



GW

Crafting an ESPC Roadmap: Leadership Insights

April 2024

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Course Description

This presentation is designed to inspire and guide university leaders, administrators, and decision-makers in their pursuit of sustainable energy solutions. It offers a strategic perspective on the implementation of ESPC projects, aiming to not only meet but surpass benchmarking and building performance standards. By delving into the experiences of key decision-makers, the session provides valuable insights into the strategic considerations, challenges, and successes encountered throughout the project development journey. Emphasizing the importance of balancing short-term financial considerations with long-term sustainability goals, the presentation advocates for a holistic approach that carefully considers both immediate and future impacts on the university's infrastructure.

Learning Objectives

1. Develop leadership skills to drive project development by effectively considering and balancing multiple goals.
2. Acquire strategies to identify and maximize funding opportunities promptly.
3. Ability to conduct comprehensive status quo analyses to assess the financial implications of delaying action.
4. Learn techniques to mitigate the University's exposure to legislative penalties and rising utility expenses by shifting risks to an Energy Savings Performance Contract (ESPC) vendor.

Introduction



Baxter A. Goodly

The George Washington University

Interim Vice President for Safety and Facilities



Mansi Talwar

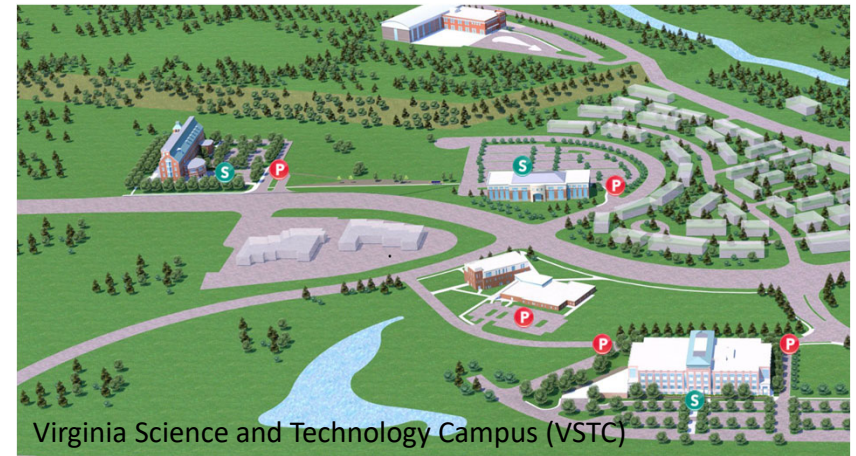
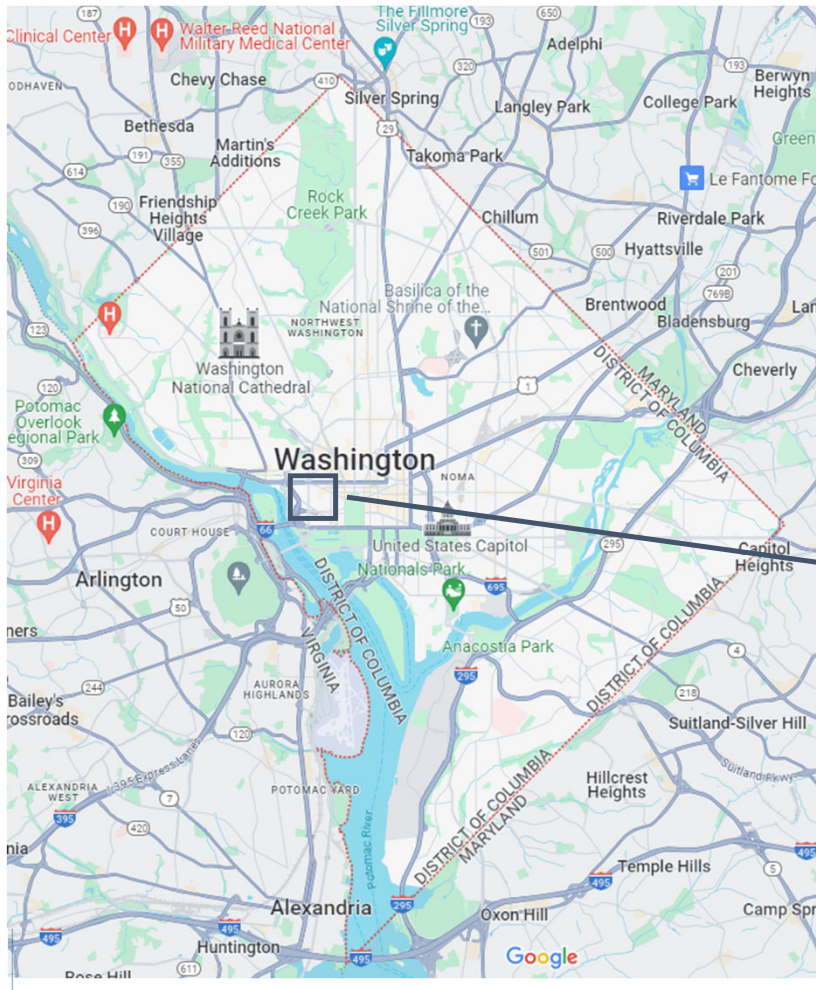
The George Washington University

Executive Director, Utilities, Energy and Engineering

Agenda

- Overview of GW
- Building Energy Performance Standards
- Energy Efficiency: Why Now?
- Energy Performance Project
- Project Process
- Keys to Success
- Financial Overview
- Key Take Away's

Campus Location: Urban Campus



Portfolio Overview

- **Annual Utility Spend: ~\$28M**
 - Electricity: ~\$18M
 - Water: ~\$5M
 - Gas: ~\$5M
- **Facilities Portfolio**
 - 136 buildings across 3 campuses (8,273,474 SF)
 - 4.2 MW Cogen Plant in Foggy Bottom Campus.
- **Challenges**
 - Number, variety, and age of buildings (average is 88 years)
 - Mix of district and standalone systems (including a gas-powered cogeneration plant)
 - Limited metering infrastructure (multiple buildings on a single meter, lack of submeters)
 - Different and varied procurement regulations (VA versus DC, gas versus electricity)
 - Significant deferred maintenance backlog
- **Regulatory Requirements and Commitments**
 - BEPS: DC's regulatory requirement for building energy efficiency
 - Climate Neutrality: achieving net zero carbon emissions (emissions reductions plus offsets)

ESG Commitments Overview



Endowment

1. Avoid new investments in fossil fuel (2020)
2. Divest from existing fossil fuel investments (2025)
3. Evaluate investments against ESG criteria



