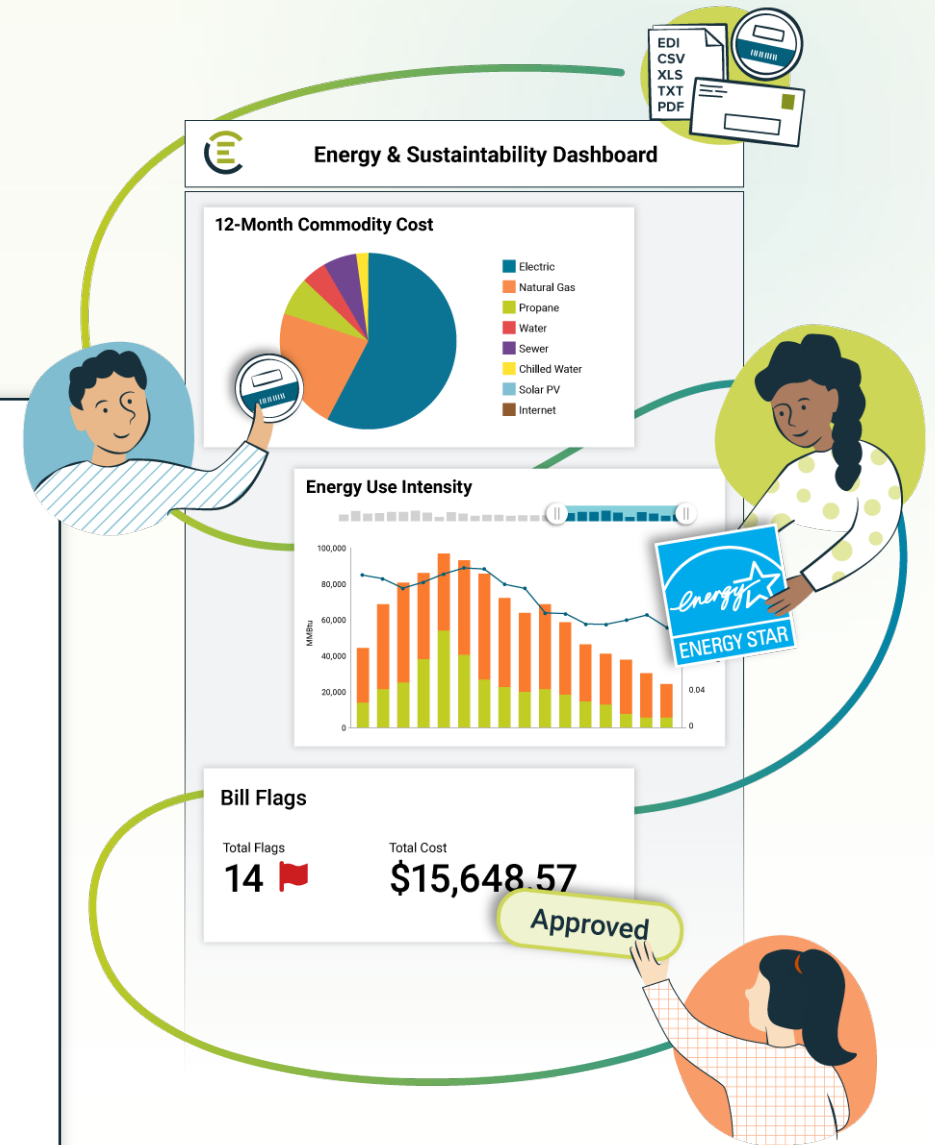


How EnergyCAP is using EnergyCAP



Lalit Agarwal

