

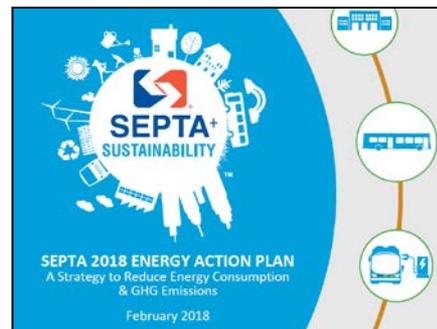
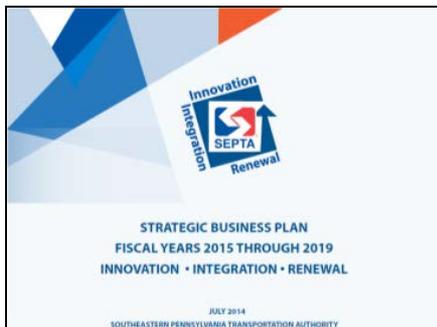


SEPTA ENERGY ACTION PLAN

Becky Collins
Corporate Initiatives Manager - Sustainability

PLANNING HIERARCHY

HOW SUSTAINABILITY
FITS IN



STRATEGIC BUSINESS PLAN



SUSTAINABILITY PROGRAM PLAN



ENERGY ACTION PLAN

SUSTAINABILITY PRINCIPLES

Budget Neutral

Leverage Existing Assets

Provide Multiple Benefits

SUSTAINABILITY TIMELINE FOR ENERGY

2011

Board approves SEPTA's Sustainability Program



2014

- Next 200 Hybrid buses begin to arrive
- LED retrofits become standard

2016

- WESS build-out begins
- SEPTA receives grant for incremental cost of 25 battery - electric buses



2018

- Publish Energy Action Plan
- Start construction on Solar PPA

2012

- First Energy Action Plan
- WESS pilot begins
- 100 Hybrid buses delivered



2015

- SEPTA HQ receives ENERGY STAR Certification for 4th time
- ESCO Master Plan begins