Campus Sustainability


4. Accelerate planning and implementation:
 - A. Publish a resilience plan
 - B. Achieve carbon neutrality (2030)
 - C. Offset legacy emissions
5. Model urban sustainability:
 - A. Stormwater capture
 - B. Biodiversity
 - C. Zero-emissions vehicles
 - D. Single-use plastics ban
 - E. STARS Platinum (2025)



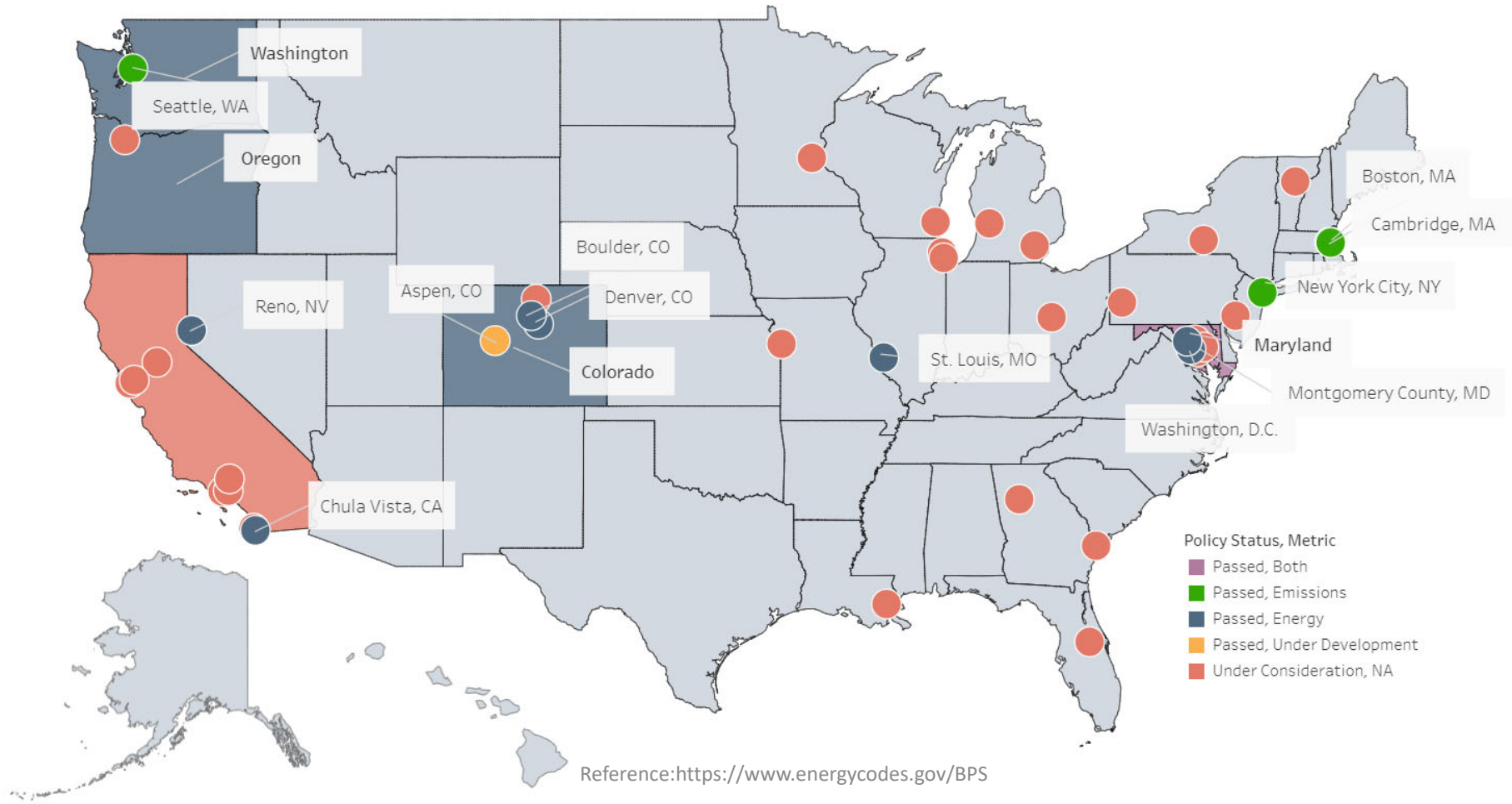
Academics and Engagement

6. Opportunity for academic credit experience in sustainability
7. Establish the Sustainability Institute

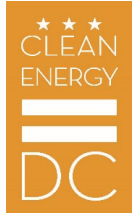
Building Performance Standard - Basics

- A building performance standard is a policy that requires building owners to meet performance targets by actively improving their buildings over time.
- Performance measured based on emissions or energy to support climate commitments.
- EUI - Energy Use Intensity, energy per square foot per year
- Common Tool used
 - Water, Gas, Electric 
 - Space usage

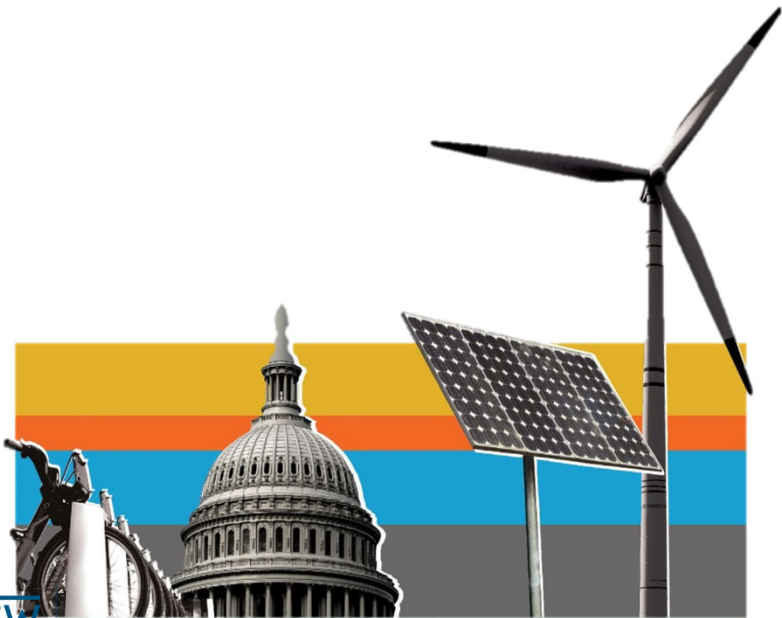
Building Performance Standard - National



Building Energy Performance Standards (BEPS)



CLEAN ENERGY DC OMNIBUS AMENDMENT ACT OF 2018, TITLE III....



What is BEPS?