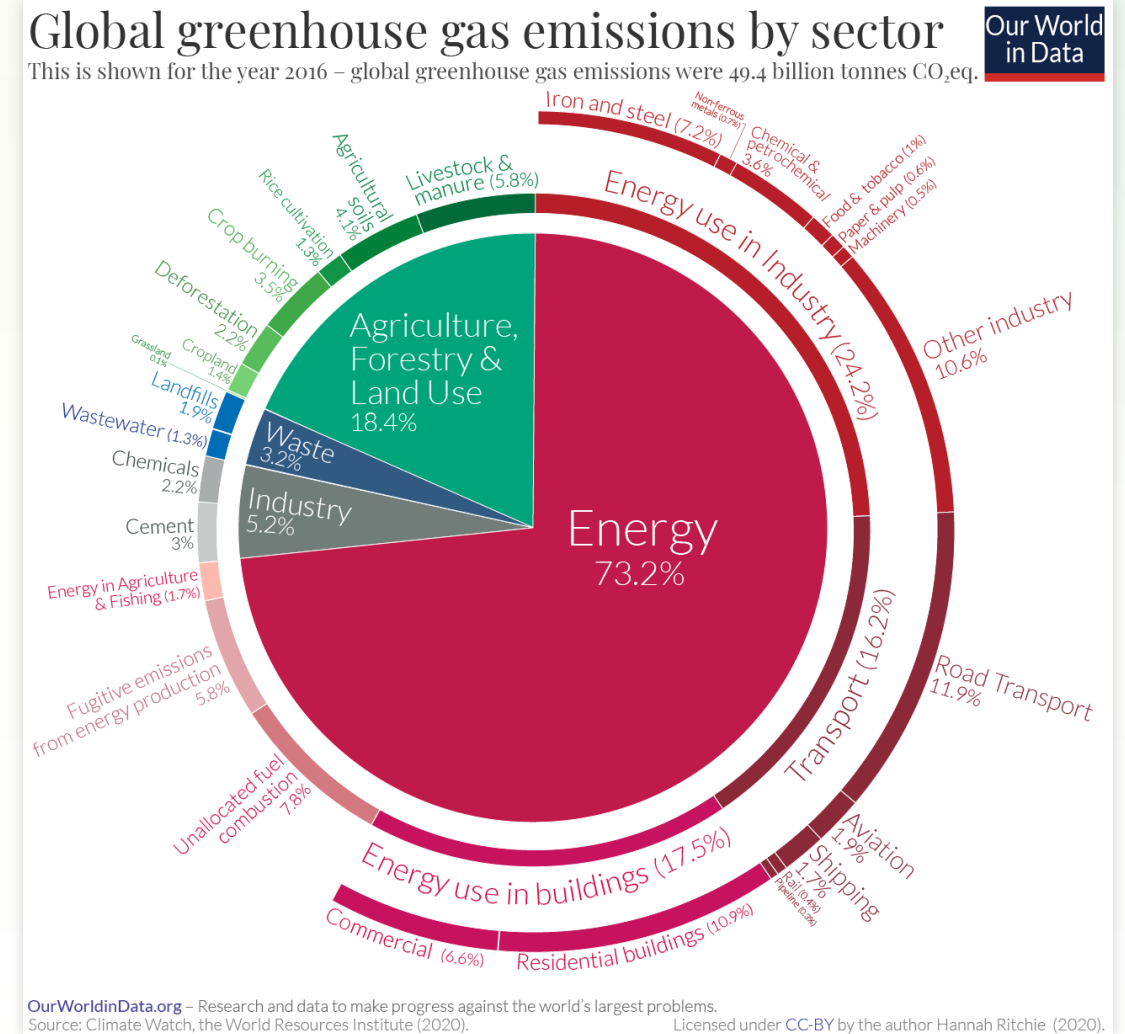
VP of Energy Management & Sustainability
EnergyCAP



