



“Energetic Initiatives for People, Community and Planet”

# Energetic Initiative for People, Community, and Planet

An overview of sustainability energy projects conducted at AstraZeneca – Mt. Vernon.

July 2024



# Who are We?


We are a global, science-led biopharmaceutical business and our innovative medicines are used by millions of patients worldwide.






## Our purpose:

We push the boundaries of science to deliver life-changing medicines.

### Our Values

-  We follow the science
-  We put patients first
-  We play to win
-  We do the right thing
-  We are entrepreneurial

### Our strategic priorities

-  Science & Innovation
-  Growth & Therapy Area Leadership
-  People & Sustainability



**CALQUENCE**  
(acalabrutinib) 100 mg capsules

**TAGRISSO**  
osimertinib

**farxiga**  
(dapagliflozin) 5mg & 10mg tablets

**Qtern**  
(dapagliflozin/saxagliptin) 5 mg/5 mg tablets

**ONCE-DAILY xigduo XR** (dapagliflozin/metformin HCl extended-release) 5/1000 mg tablets

**onglyza** (saxagliptin) 5 mg tablets

**kombiglyze XR**  
(saxagliptin and metformin HCl extended-release) tablets



# What sustainability means at AstraZeneca

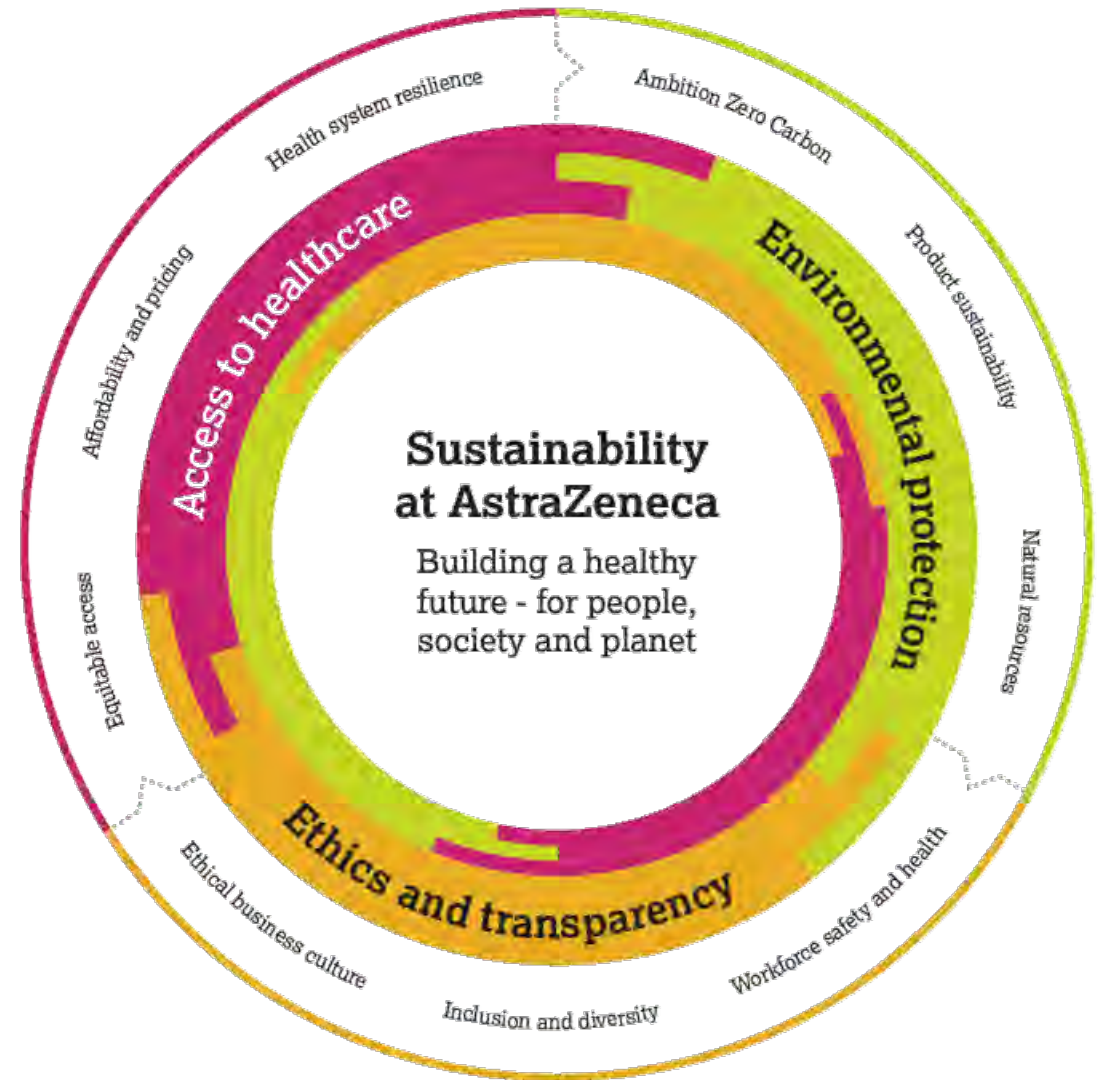
## Our sustainability strategy

We have nine material focus areas, each with their own targets, grouped under three interconnected priorities:

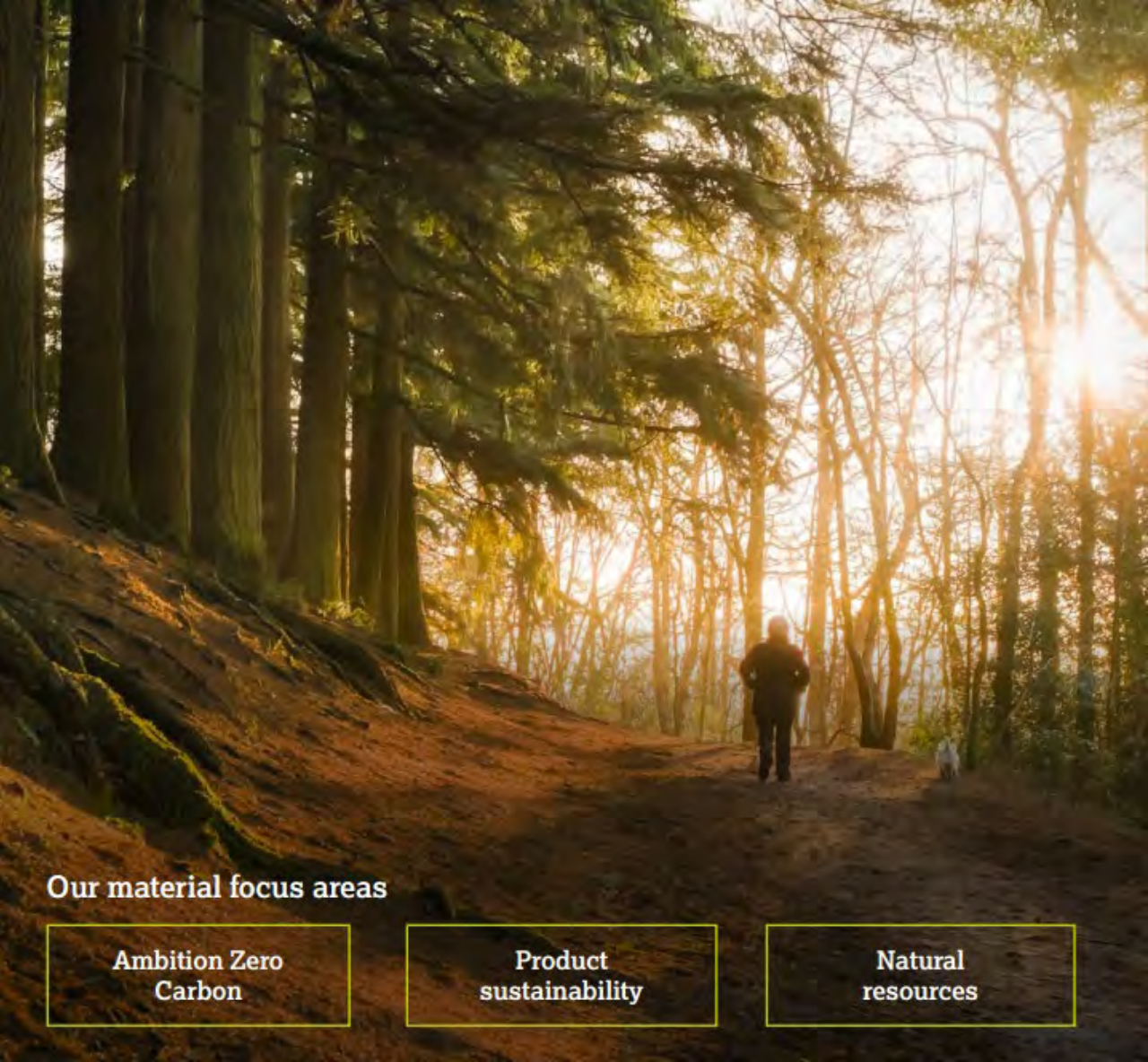
- | Access to healthcare
- | Environmental protection
- | Ethics and transparency

## Our ambitions

- | Promoting prevention, increasing access to life-saving treatments, and strengthening health system resilience and sustainability.
- | Accelerating the delivery of net-zero healthcare, proactively managing our environmental impact across all activities and investing in nature and biodiversity.
- | Ensuring ethical, open and inclusive behaviour across our organisation and value chain.