- On January 1, 2021, DOEE established a minimum threshold of energy performance for existing buildings
- Share annual electric, gas, fuel and water usage
- Publicly available data

Energy Performance Requirements

- Campus needs to meet Energy Use Intensity (EUI) threshold if non compliant
- Multiple compliance pathways available
- Three defined cycles with 5-year performance timeline
- **Up to \$7.5M fine associated to non-compliance.**

Reference: https://www.doe.dc.gov/sites/default/files/dc/sites/doe/service_content/attachments/BEPS%20Overview%20Presentation.pdf

Building Energy Performance Standards

Over time the Act will require all buildings greater than 10,000 SF will be required to meet BEPS in the following periods.

BEPS Period 1: FY21 - FY27

Private buildings > 50,000 ft² and
DC-owned > 10,000 ft²

BEPS Period 2: FY27 - FY32

Private buildings > 25,000 ft² and
DC-owned > 10,000 ft²

BEPS Period 3: FY33 - FY37

Private buildings and
DC-owned > 10,000 ft²

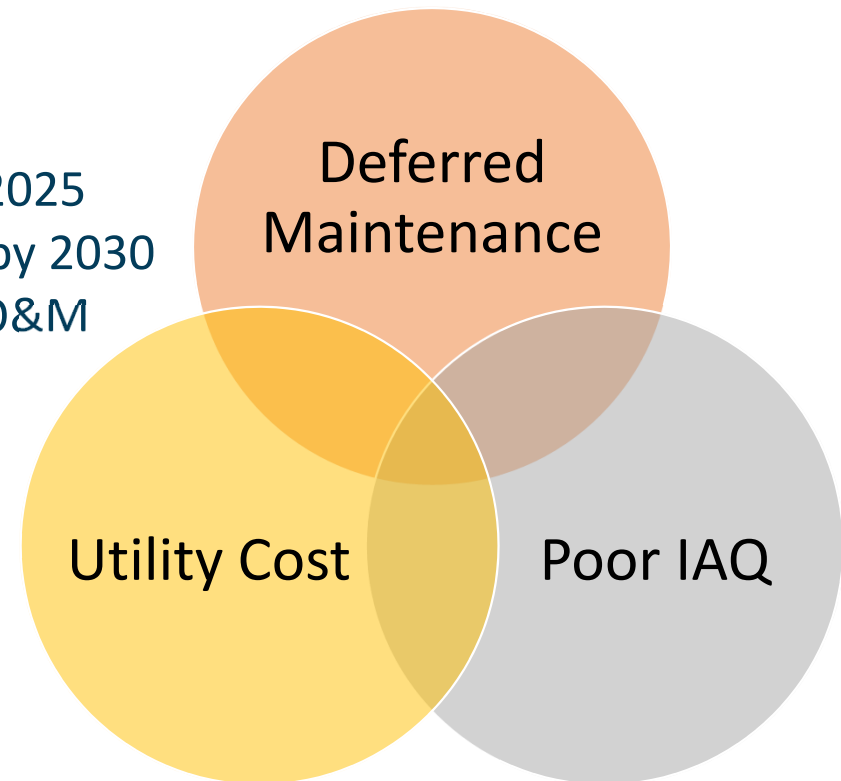


Reference: https://www.doe.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/BEPS%20Overview%20Presentation.pdf

Why Invest in an Energy Efficiency Project Now?

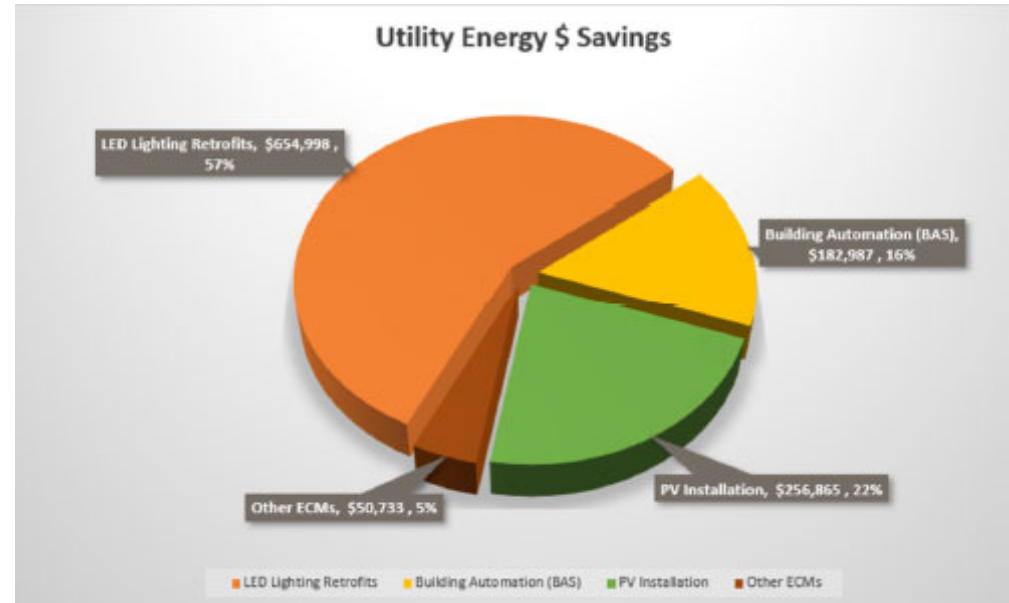
Driving Forces:

- Continuous increase in Utility Costs
 - 10% annually for the last 3 years
- Escalating Construction Costs.
- Building Energy Performance Standards (BEPS) - 2025
- BOT commitment to achieving carbon neutrality by 2030
- Opportunity to modernize HVAC while reducing O&M
- Improve Indoor Air Quality (IAQ)
- Enhance the Student Experience
- Funding Opportunity