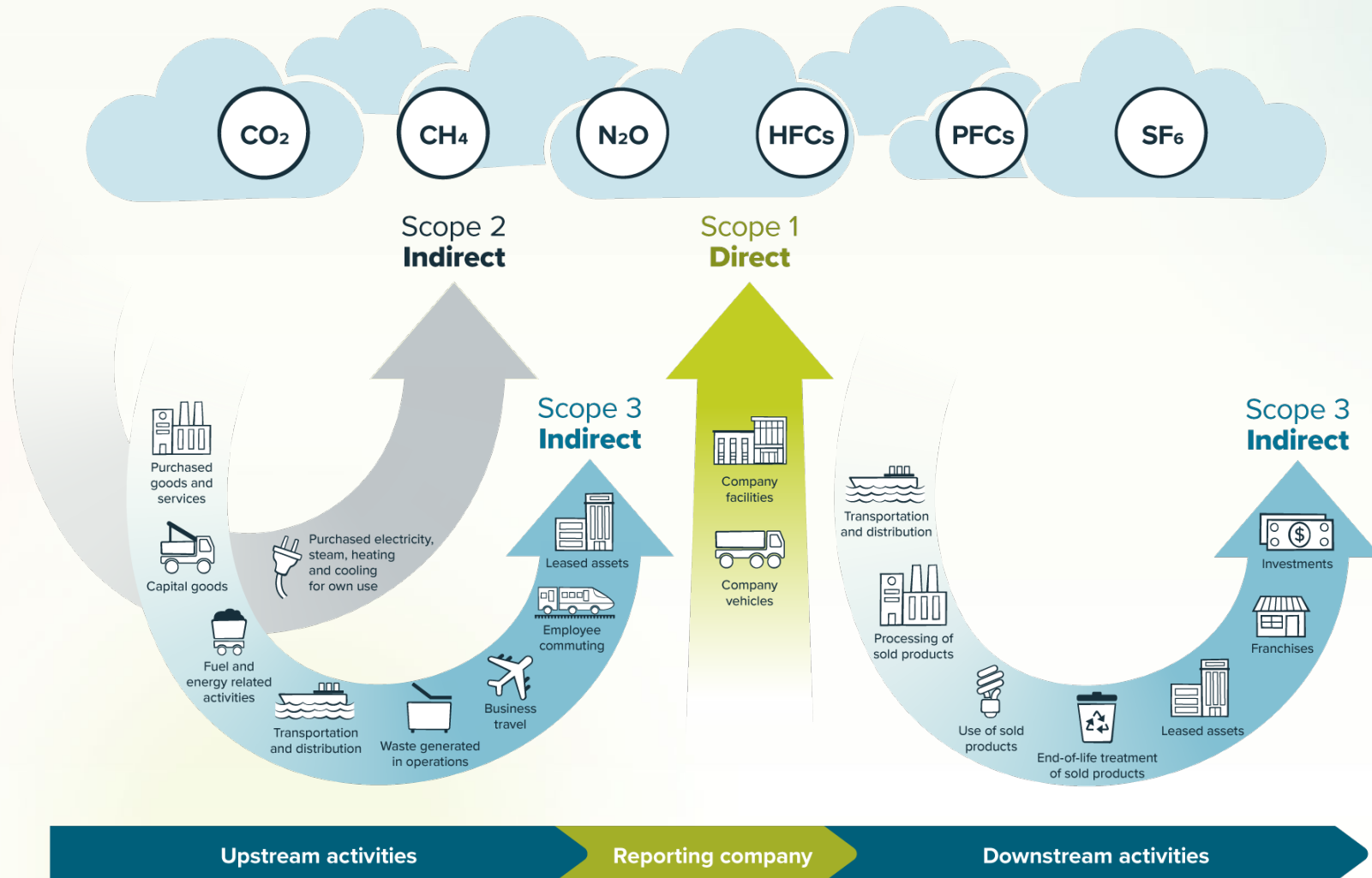
Fundamentals of Greenhouse Gases

GHG Sources

- Energy needs of human activity (anthropogenic emissions)
- Common GHGs
 - CO₂
 - N₂O
 - CH₄
- Fugitive emissions from refrigerants
- Typically reported in CO₂ equivalent



Greenhouse Gases (GHG) Scopes



GHG Scopes // It's a matter of perspective

Natural gas



Emissions count toward Scope 1

Electricity



Emissions count toward Scope 2

Carbon Accounting for EnergyCAP

Energy and sustainability ERP // The single source of truth

Get instant access to validated, actionable data you can trust to better manage resource consumption, reduce your carbon footprint, reach net-zero, and drive massive savings.