# What sustainability means at AstraZeneca



## Our material focus areas

Ambition Zero  
Carbon

Product  
sustainability

Natural  
resources

**Accelerating the delivery of net-zero healthcare, proactively managing our environmental impact and investing in nature and biodiversity.**

“AstraZeneca announces \$400 million investment in reforestation and biodiversity in support of climate action and human health”

– Announced June 28, 2023

“AstraZeneca announces innovative partnership with Vanguard Renewables to decarbonize its United States sites”

– Announced June 13, 2023



# Greenhouse Gases (GHGs)

## Primer

Scope 1 emissions are greenhouse gas (GHG) emissions that are released into the atmosphere directly from activities that an organization owns or controls. These emissions can include:

### Fugitive emissions

Leaks of gases or vapors from pressure-containing equipment, such as methane leaks from coal mines or refrigerant gases from air conditioning units

### Process emissions

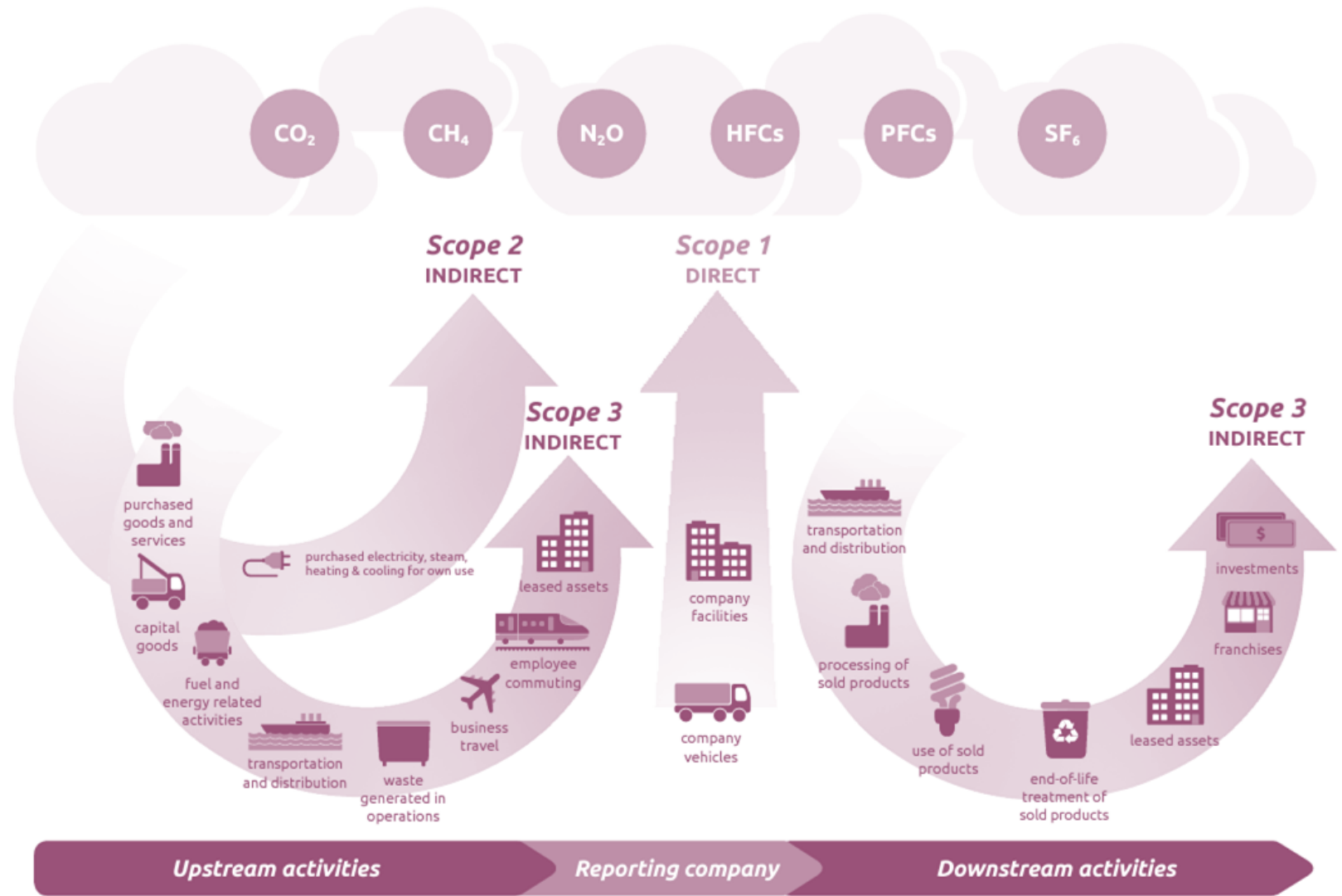
Emissions released during industrial processes, such as factory fumes, chemicals, and the production of CO<sub>2</sub> during cement manufacturing

### Transportation emissions

Emissions from fuels used in vehicles owned or controlled by the company, such as burning fuel in a fleet of vehicles  
Electricity, heat, or steam generation  
Emissions from burning coal to produce electricity, or from fuel combustion in boilers and furnaces