2017

- Board approves SEP-TAINABLE 2020 Plan
- Board approves first solar PPA



2019

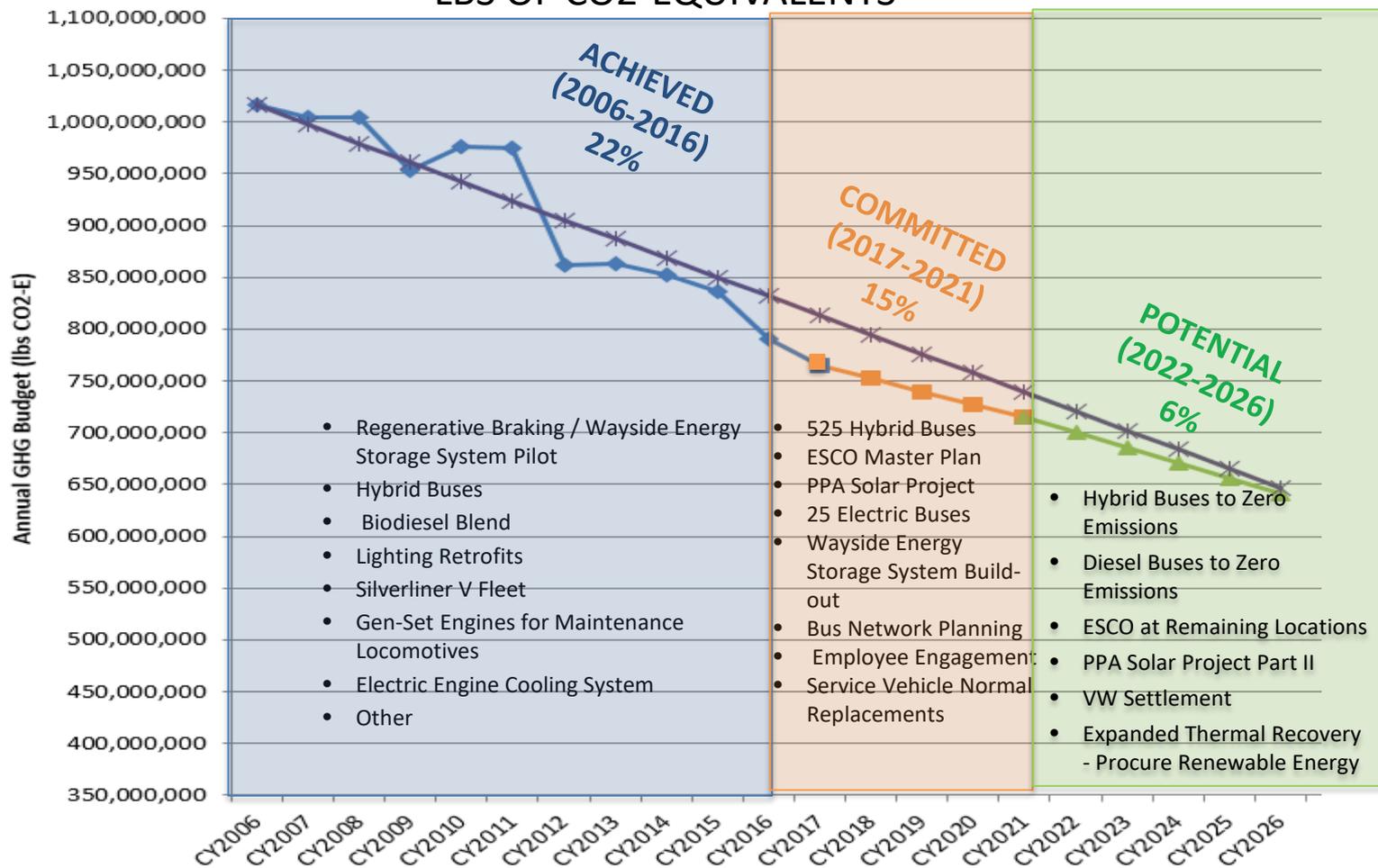
- SEPTA receives grant for incremental cost of 10 battery – electric buses
- Begin ESCO on 1234 Market Street

PUBLIC & STAKEHOLDER OUTREACH

- **STAKEHOLDER BRIEFING: AUG 24**
350.org, Sierra Club, EPA, DEP, DVRPC, PECO, PGW, City
- **PUBLIC OPEN HOUSE 1: NOV 7**
12 Attendees, Including 350.org, Clean Air Council, City & Media Outlets
- **CITY/COUNTY MEETING: NOV 15**
- **PUBLIC OPEN HOUSE 2 & 3: NOV 21**
- **ONLINE COMMENT FORM: NOV 3 – DEC 4**
- **PUBLICATION: Following Board briefing**