Financial-grade greenhouse gas accounting

Target and track emissions.

An advanced, holistic view of financial-grade emissions data across your business with automatically applied factors to meet your ESG reporting needs.

Customer Data Type:

GHG activities

Persona:

Sustainability



Portfolio-level energy & sustainability reporting

Manage and see it all.

Get accurate and reliable energy and utility data across your entire portfolio and streamline energy and accounting workflows.

Customer Data Type:

Utilities/Bill/Resources

Persona:

Finance/energy



Real-time energy and sustainability analytics

Dive deep. Respond quickly.

Dive deep into real-time performance of assets, devices, and sensors. Make quick, data-driven decisions for high-performance, net-zero buildings.

Customer Data Type:

Time-Series/Interval Energy

Persona:

Energy/facilities

CAPture Services: Bill CAPture, Bill Processing/Managed Services

Process

- Walk the talk
 - Understand our impact on the environment
 - Leverage the technology we built
 - Understand the process our clients would undertake
- Get buy-in
 - The senior leadership of the organization (ELT/CEO/CFO)
 - Some data may be proprietary or sensitive

Where do you start?

- Identify what applies to your operations
- Guidance for Scope 1, 2 and 3 from GHG Protocol (<https://www.ghgprotocol.org>)

Scope 1

| Fugitive Emissions | Direct emissions from refrigeration and air conditioning result from leakage and service over the operational life of the equipment. The leakage of refrigerant gas is a small but significant source of GHG emissions because of a high GWP associated with these GHGs. |
|-----------------------|--|
| Mobile Combustion | Direct emissions from owned or leased mobile sources (both on-road and non-road vehicles) that are within the company's inventory boundaries. |
| Stationary Combustion | Direct emissions typically from devices that combust solid, liquid or gaseous fuel, generally for the purposes of producing electricity, generating steam or heat. |

Scope 1 // As it applies to EnergyCAP

| Fugitive Emissions | Direct emissions from refrigeration and air conditioning result from leakage and service over the operational life of the equipment. The leakage of refrigerant gas is a small but significant source of GHG emissions because of a high GWP associated with these GHGs. |
|-----------------------|--|
| Mobile Combustion | Direct emissions from owned or leased mobile sources (both on-road and non-road vehicles) that are within the company's inventory boundaries. |
| Stationary Combustion | Direct emissions typically from devices that combust solid, liquid or gaseous fuel, generally for the purposes of producing electricity, generating steam or heat. |

Propane at Boalsburg Office

July 2021
Bill ID: 32111

360 Discovery Drive - PRO
2049457
360 Discovery Drive, Boalsburg, PA 16827, United States

Account History | Timeline | Note

| | |
|-----------------------|----------|
| 02/25/2021-12/29/2021 | Jul 2021 |
| 12/27/2020-02/25/2021 | Jan 2021 |
| 08/01/2020-12/27/2020 | Oct 2020 |

Heller's Gas
HELLERS_GAS

Batch
20220309_netter_Happy_Valley_Bills

EnergyCAP Offices > EnergyCAP Boalsburg > EnergyCAP HQ - PRO01 [ENERGYCAP HQ - PRO01]

Bills | Billing Period Data | Calendarized Data | Normalized Data | Interval

GHG Scope Category: **Scope 1 - Stationary Combustion** | GHG Factor: **Propane**

More actions | Close

Actions | Reports

Close

Total Emissions

May 2022-Apr 2023
0.00 t CO₂e

May 2021-Apr 2022
3.33 t CO₂e

May 2021-Apr 2023 (Calendarized Data)

Linked Factors History

Emission factors are per unit of heat content using higher heating values (HHV). If heat content is available from the fuel supplier, it is preferable to use that value. If not, default heat contents are provided. The factor represents combustion emissions only (tank-to-wheel) and do not represent upstream emissions or well-to-wheel emissions.