### Chemical and material processing

Emissions from the manufacture or processing of chemicals and materials



Source: WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard

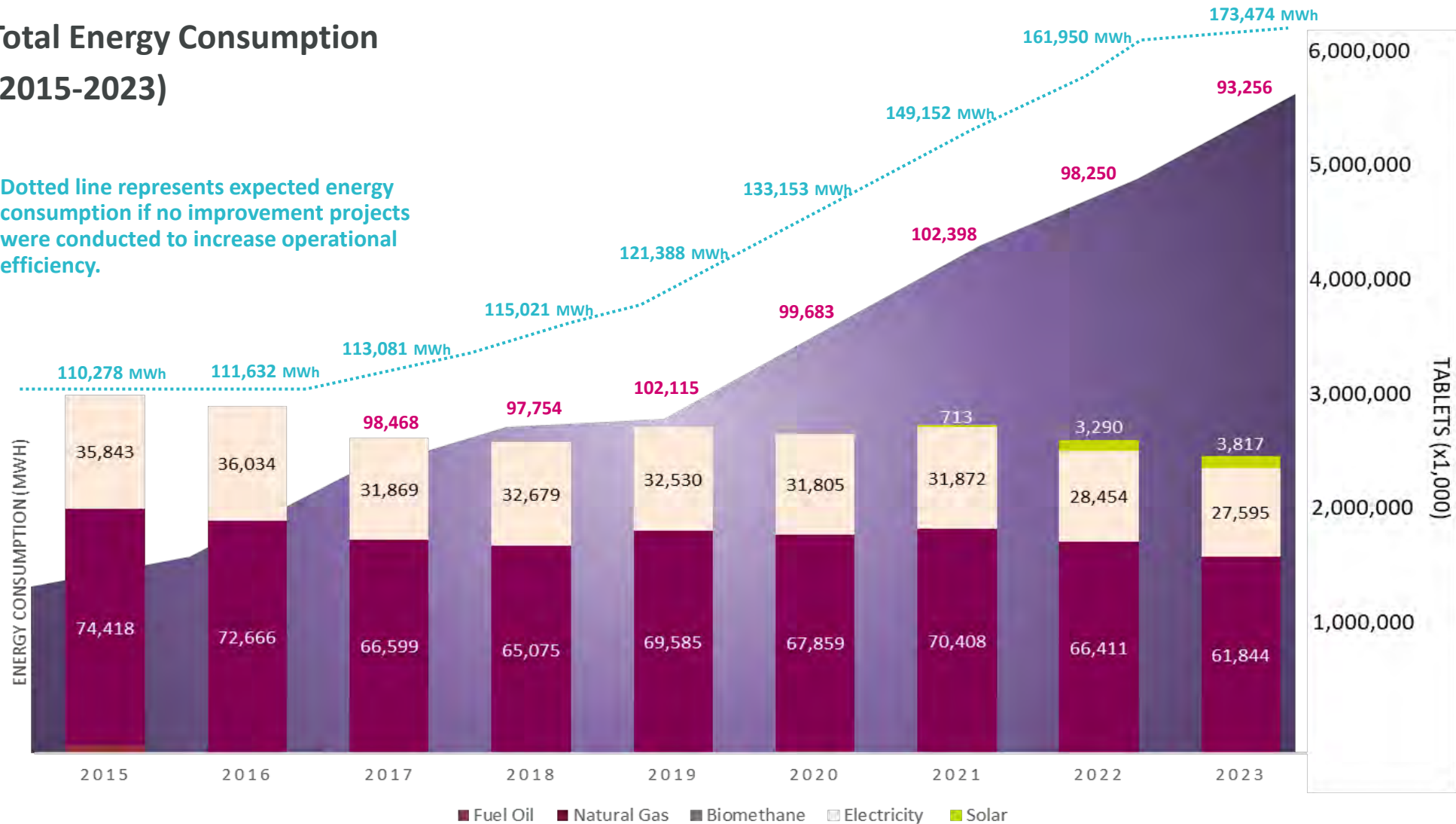


# AZ - Mt. Vernon's Total Energy Consumption Comparisons

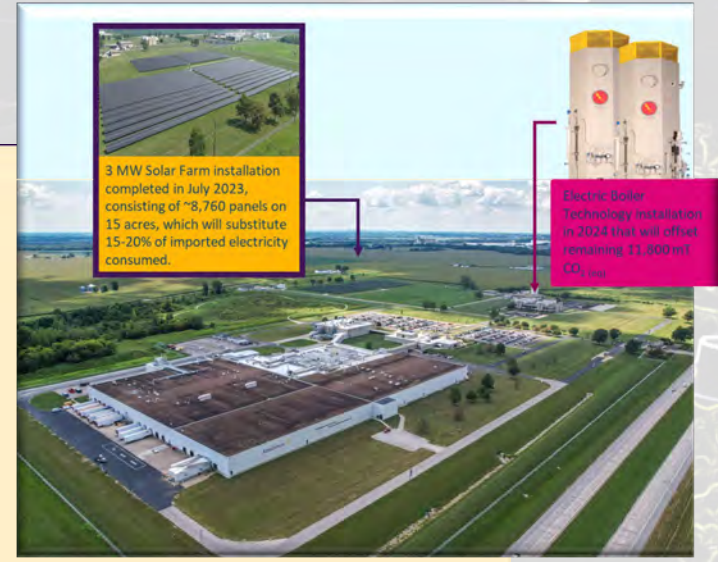
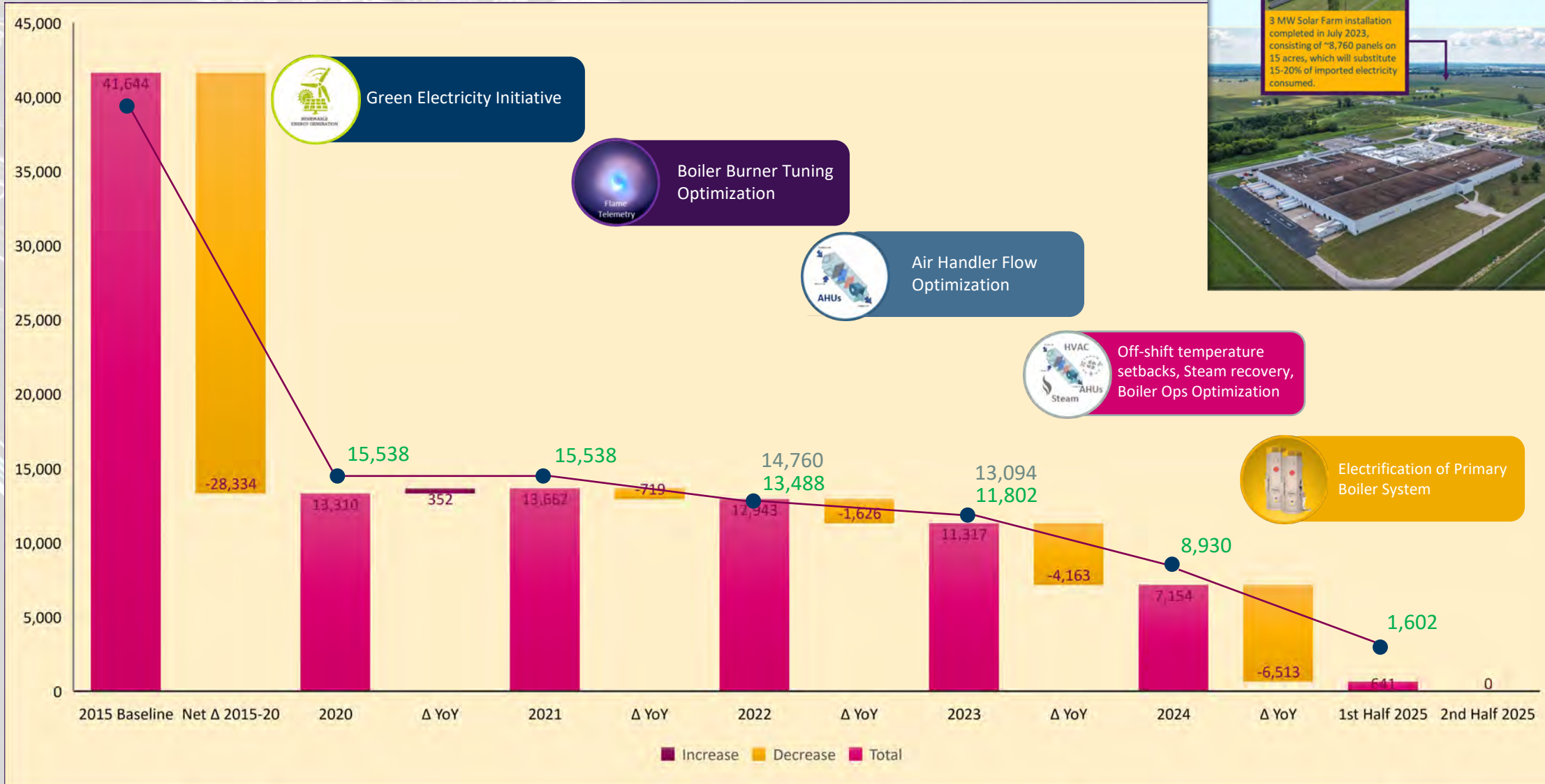


## Total Energy Consumption (2015-2023)

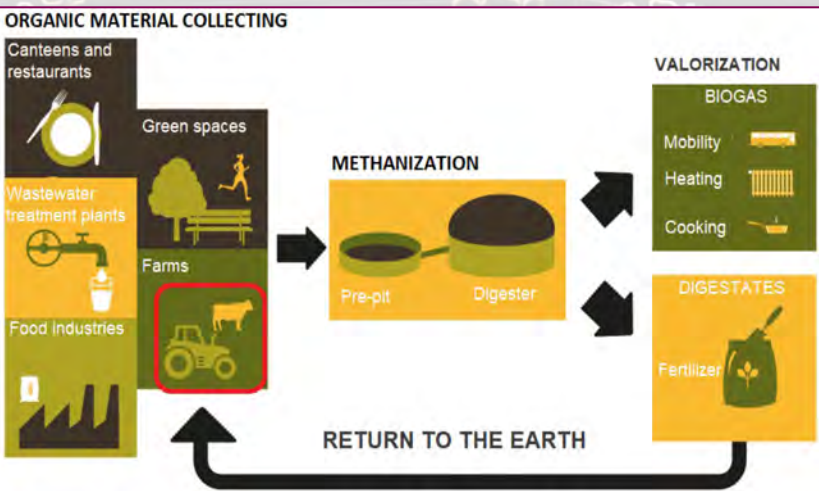
Dotted line represents expected energy consumption if no improvement projects were conducted to increase operational efficiency.