ENERGY ACTION PLAN SUMMARY

GHG EMISSIONS INVENTORY LBS OF CO2-EQUIVALENTS



COMMITTED INITIATIVES 2017-2021

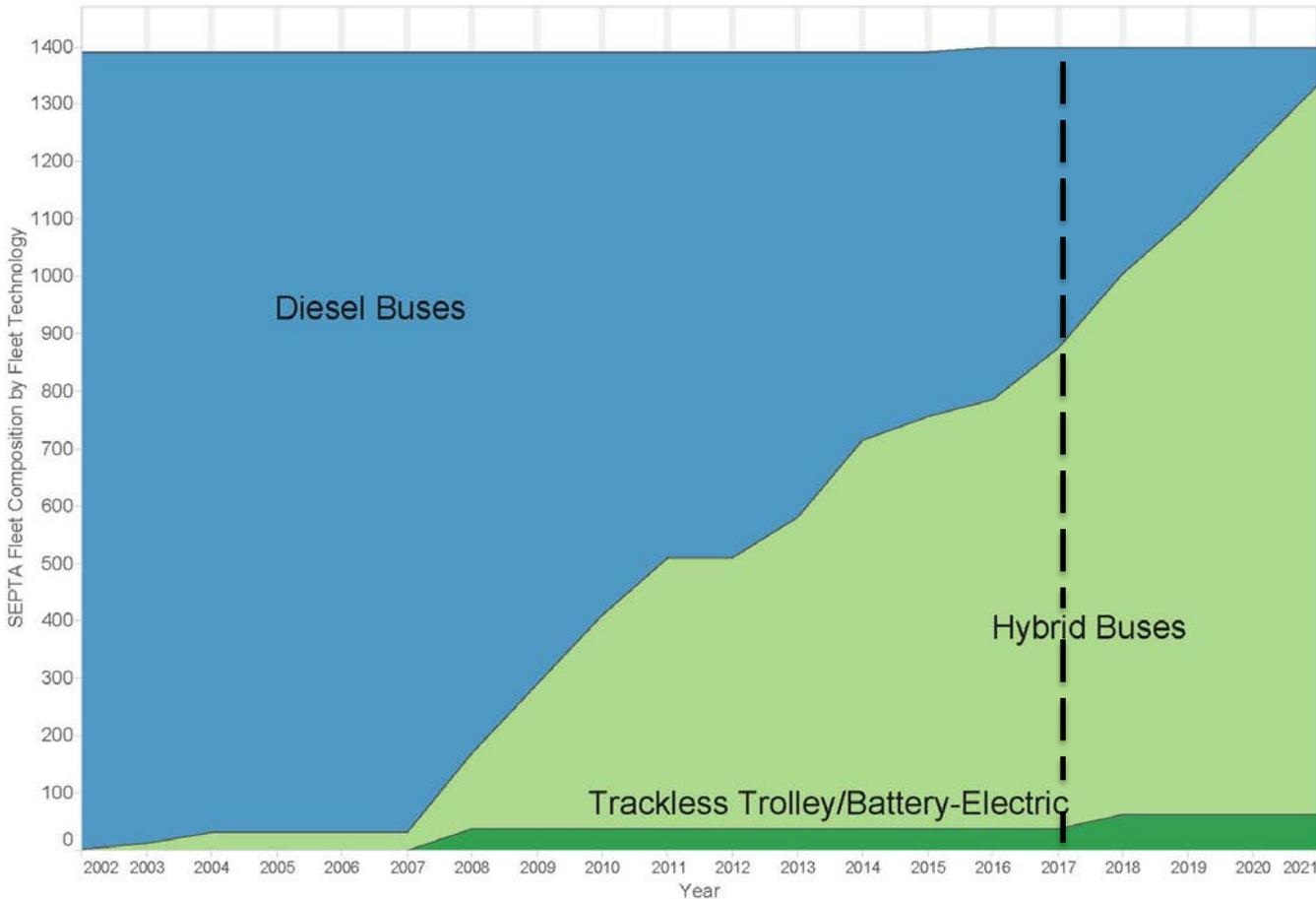
- Categorized by three focus areas:
 - Energy Efficiency
 - Alternative Energy
 - Operational Strategy

- Modeled & actual emissions reductions from **committed initiatives: 156,364,918 lbs CO₂e (15%)**

INITIATIVE CATEGORY	INITIATIVE	FOCUS AREAS
Committed	Hybrid Buses	Energy Efficiency
	Electric Buses	Alternative Energy
	Completion of ESCO Master Plan	Energy Efficiency & Alternative Energy
	Solar RFP	Alternative Energy
	Wayside Energy Storage/Regenerative Braking Build-Out	Energy Efficiency
	Service Vehicle Normal Replacements	Energy Efficiency
	Bus Network Planning	Operational Strategy
	Employee Engagement	Operational Strategy