| Effective | Source | Gas | Gas Amount (kg/Gal) | Total kg CO ₂ e/Gal |
|------------|-------------------------------------|----------------------------------|---------------------|--------------------------------|
| 05/01/2023 | EPA 2023 GHG Emission Factors Hub | CO ₂ (Carbon dioxide) | 5.720000 | 5.720000 |
| | | CH ₄ (Methane) | 0.000270 | 0.007560 |
| | | N ₂ O (Nitrous oxide) | 0.000050 | 0.013250 |
| 05/01/2022 | EPA 2022 GHG Emission Factors Hub | CO ₂ (Carbon dioxide) | 5.720000 | 5.720000 |
| | | CH ₄ (Methane) | 0.000270 | 0.007560 |
| | | N ₂ O (Nitrous oxide) | 0.000050 | 0.013250 |
| 10/01/2021 | EPA 2021 GHG Emission Factors Hub | CO ₂ (Carbon dioxide) | 5.720000 | 5.720000 |
| | | CH ₄ (Methane) | 0.000270 | 0.007560 |
| | | N ₂ O (Nitrous oxide) | 0.000050 | 0.013250 |
| 04/01/2020 | EPA 2020 GHG Emission Factors Hub | CO ₂ (Carbon dioxide) | 5.720000 | 5.720000 |
| | | CH ₄ (Methane) | 0.000270 | 0.007560 |
| | | N ₂ O (Nitrous oxide) | 0.000050 | 0.013250 |
| 04/01/2018 | EPA 2018 GHG Emission Factors Hub | CO ₂ (Carbon dioxide) | 5.720000 | 5.720000 |
| | | CH ₄ (Methane) | 0.000270 | 0.007560 |
| | | N ₂ O (Nitrous oxide) | 0.000050 | 0.013250 |
| 12/01/2015 | EPA 2015 GHG Emission Factors Hub | CO ₂ (Carbon dioxide) | 5.720000 | 5.720000 |
| | | CH ₄ (Methane) | 0.000270 | 0.007560 |
| | | N ₂ O (Nitrous oxide) | 0.000050 | 0.013250 |
| 05/01/2014 | EPA 2014 GHG Emission Factors Hub | CO ₂ (Carbon dioxide) | 5.720000 | 5.720000 |
| | | CH ₄ (Methane) | 0.000270 | 0.007560 |
| | | N ₂ O (Nitrous oxide) | 0.000050 | 0.013250 |
| 12/01/2011 | EPA 2011 GHG Emission Factors Hub | CO ₂ (Carbon dioxide) | 5.590000 | 5.590000 |
| | | CH ₄ (Methane) | 0.000270 | 0.007560 |
| | | N ₂ O (Nitrous oxide) | 0.000050 | 0.013250 |

EnergyCAP HQ - PRO01
ENERGYCAP HQ - PRO01

Daily Use (Calendarized)
2.397 Gal

Daily Cost (Calendarized)
\$4.10

Unit Cost (Calendarized)
\$1.710/Gal

Scope 2

| Purchased Cooling | Indirect emissions from purchased or acquired cooling. |
|-----------------------|--|
| Purchased Electricity | Indirect emissions from purchased or acquired electricity. |
| Purchased Heat | Indirect emissions from purchased or acquired heat. |
| Purchased Steam | Indirect emissions from purchased or acquired steam |

Scope 2 // As it applies to EnergyCAP

| Purchased Cooling | Indirect emissions from purchased or acquired cooling. |
|-----------------------|--|
| Purchased Electricity | Indirect emissions from purchased or acquired electricity. |
| Purchased Heat | Indirect emissions from purchased or acquired heat. |
| Purchased Steam | Indirect emissions from purchased or acquired steam |

Electricity at Boalsburg Office

January 2023
Bill ID: 34633

360 Discovery Drive - ELE
100 133 338 556
360 Discovery Drive, Boalsburg, PA 16827, United States

Account History | Timeline | Note

| | |
|-----------------------|----------|
| 12/17/2022-01/18/2023 | Jan 2023 |
| 11/17/2022-12/17/2022 | Dec 2022 |
| 10/19/2022-11/17/2022 | Nov 2022 |
| 09/20/2022-10/19/2022 | Oct 2022 |
| 08/18/2022-09/20/2022 | Sep 2022 |