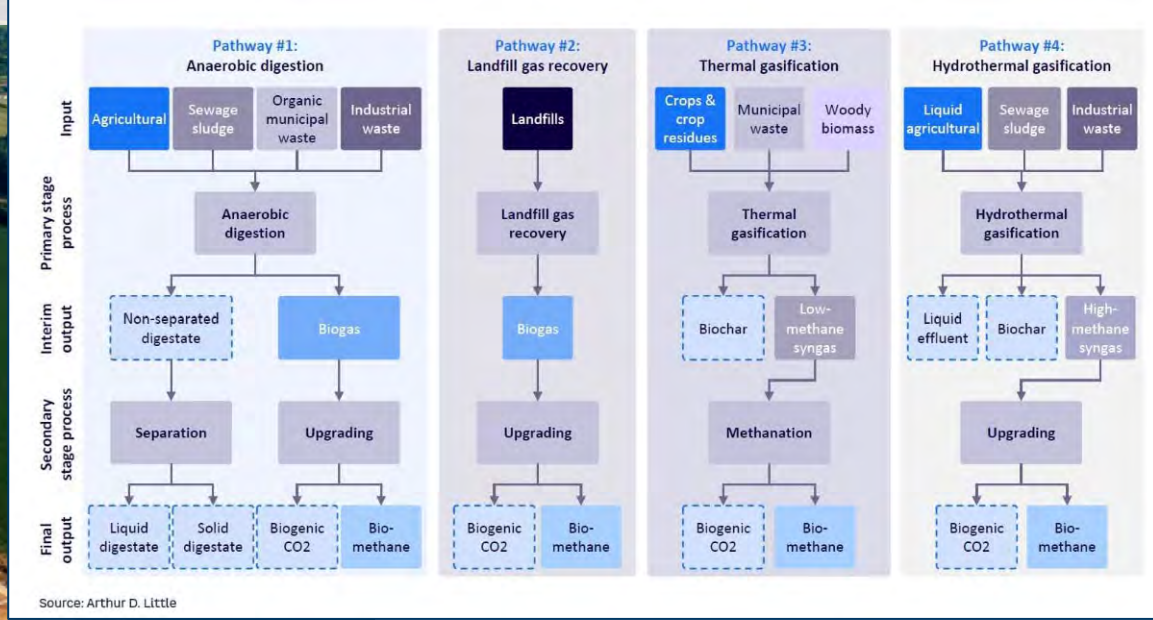
# AZ - Mt. Vernon's Glidepath to Zero Carbon



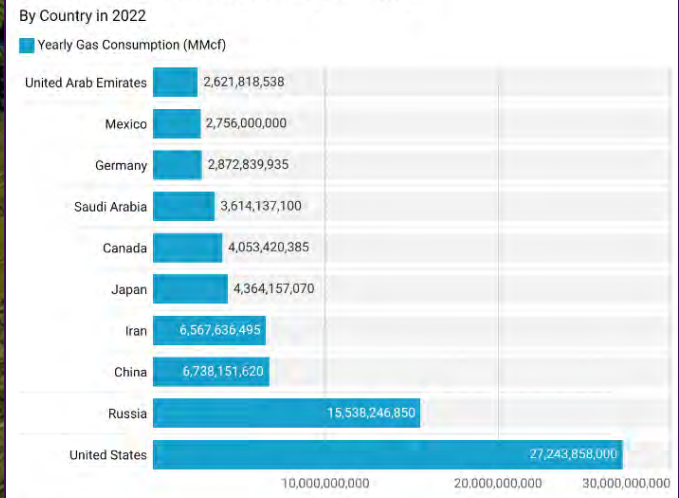
# Alternative Energy Considerations (Biogas/Biomethane)



Biomethane Production



## Natural Gas Consumption by Country





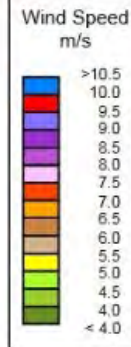
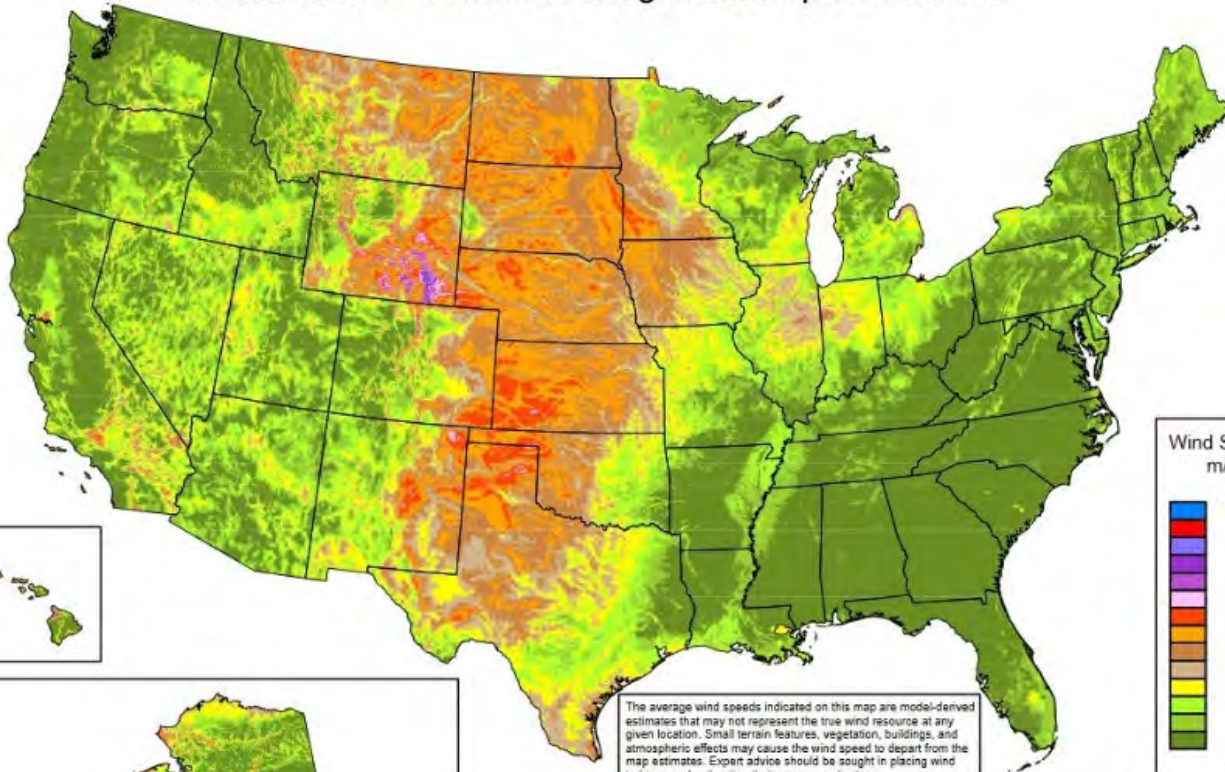
# Alternative Energy Considerations (Electric Vehicle Fleet)



# Alternative Energy Considerations (Wind)

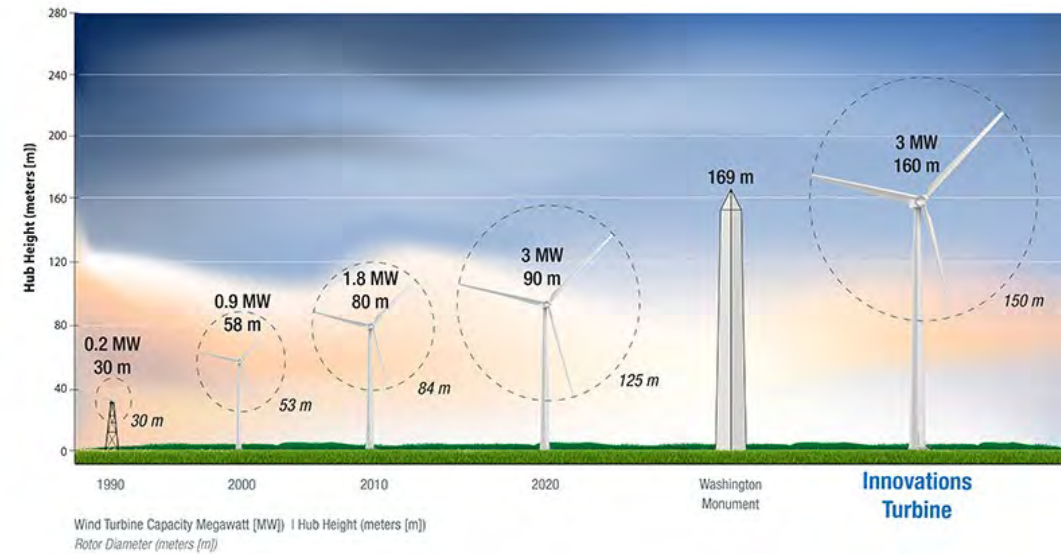


United States - Annual Average Wind Speed at 30 m



The average wind speeds indicated on this map are model-derived estimates that may not represent the true wind resource at any given location. Small terrain features, vegetation, buildings, and atmospheric effects may cause the wind speed to depart from the map estimates. Expert advice should be sought in placing wind turbines and estimating their energy production.