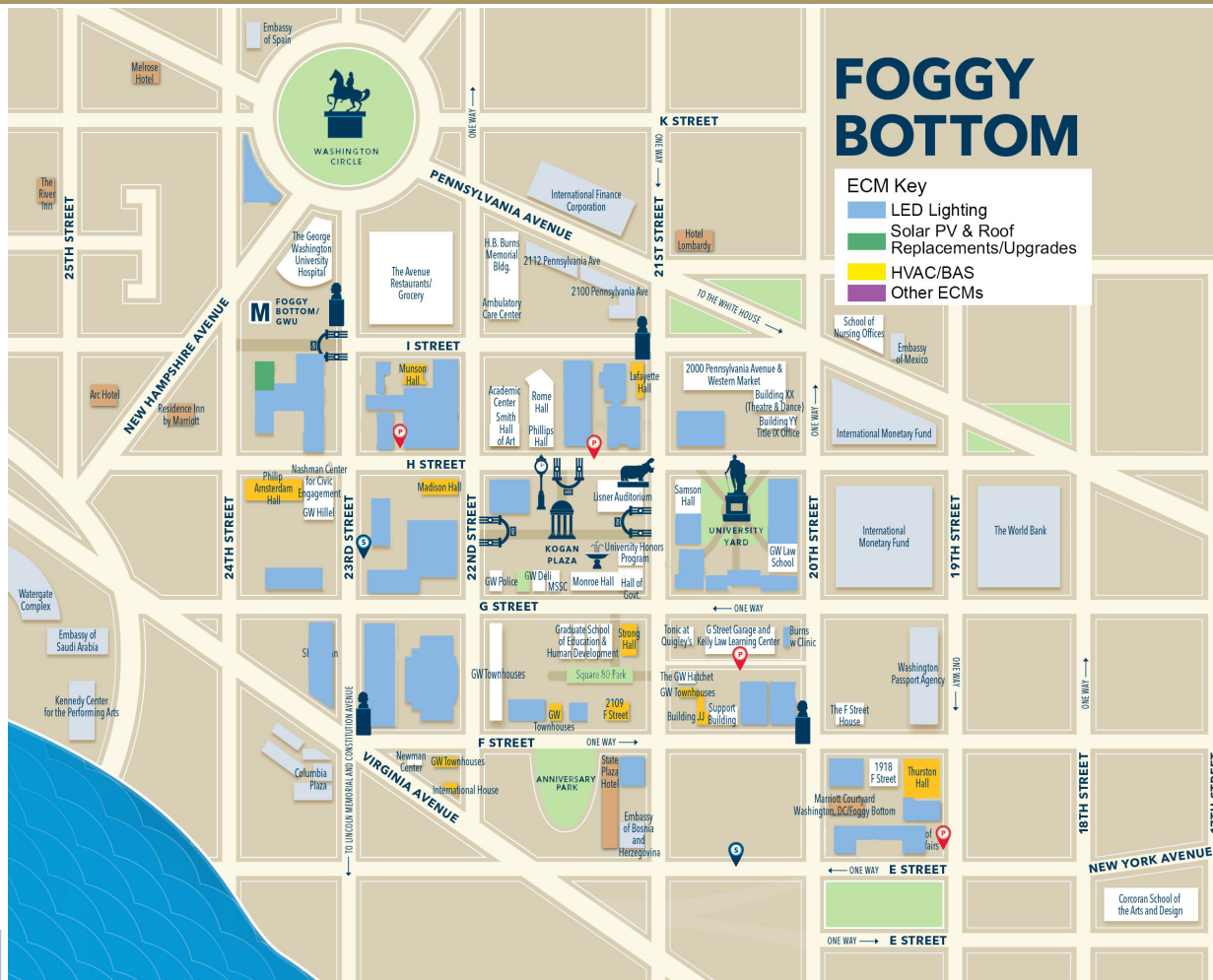


Project Overview

10 Year - Financial Support		
Grants/Rebates	\$	3,837,420
SREC Revenue	\$	2,746,544
Utility Rebates	\$	616,000
10 Year - Avoided Cost		
Utility Savings	\$	16,847,382
BEPS Penalty Avoided	\$	4,375,000
US Tons CO2 Avoided		947,070
Net Project Benefit		
Return of Investment		7.8 Years



Energy Conservation Measure (ECM) Impact Map - Lighting



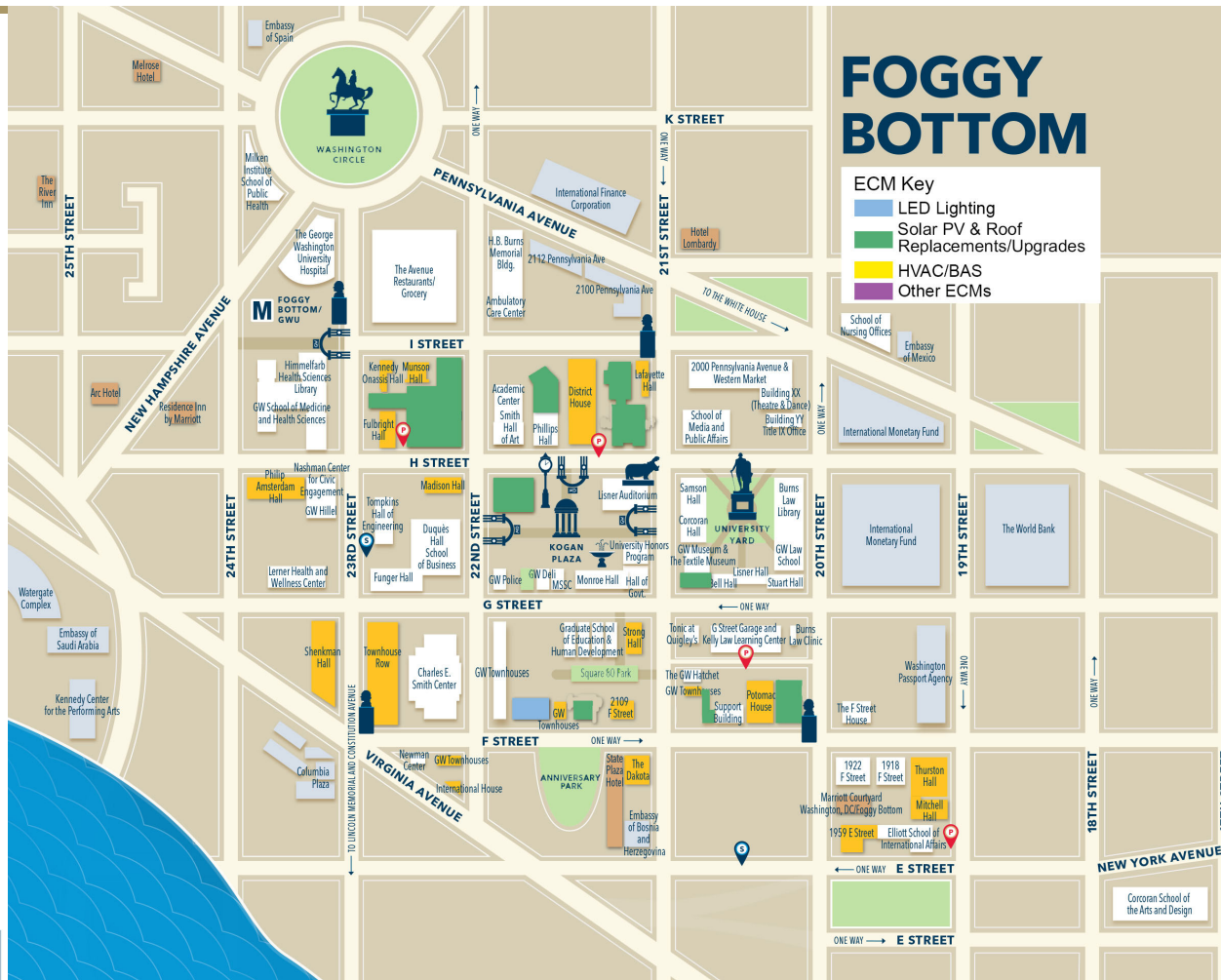
Project Impact:

