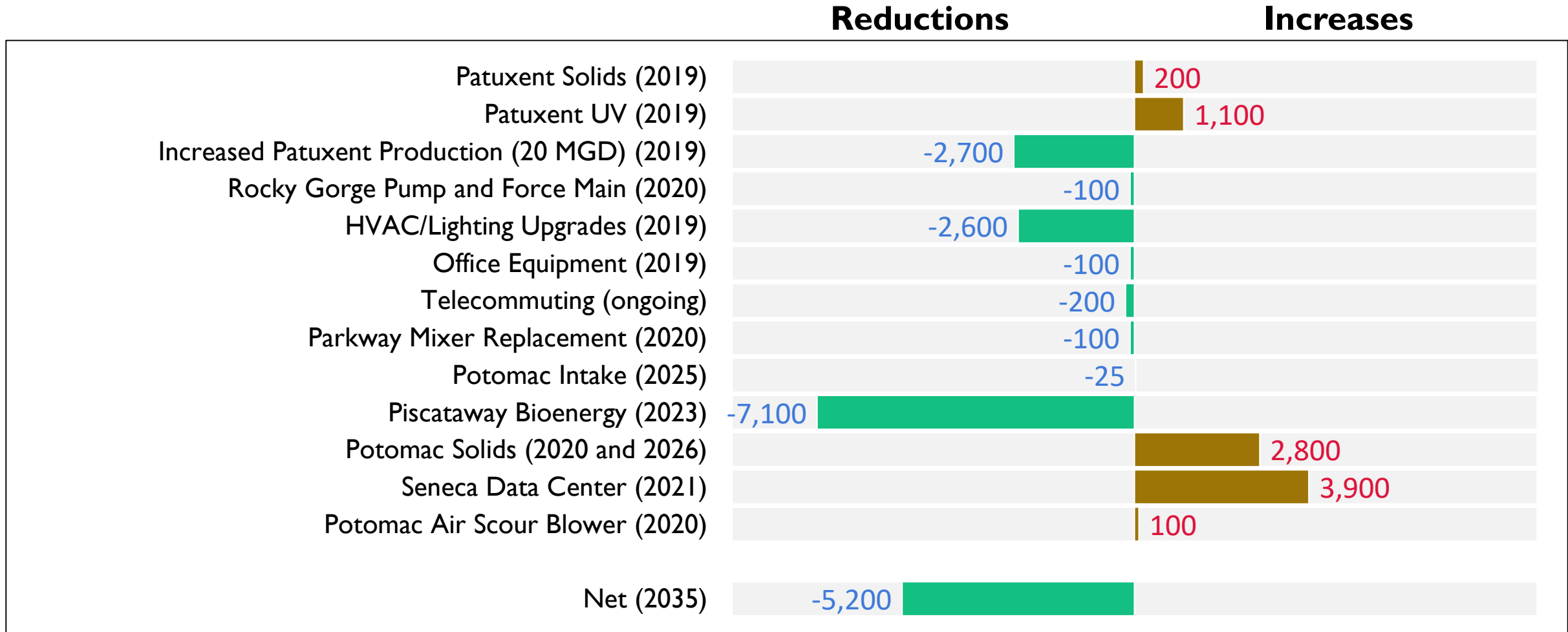
Greenhouse Gas (GHG) Reduction Progress (Mitigation)

What a Greenhouse Gas inventory includes...