Source: Wind resource estimates developed by AWS Truepower, LLC. Web: <http://www.awstruepower.com>. Map developed by NREL. Spatial resolution of wind resource data: 2.0 km. Projection: Albers Equal Area WGS84.



LCOE (USD/MWh) < 30 35 40 45  
 PLANT SIZE (MW) < 200 400 600 800 1,000

A recent NREL study has revealed that technology innovations could unlock an additional 80% economically viable wind energy capacity as soon as 2025. Innovations in wind technology—such as on-site manufacturing, taller towers, longer blades, and wake steering—could allow wind power plants (yellow circles on maps) to be deployed in new areas of the United States (shaded regions in second map) compared with areas that are viable with current technology (shaded regions in first map). Graphic by Travis Williams, NREL, using the U.S. Geological Survey's U.S. Wind Turbine Database



# “Moving the Business Forward”



Air Handler Unit Temperature Setback  
Dust Collection Purge Upgrade  
Flash Tank Heat Plume Recovery  
LED Lighting Conversion



17,764 MWh



Wilderness Habitat



3.5 MW Solar Field

5,512 MWh



Solar Grazing



HVAC/Condensing Boiler

5,711 MWh



Chiller Replacement  
Water Tower Replacement

3,630 MWh



Two Electric Boilers

7,852 MWh



Earth Day Tree Grove



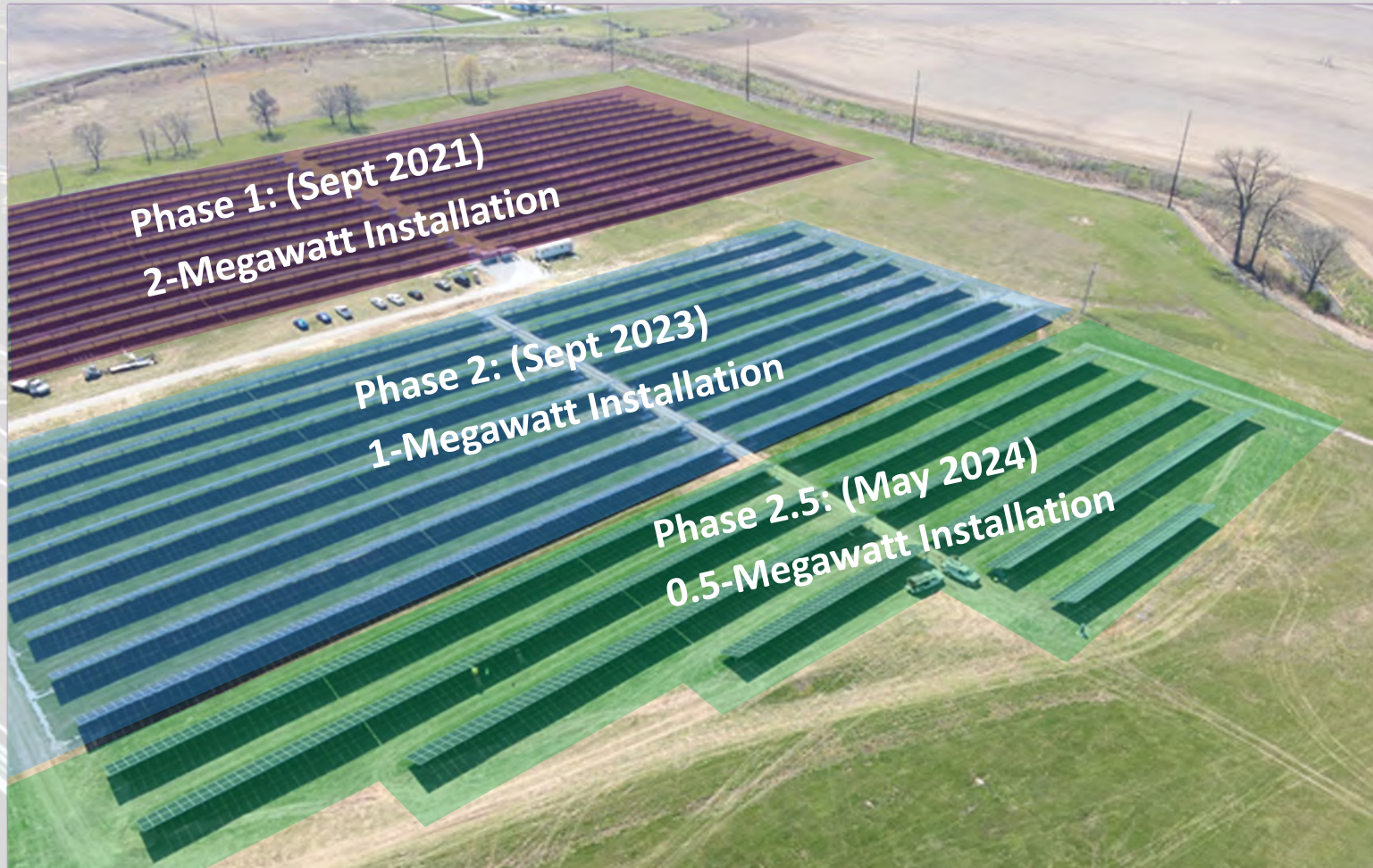
Fire Water Supply Loop Replacement  
Potable Water Supply Line Replacement

1,350 m<sup>3</sup>

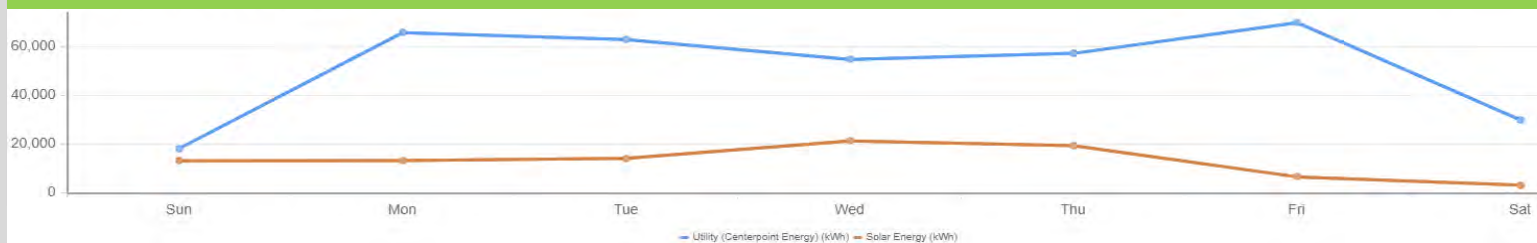
Mt. Vernon Sustainability Projects have resulted in significant natural resource savings as denoted in the applicable box.