SEPTA VEHICLE FLEET

SEPTA Fleet Composition by Fleet Technology
2002 - 2021



- 525 more hybrid-electric buses by 2021
- Modeled emissions reductions: **15,549,624 lbs CO₂e (2%)**

- 25 Proterra Electric Buses
- Low-No Grant to cover incremental cost
- Modeled emissions reductions: **2,103,771 lbs CO₂e (<1%)**

SOLAR PPA

2ND & WYOMING

3,500 + solar panels
200,000 + sq ft
1.29 MW



CALLOWHILL

3,000 + solar panels
200,000 + sq ft
955 kW



ROBERTS

450 + solar panels
23,900 sq ft
154 kW



FERN ROCK

1,900 + solar panels
190,000 sq ft
730 kW



- 3 MW Solar PPA with SunVest Solar
- Modeled emissions reductions:
3,050,993 lbs CO₂e (<1%)

POSSIBLE OPPORTUNITIES 2021-2026

- Categorized by three focus areas:
 - Energy Efficiency
 - Alternative Energy
 - Operational Strategy

- Modeled emissions reductions from **possible opportunities**: **68,787,939 lbs CO₂e (6%)**

INITIATIVE CATEGORY	INITIATIVE	FOCUS AREAS
Possible Opportunity	Phase 2: Solar RFP	Alternative Energy
	ESCO #5 Remaining Backshops/Depots	Energy Efficiency
	VW Settlement for Utility Fleet Upgrades	Energy Efficiency
	Expanded Use of Thermal Recovery	Energy Efficiency
	Green Power Purchasing	Alternative Energy
	Convert 300 Hybrid Buses to Zero Emissions Buses	Energy Efficiency & Alternative Energy
	Convert Remaining 100 Diesel Buses to Hybrid or Electric	Energy Efficiency & Alternative Energy
	Procure Renewable Energy	Alternative Energy

REPLACE DIESEL & HYBRID BUSES

- Replace remaining diesel buses (100) with zero emission buses :
14,539,258 lbs CO₂e (1%)
- Replace first generation hybrid buses (300) with zero emission buses:
35,474,434 lbs CO₂e (3%)



What's needed

- Development of Battery Electric Bus Master Plan
 - Range
 - Acquisition Cost
 - Infrastructure

PHASE II SOLAR PPA

ALLEGHENY

183,930 SQ. FT.



COMLY

105,970 SQ. FT.



FRANKFORD

137,738 SQ. FT.



FRAZER

52,770 SQ. FT.



FRONTIER

32,000 SQ. FT.