- 37 Different Buildings
- 5,150,723 SF
- ~45,000 Lighting fixtures



General Purpose LED Floodlight

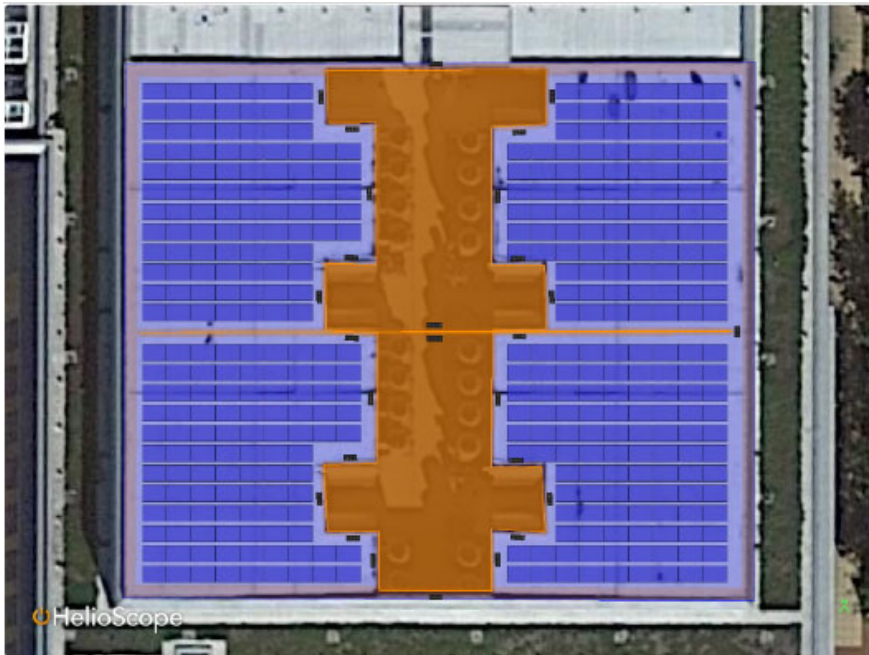
Energy Conservation Measure (ECM) Impact Map – Solar PV