# AZ - Mt. Vernon's 3.5 Mega-Watt Solar Field



TYPICAL SITE ENERGY CONSUMPTION WEEK



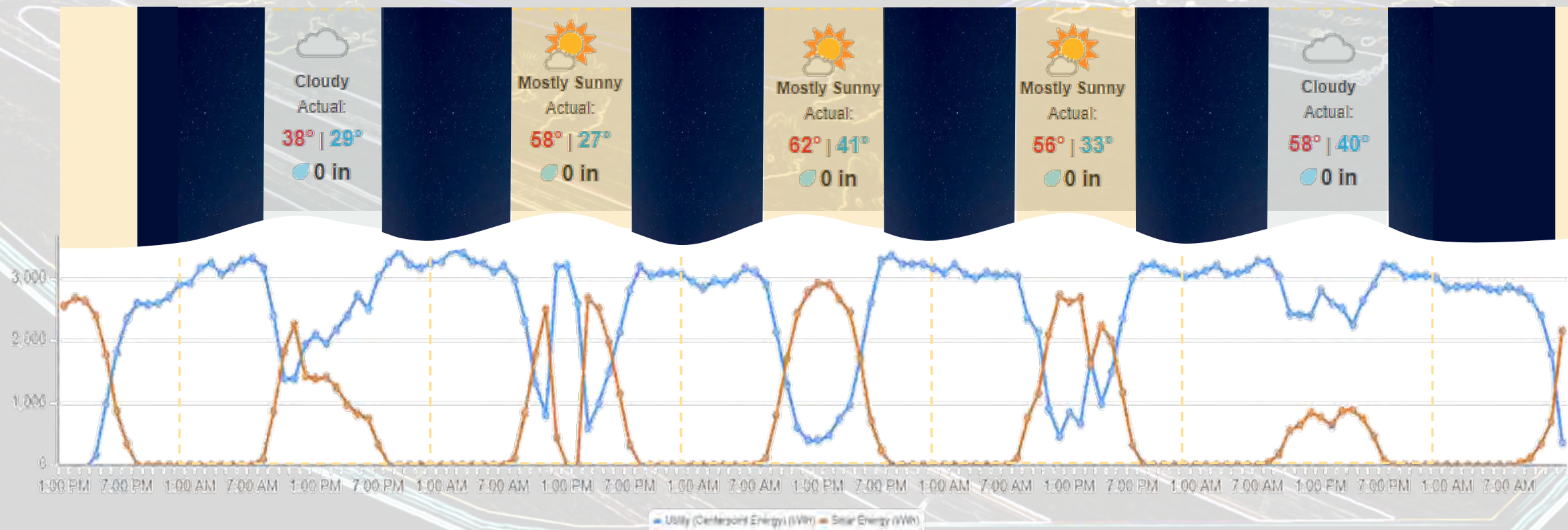
Date	ELECTRICITY CONSUMPTION (SCOPE 2 / SOLAR GENERATION)			GHG Offset mT CO2e	Cost Offset \$105.42
	Scope 2-Elec	Solar	Percent		
Jan-21	2,294	0	0%	0	\$0.00
Feb-21	2,174	0	0%	0	\$0.00
Mar-21	2,534	0	0%	0	\$0.00
Apr-21	2,515	0	0%	0	\$0.00
May-21	2,702	0	0%	0	\$0.00
Jun-21	3,163	0	0%	0	\$0.00
Jul-21	3,394	0	0%	0	\$0.00
Aug-21	3,418	0	0%	0	\$0.00
Sep-21	2,827	96	3%	57	\$10,105.77
Oct-21	2,539	252	10%	150	\$26,514.61
Nov-21	2,069	209	10%	124	\$22,005.58
Dec-21	2,242	157	7%	93	\$16,507.51
Jan-22	2,136	109	5%	65	\$11,490.39
Feb-22	1,992	226	11%	134	\$23,780.43
Mar-22	2,237	294	13%	175	\$30,979.88
Apr-22	2,189	289	13%	173	\$30,516.77
May-22	2,491	337	14%	201	\$35,565.02
Jun-22	2,616	354	14%	211	\$37,361.27
Jul-22	2,962	328	11%	196	\$34,600.43
Aug-22	2,952	352	12%	210	\$37,121.02
Sep-22	2,424	330	14%	197	\$34,791.55
Oct-22	2,280	307	13%	183	\$32,416.02
Nov-22	2,112	215	10%	128	\$22,626.61
Dec-22	2,064	148	7%	88	\$15,561.26
Jan-23	2,246	145	6%	86	\$15,290.12
Feb-23	2,002	226	11%	134	\$23,772.95
Mar-23	2,222	252	11%	150	\$26,612.22
Apr-23	2,218	280	13%	167	\$29,568.62
May-23	2,472	363	15%	216	\$38,275.16
Jun-23	2,438	344	14%	205	\$36,284.40
Jul-23	2,755	331	12%	197	\$34,886.11
Aug-23	2,856	307	11%	183	\$32,318.29
Sep-23	2,266	497	22%	297	\$52,433.80
Oct-23	2,251	418	19%	249	\$44,072.10
Nov-23	1,992	404	20%	241	\$42,585.78
Dec-23	1,877	250	13%	149	\$26,303.34
Jan-24	2,083	228	11%	136	\$24,002.18
Feb-24	1,786	439	25%	262	\$46,292.40
Mar-24	1,958	471	24%	281	\$49,604.64



# Solar Contribution to Total Energy Consumption

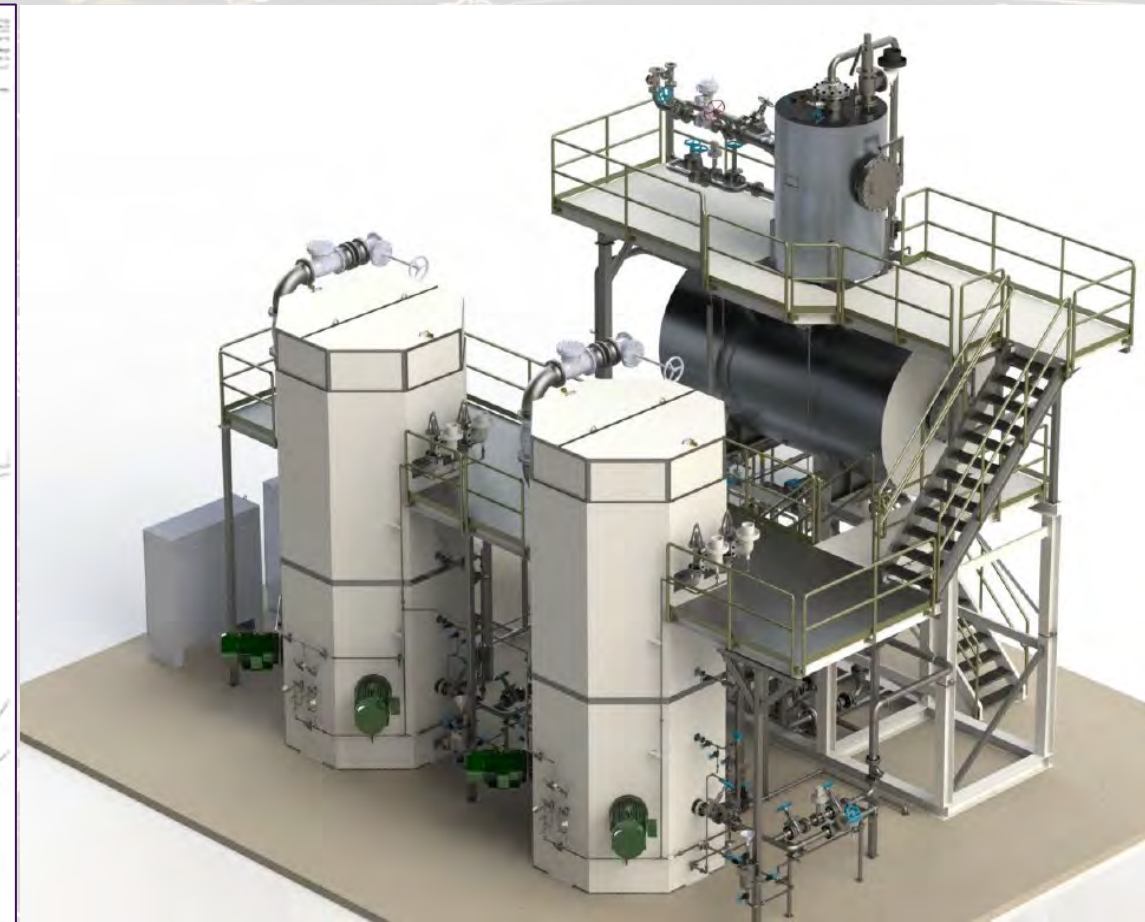
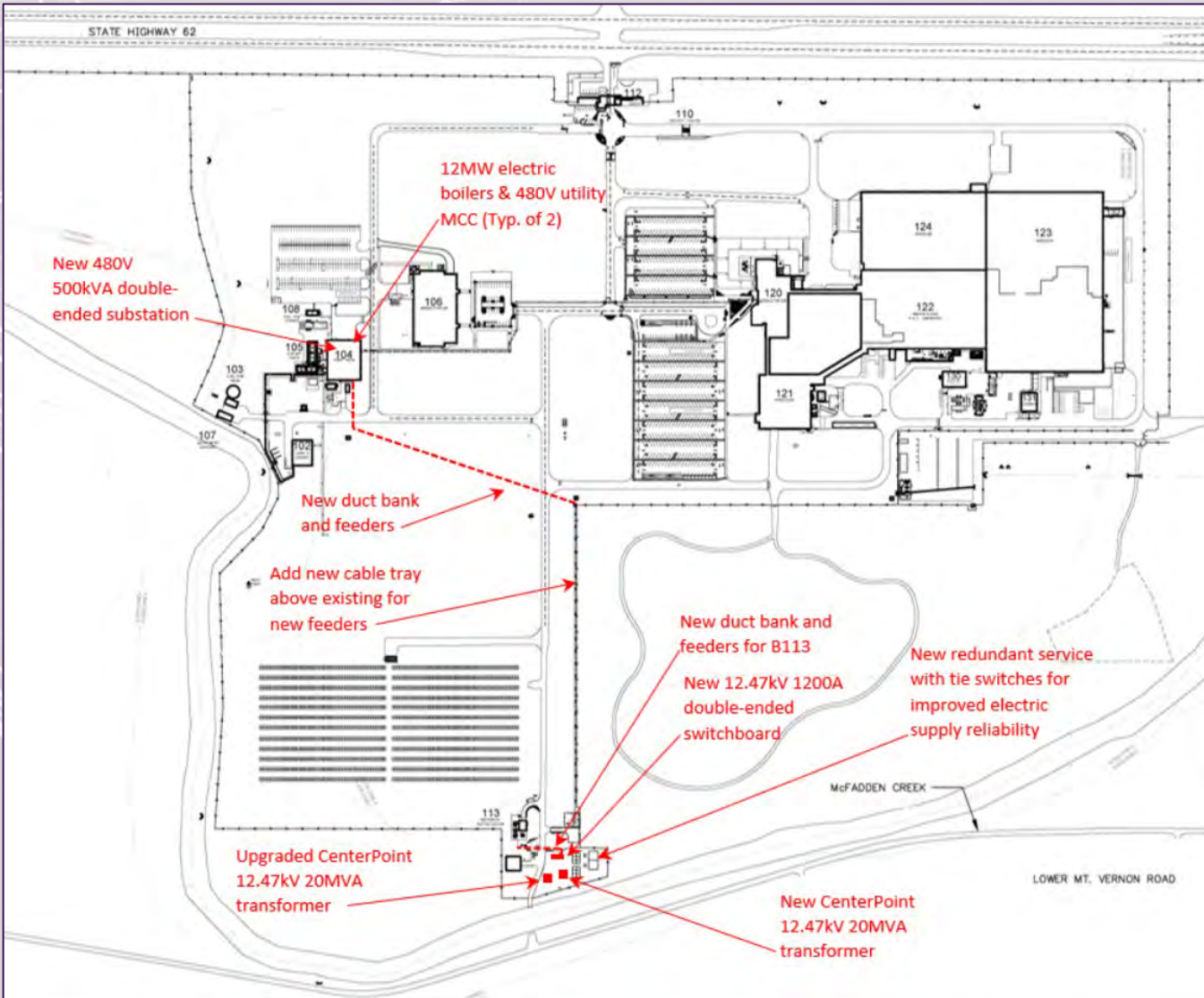