Source: WRI/WBCSD GHG Protocol

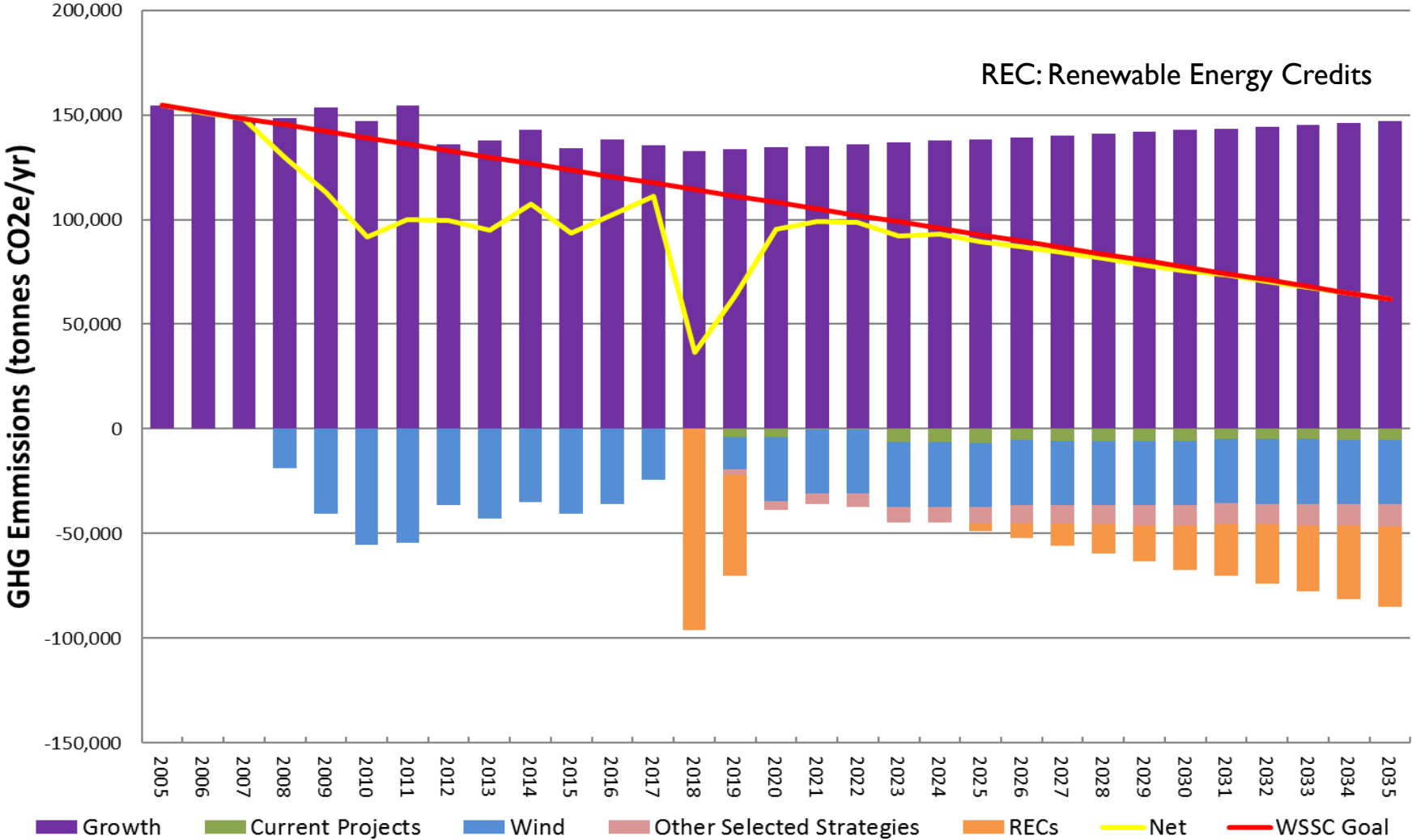
Greenhouse Gas Emissions Impacts of Current Projects



Unit: Metric tonnes of GHG emissions

Greenhouse Gas Emissions Reductions

WSSC Water GHG Projections (2005 – 2035)
Impact of Project, Strategies, Wind Contract and RECs vs. WSSC Goal



WSSC Water
will reduce
Greenhouse Gas
emissions by 60%
by 2035

Fiscal Year 2020 Tasks

Facility Vulnerability Assessments

- Complete detailed screenings and facility assessment for nine smaller pump stations and depot facilities

Design Guidelines

- Finalize Guidelines

Greenhouse Gas Inventory

- Compile CY'19 data to produce 2019 GHG inventory

Questions?