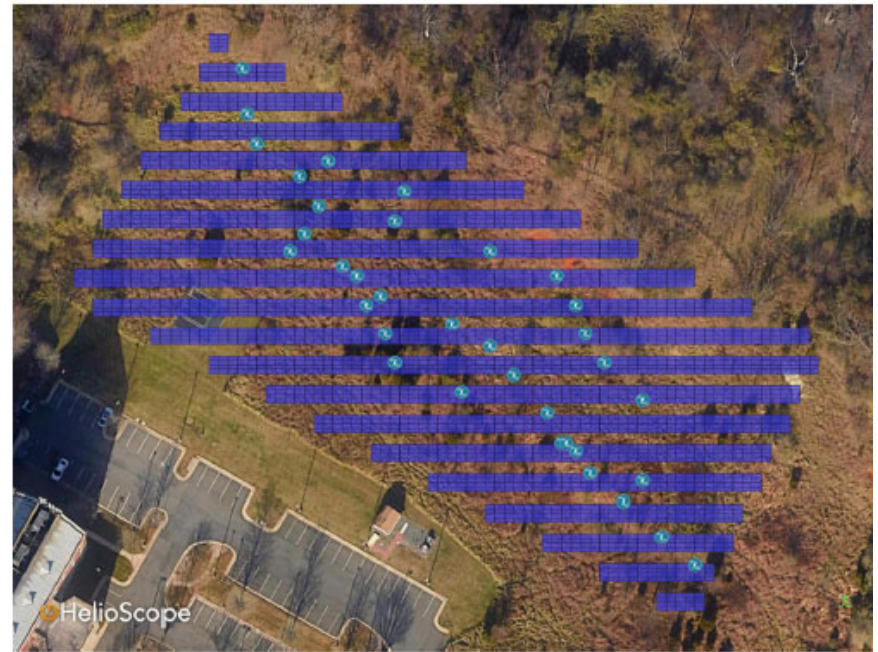
VSTC– Renewable Energy PV



Energy Conservation Measure (ECM) Impact Map – Solar PV

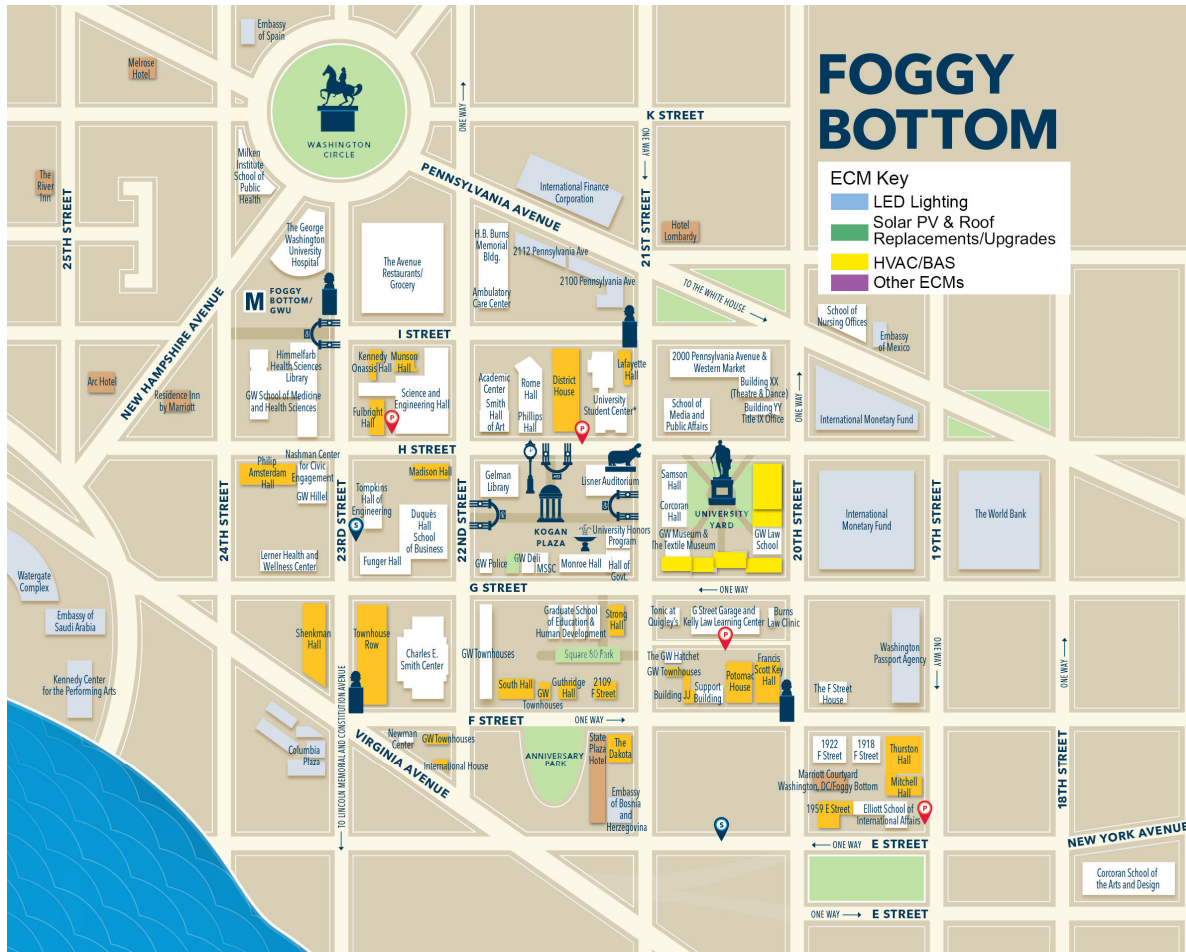


Proposed Rooftop Solar – Science and Engineering School (DC)

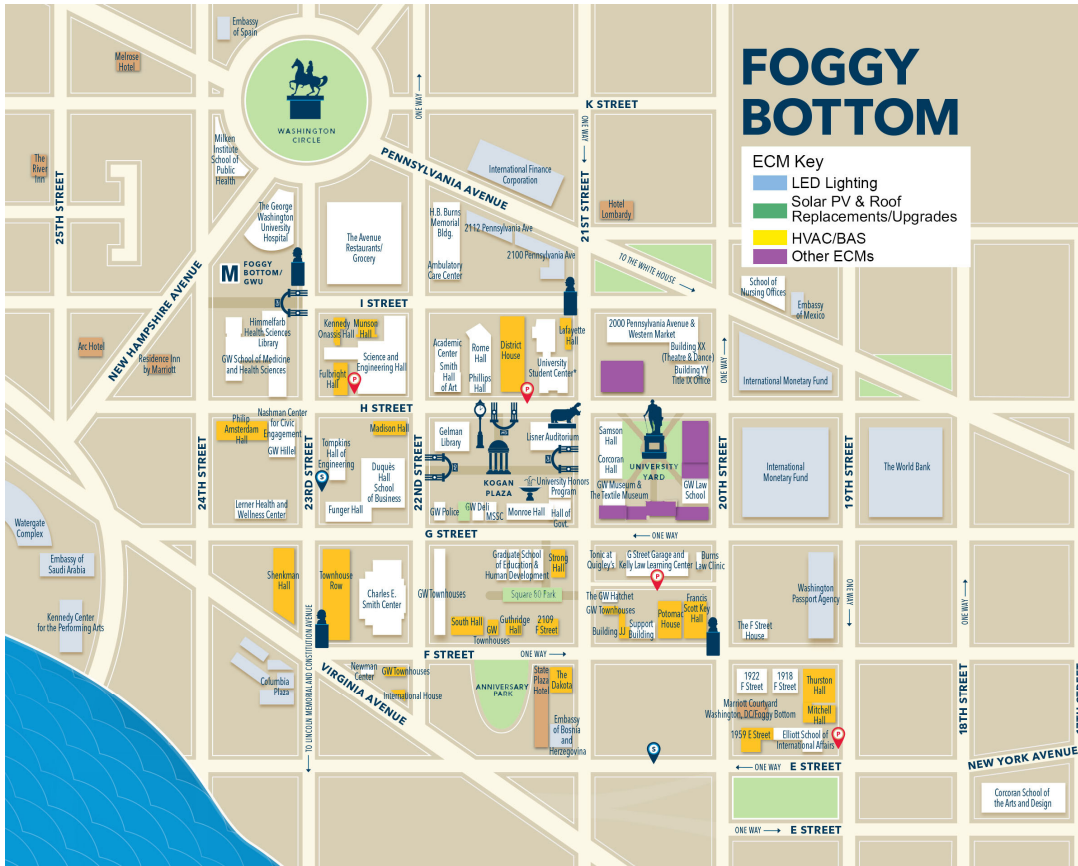


Proposed Ground Mount Solar – VSTC Campus

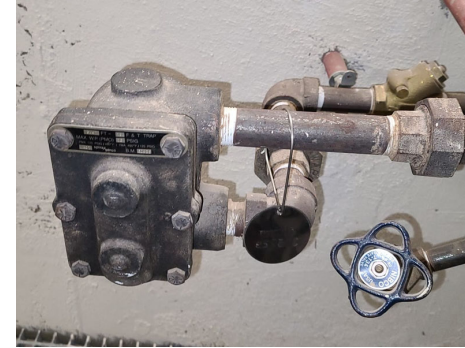
Energy Conservation Measure (ECM) Impact Map – HVAC/BMS



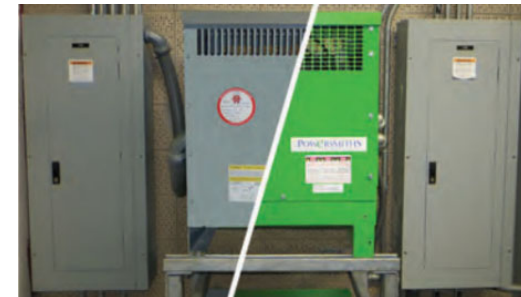
Energy Conservation Measure (ECM) Impact Map - Other