	MON	TUES	WED	THUR	FRI
Solar Energy	13,505 kwh	14,413 kwh	21,547 kwh	19,602 kwh	6,778 kwh
Electricity	66,010 kwh	63,090 kwh	54,982 kwh	57,458 kwh	70,077 kwh





# ELECTRIC BOILERS – MT. VERNON, INDIANA



YEAR IMPLEMENTED	BRIEF PROJECT DESCRIPTION	IMPACT	COST TO IMPLEMENT	PROJECTED UTILITY SAVINGS	PROJECTED COST SAVINGS (Annualized)
2024	<b>Boiler Electrification</b> Install two (2) Electric Boilers (Engineering analysis expects additional 55,000 MWh. Boiler specifications are up to 71,000 MWh.)	Electricity	\$26,000,000	carbon zero	\$0



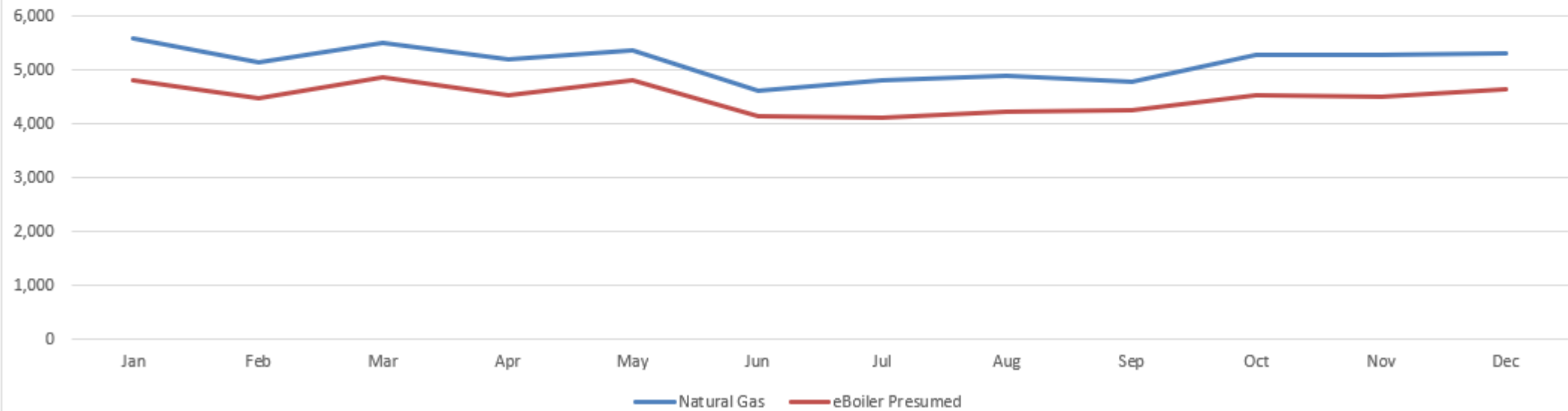


# Electric Boiler Energy Consumption (Engineering Calculation)

## ELECTRIC BOILER ASSUMED POWER REQUIREMENT BASED ON MONTHLY STEAM LOAD

2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Total Energy	26,648	4,485	4,876	4,532	4,817	4,154	4,122	4,245	4,257	4,534	4,500	4,648	283,786
Steam (lbs)	16,060,000	14,936,000	16,236,000	15,090,000	16,041,000	13,832,000	13,727,000	14,136,000	14,175,000	15,098,000	14,984,000	15,477,000	179,792,000
Natural Gas	5,597	5,157	5,503	5,214	5,366	4,622	4,808	4,888	4,784	5,295	5,298	5,312	61,844
eBoiler Forecast	4,823	4,485	4,876	4,532	4,817	4,154	4,122	4,245	4,257	4,534	4,500	4,648	53,992

### N.G Boiler Energy Consumption v. eBoiler Energy Consumption (MWH)



<b>Please list one or two topics you are interested in hearing or learning more about.</b>
Sustainability, Best Practices
Energy reduction projects,
Energy reduction and savings. CO2 emissions and energy efficiency.
Lessons learned from installation of solar panels (maintenance/capacity/switchgear considerations/backup power/etc.)
energy efficiency
calculating carbon neutrality. Solar energy business models.
Site level energy generation ideas - hydrogen fuel cells, mini windmills, solar





# Mt. Vernon Leading the Way In Sustainability Initiatives



## Electricity



### Solar Energy

3.5 MW designed capacity

Offsets 20% annual electricity requirements in 2024

Rezoned land for agricultural use

Electricity Offset:

**20%**  
5,100 MW  
of Electricity

## Natural Resources



### Renew Building/Facility Infrastructure

Renewed working environment to promote wellness while reducing natural resource demand

Digital lighthouse / smart metering site

Site Energy Offset:

**19%**  
19,000 MW  
of Energy



### Regrow Biodiversity

Introduce 750 trees in community annually – removes 20 mT of carbon over 20 yrs life.

Fortifying habitat for plant & animal species richness (Introduce St. Croix Sheep in 2024)

Species Richness:

**>100**  
Flora/Fauna  
(identified to date)

## Water



### Conserve Water Reuse

Increase utility water cycles / minimizes chemical usage to decrease water discharge.