SOUTHERN

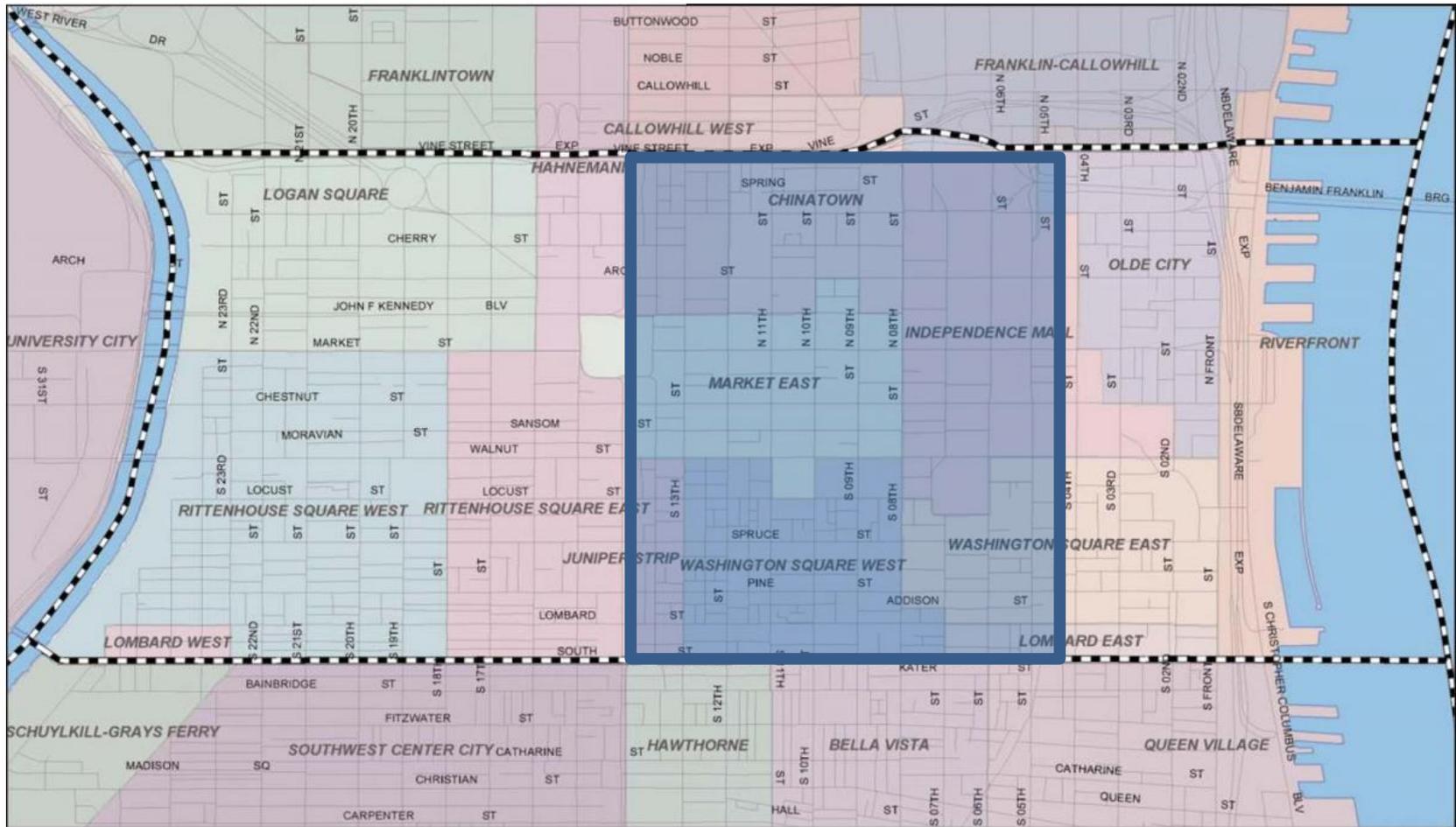
196,600 SQ. FT.