Insulation improvements

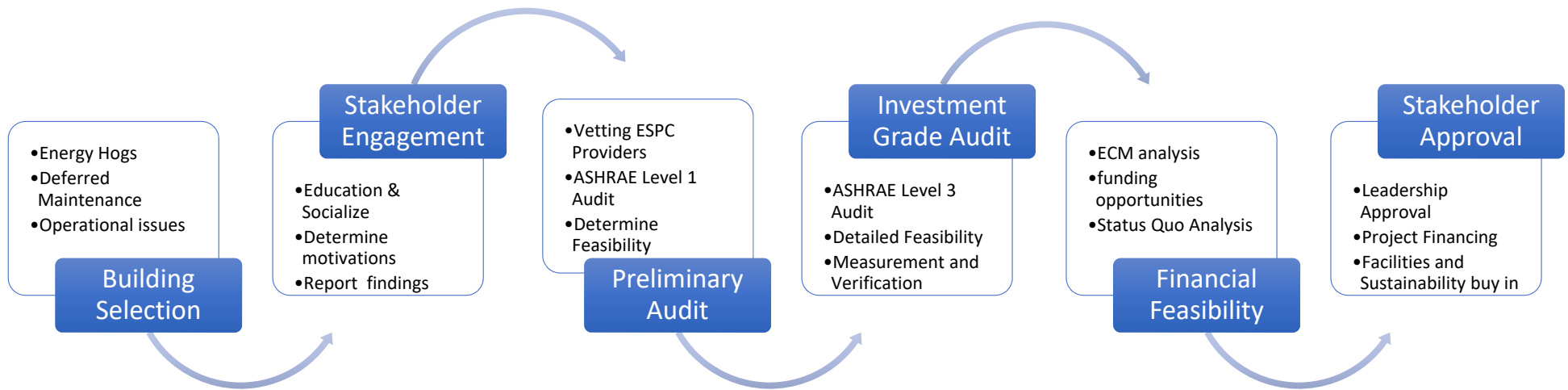


Steam Traps



High-Efficiency Transformers

ESPC Project Development Process

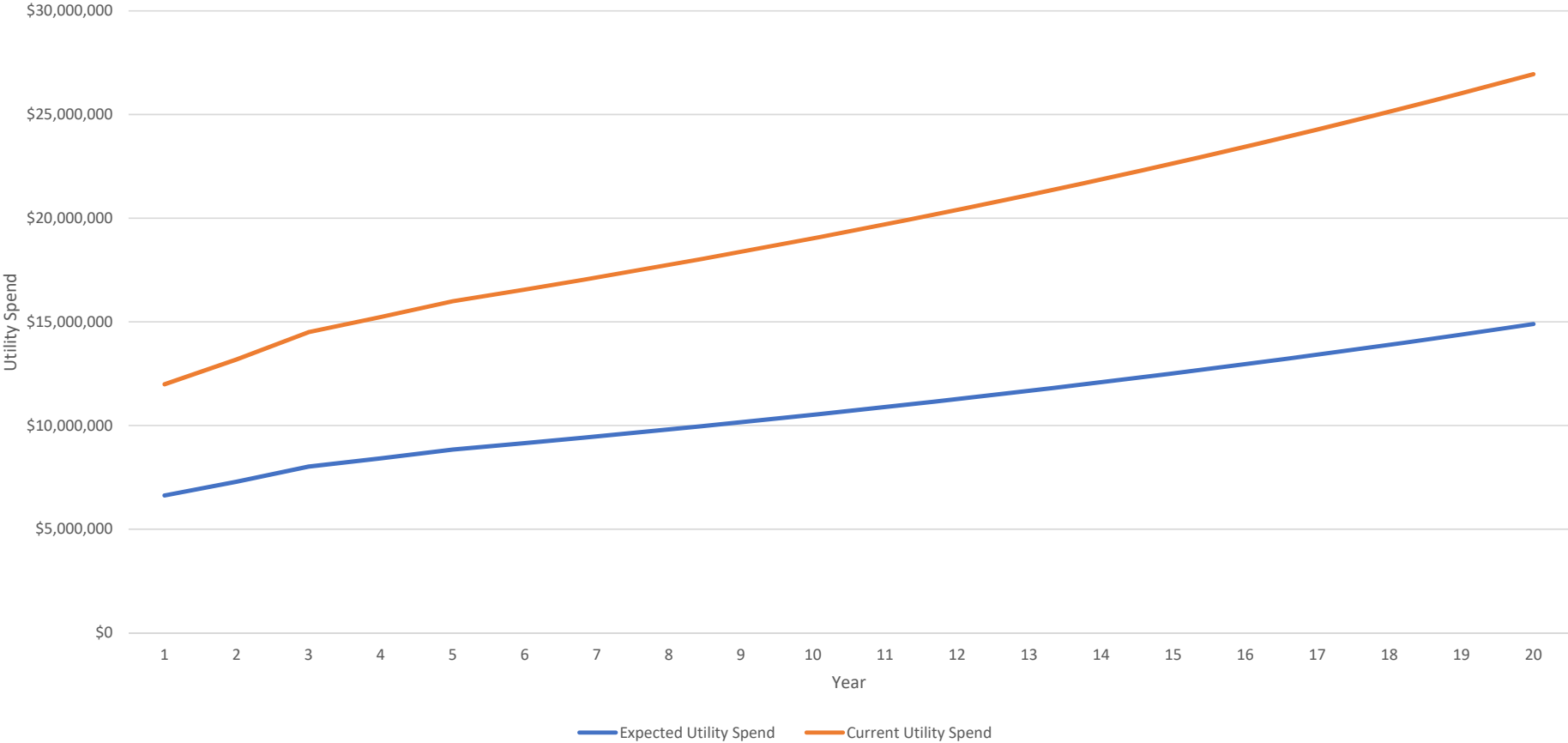


Keys to Success

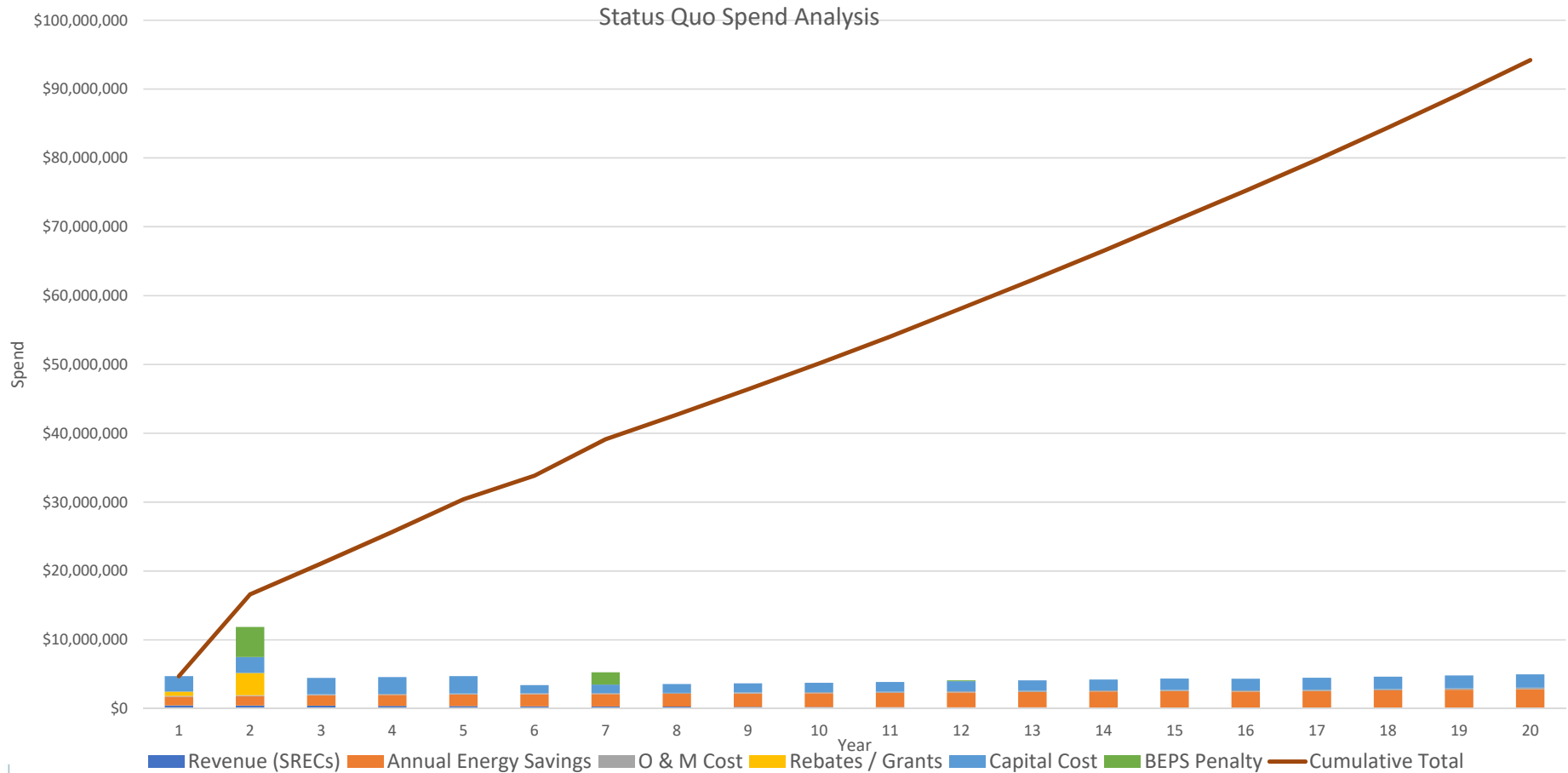
- Develop a Clear Vision
- Choose the Right Partner
- Build the Business Case
 - Compelling Reason(s)
 - **ROI + ROI + ROI**
- Develop Stakeholder Engagement Strategy
 - Identify key decision-makers and advocates
 - Enlist a Coach/Advocate
- Practice Persistence and Patience

Financial Analysis – Utility Escalation and Savings

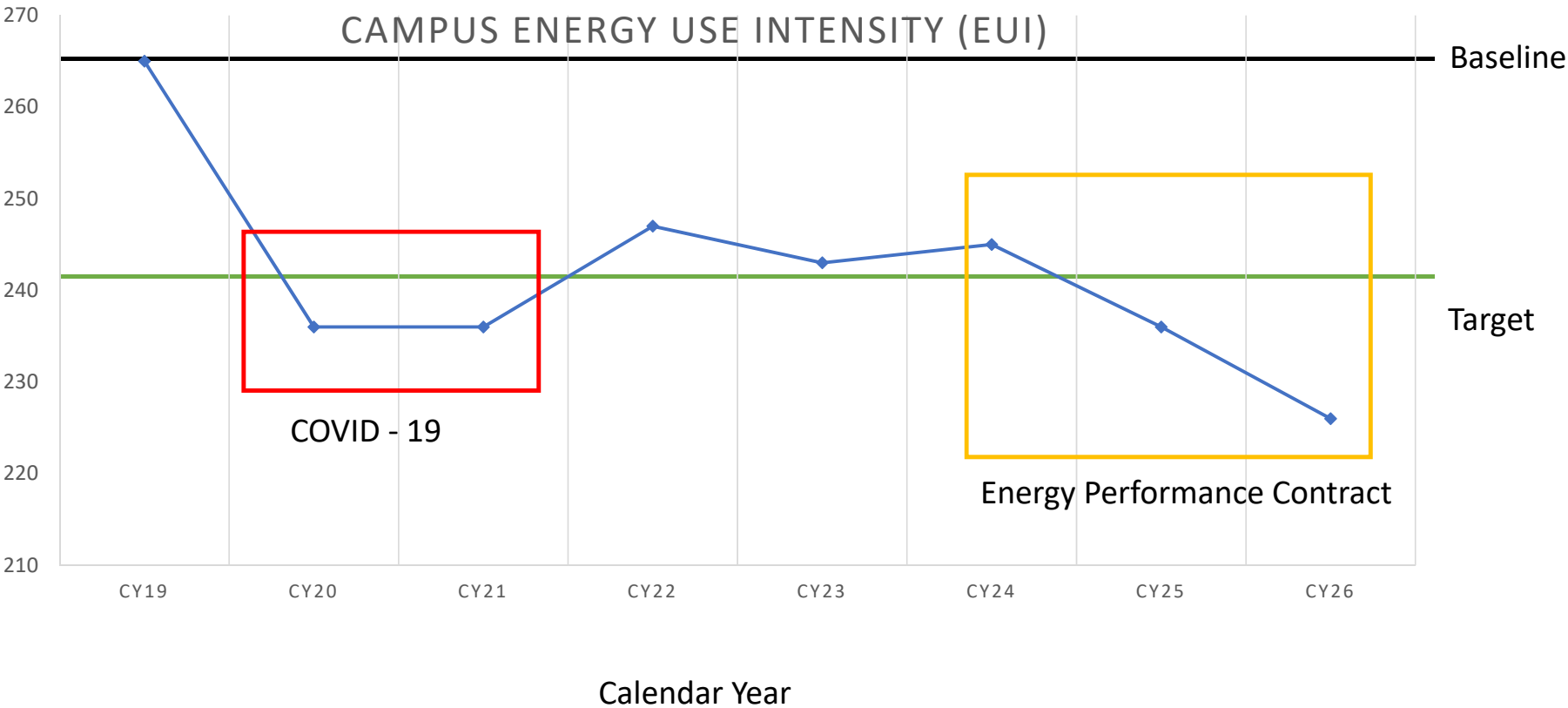
Utility Escalation



Financial Analysis – Cost of Inaction



GW Projected Progress



Estimated Performance Data: CY24, FY25 and CY26

This concludes The American
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Key Take Away's

- Cultivate an engaging team to drive project development effectively, considering multiple goals.
- Maximize funding opportunities while they're available.
- Perform a comprehensive status quo analysis to assess the cost implications of delaying action.
- Safeguard the University from increasing utility expenses by shifting risks to an ESPC vendor.