Studying site water retention & reuse

Water Usage Offset:

**5%**  
4.0 million  
gallons



### Water

Chill Water Systems

Replace/control optimization on chiller system

Cooling tower replacement

Optimize water temperatures based upon demand

Water Usage Offset:

**3%**  
1.5 million  
gallons

## Waste



### Zero

Waste to Landfill Initiative

Compactor installed for Caf  & Administration

Green Team Composting initiative

Plastics reduction initiatives

Landfill Avoidance:

**99%**  
800 mT  
Waste-to-Energy



### Circular Economy

Reuse, recycle & sell materials back into economy

New products from waste initiative

Circular Rate:

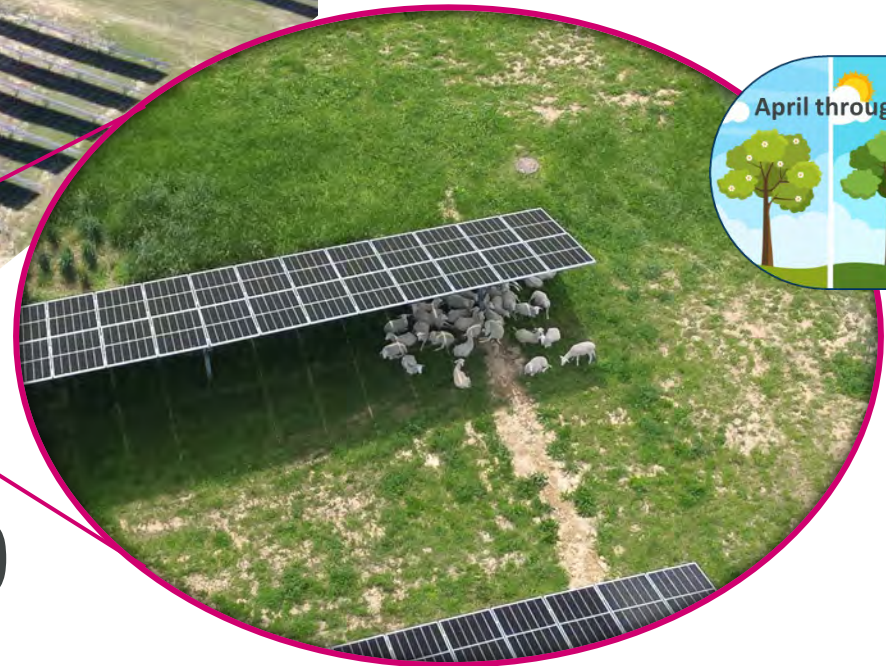
**50%**  
1,050 mT  
Reused/Recycled



# SOLAR GRAZING OVERVIEW



42  
Sheep



15  
Acres

8,760  
Solar Panels





According to current and ongoing research by Cornell University and others, the use of sheep to graze solar fields may offer the following benefits:

- ✿ Improve habitat biodiversity with a higher proportion of native vegetation to support mammals, reptiles, birds, and insects.
- ✿ Allow more flowering through natural prairie grazing for bee pollinators, as well as habitat for predatory insects helping with local pest-control.
- ✿ Increase soil health (e.g., soil aeration and nutrient levels) and soil carbon accrual and sequestration.
- ✿ Reduce fuel consumption, noise, lawnmowing costs.
- ✿ Reduce the need for herbicides and pesticides.





*“Almost all **scientific** inquiry **begins** with an observation that piques curiosity or raises a **question**” – Scientific Method*

#### **Confidentiality Notice**

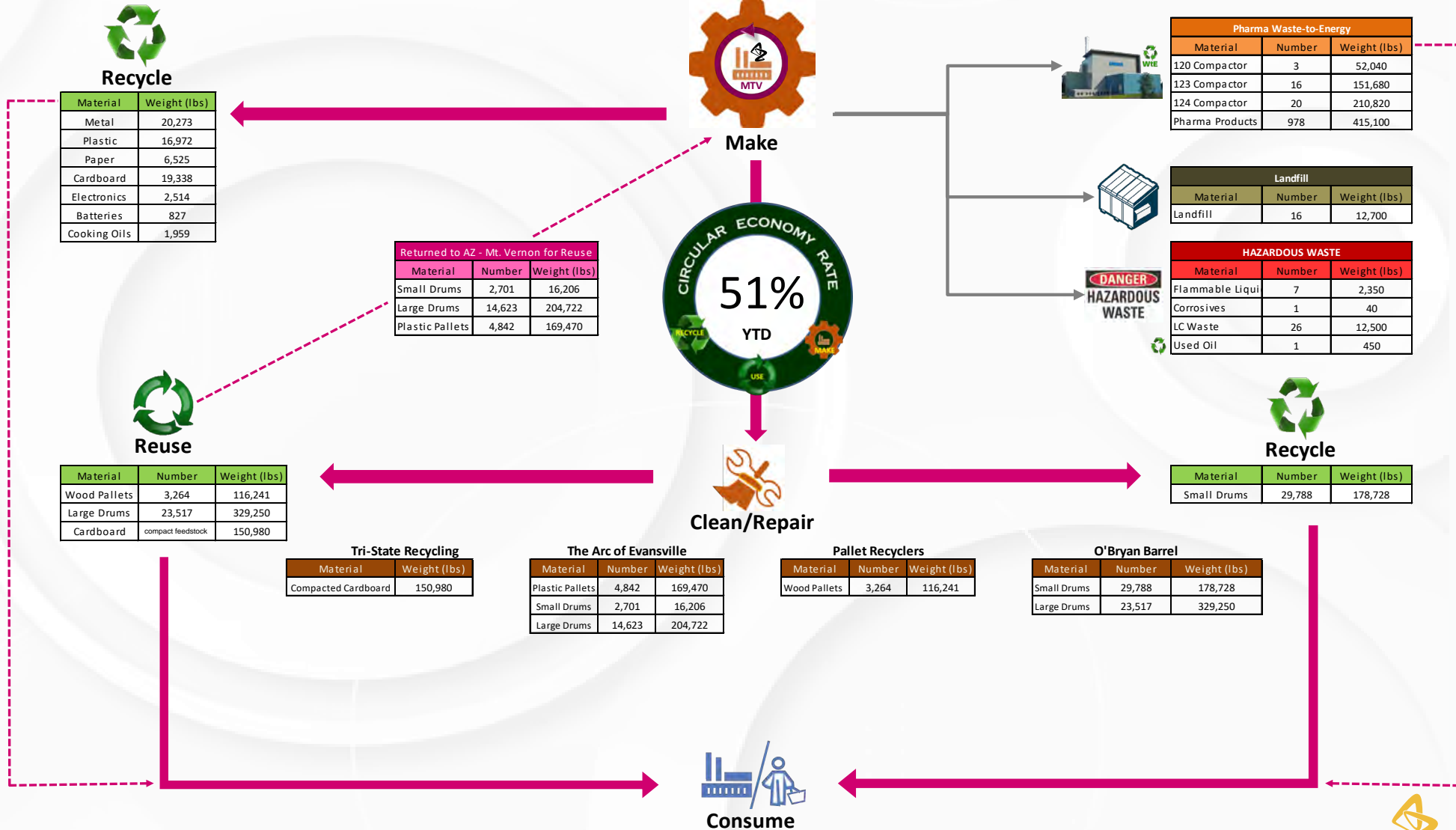
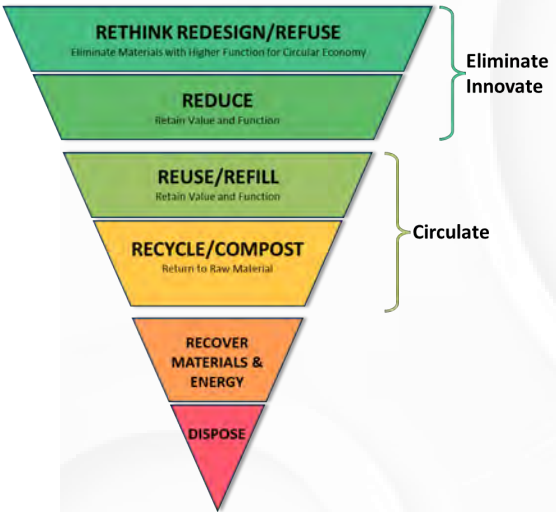
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# Working towards a Circular Economy



## THE WASTE HIERARCHY



# JOURNEY TO EXCELLENCE

2023 External Registered Auditor - Zero Findings

Recommended for Self Certified



2022 Indiana Governor's Award for Environmental Excellence Recipient  
5-Years Continuous Improvement

Indiana Partners & Environmental Stewardship Program

Charter Member / Board Member



2023 OSHA Voluntary Protection Program

2023 Recertified

Tri-State Industrial Safety Council

Charter Member / Board Member