Modeled emissions reductions: **3,180,743 lbs CO₂e (<1%)**

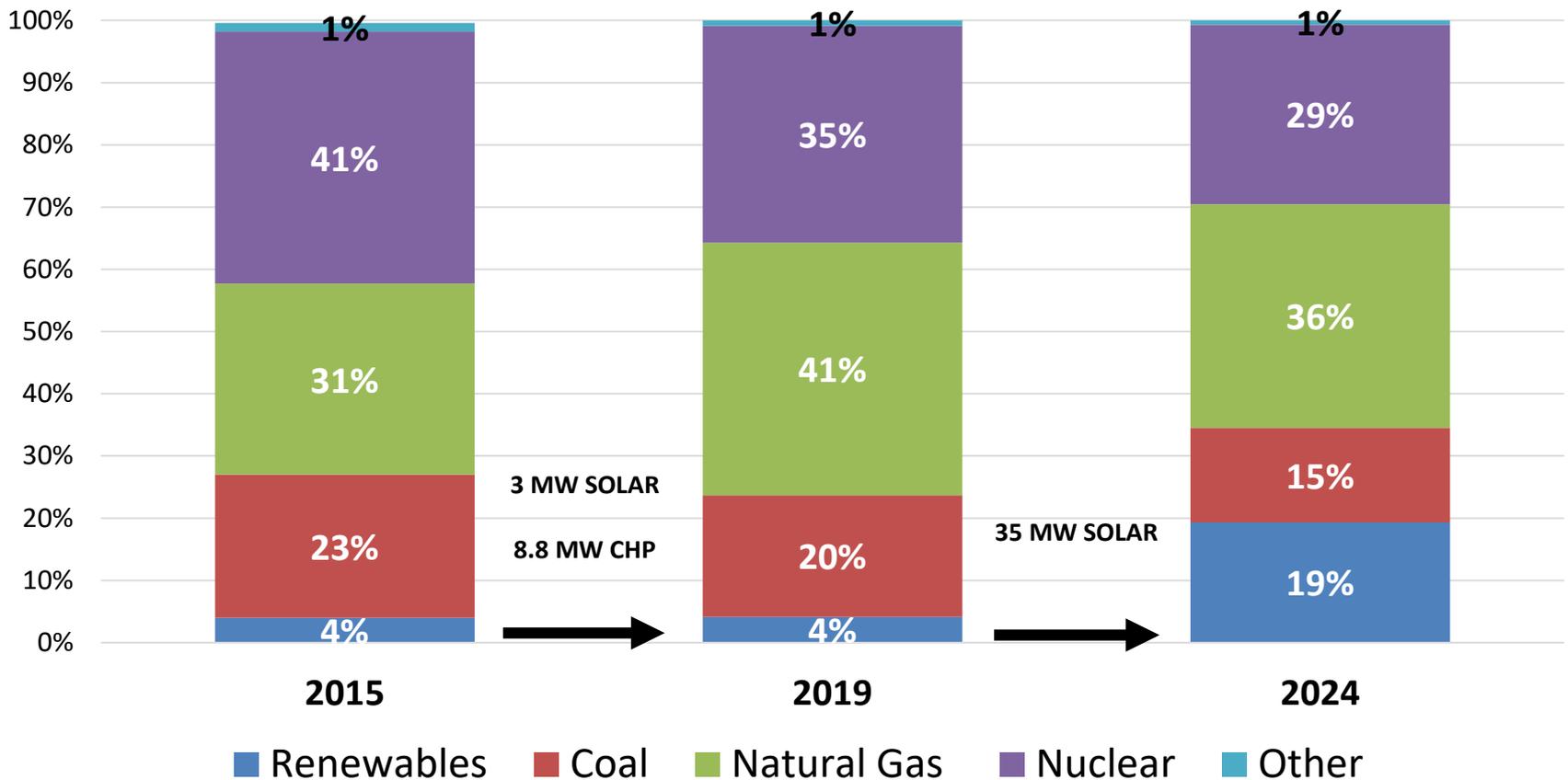
35MW SOLAR PROJECT

35 MW SOLAR FIELD = 1/3 OF CENTER CITY



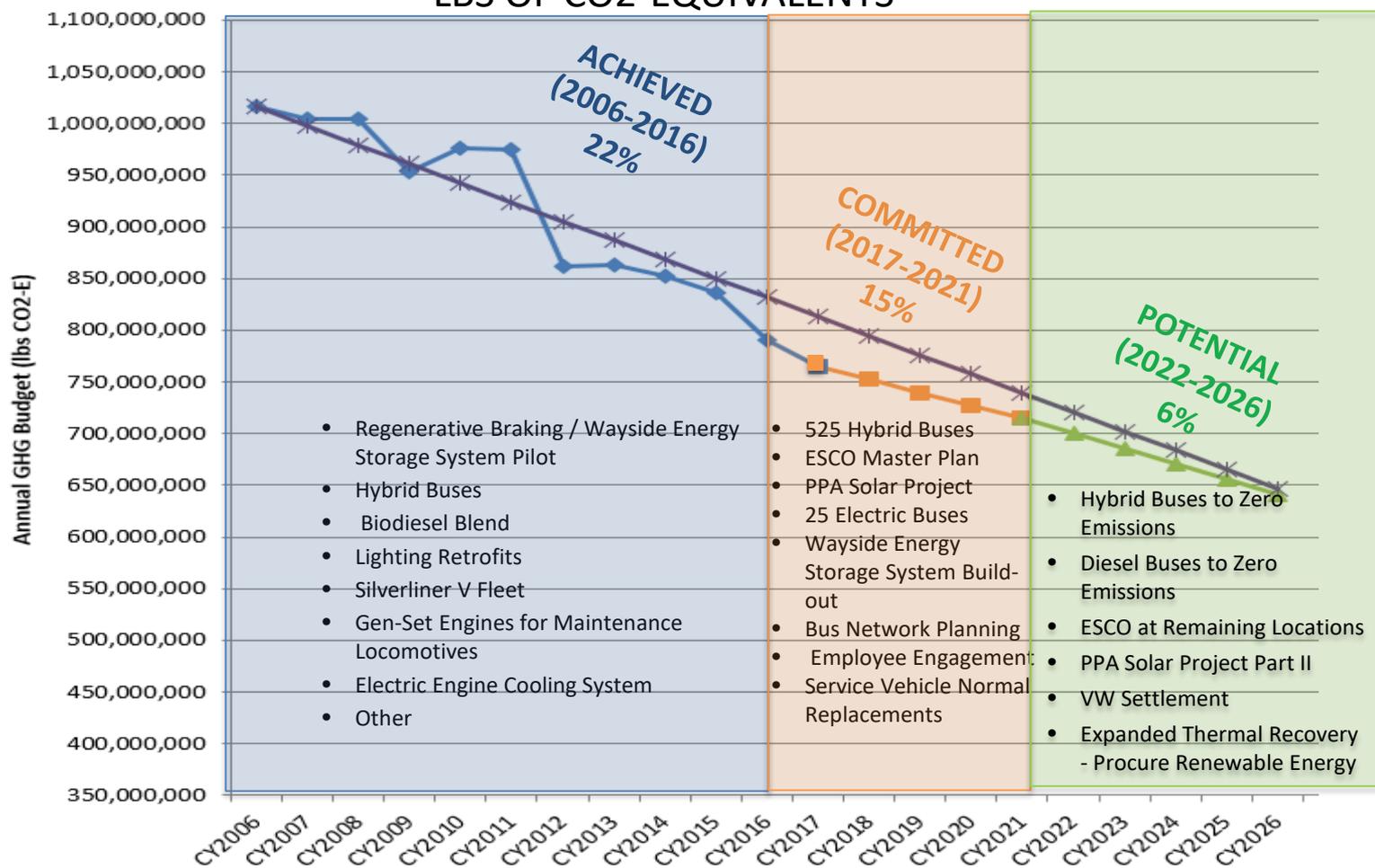
PROJECTED IMPACT ON ELECTRICITY MIX

SOURCES OF SEPTA'S ELECTRICITY



ENERGY ACTION PLAN SUMMARY

GHG EMISSIONS INVENTORY LBS OF CO2-EQUIVALENTS



CONCLUSION

- Regenerative Braking / Wayside Energy Storage System Pilot
- Biodiesel Blend
- Lighting Retrofits
- Silverliner V Fleet
- Gen-Set Engines for Maintenance Locomotives
- Electric Engine Cooling System
- 525 Hybrid Buses
- ESCO Master Plan
- PPA Solar Project
- 35 Electric Buses
- Wayside Energy Storage System Build-out
- Bus Network Planning
- Employee Engagement
- Service Vehicle Normal Replacements
- Renewable Energy PPA
- STRATEGIC
- OPPORTUNISTIC
- CREATIVE
- NETWORK (INTERNAL & EXTERNAL)