EnergyCAP HQ - ELE01
ENERGYCAP HQ - ELE01

- Daily Use (Calendarized): 1,804.869 kWh
- Daily Cost (Calendarized): \$236.70
- Unit Cost (Calendarized): \$0.131/kWh
- Demand (Calendarized): 208.8 kW

EnergyCAP Offices > EnergyCAP Boalsburg > Electricity

Bills | Billing Period Data | Calendarized Data | Normalized Data

GHG Scope Category: **Scope 2 - Purchased Electricity** | GHG Factor: **RFC East**

Total Emissions

May 2022-Apr 2023
114.31 t CO₂e

May 2021-Apr 2022
126.98 t CO₂e

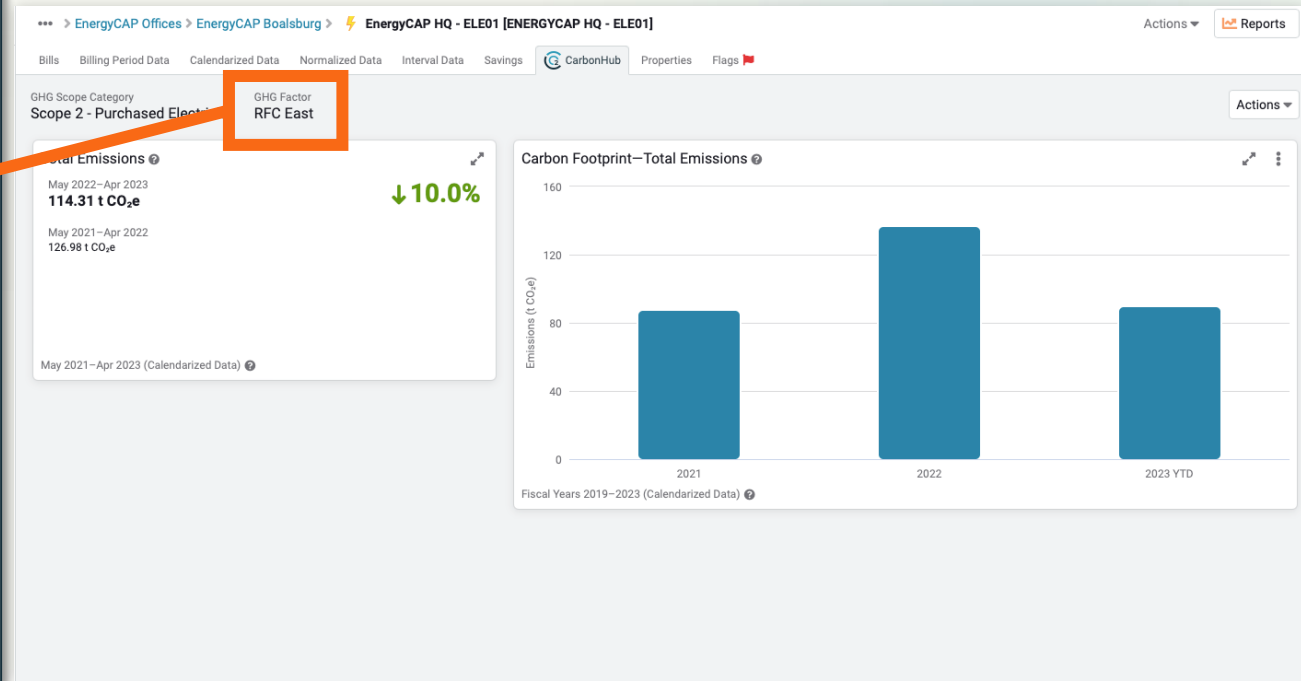
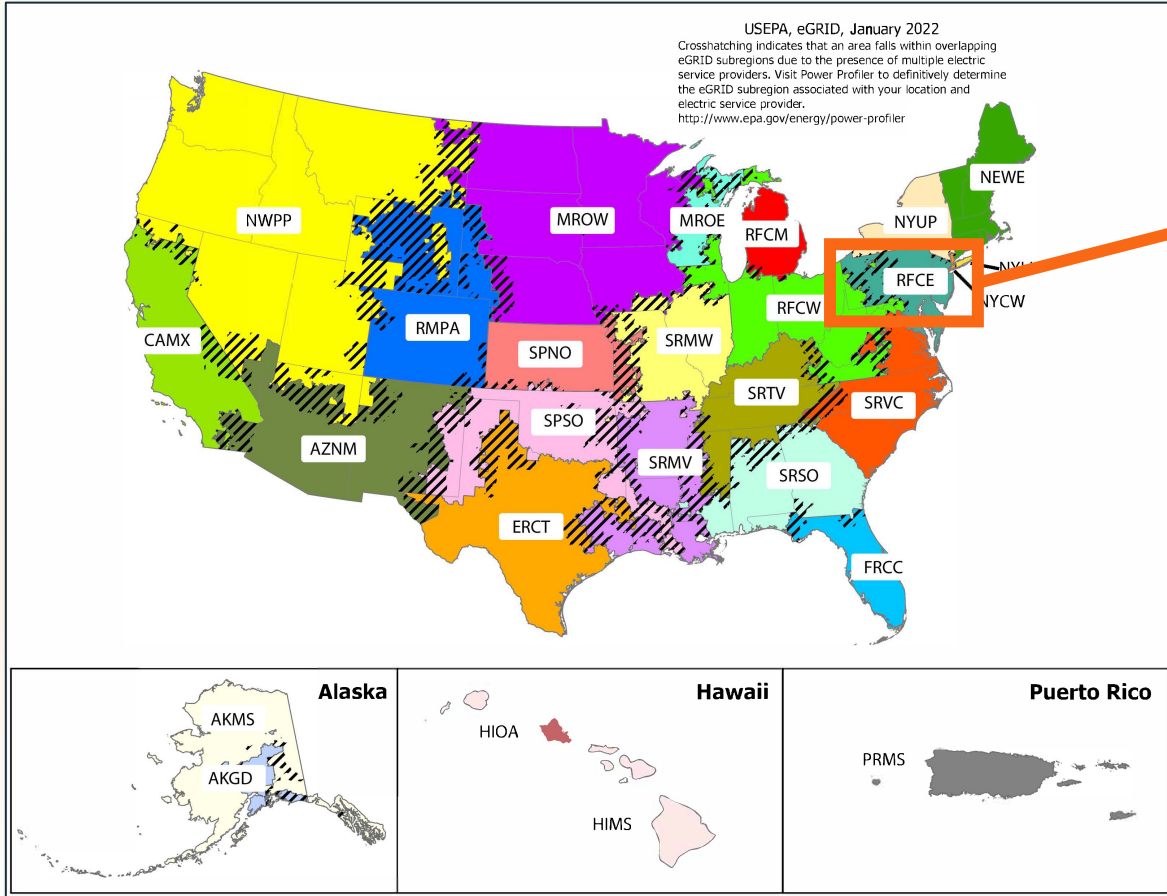
May 2021-Apr 2023 (Calendarized Data)

Linked Factors History

Emission factors are per MWh of electricity consumed using US grid averages calculated by the US EPA (eGRID data). Useful for location-based emissions data.

| Effective | Source | Gas | Gas Amount (kg/kWh) | Total kg CO ₂ e/kWh |
|------------|---|----------------------------------|---------------------|--------------------------------|
| 01/01/2019 | EPA eGRID2019 (by Subregion) - reference eGRID2019 V1.0 [02/2021] | CO ₂ (Carbon dioxide) | 0.315262 | 0.315262 |
| | | CH ₄ (Methane) | 0.000024 | 0.000672 |
| | | N ₂ O (Nitrous oxide) | 0.000003 | 0.000795 |
| 01/01/2018 | EPA eGRID2018 (by Subregion) - reference eGRID2018 V2.0 [03/2020] | CO ₂ (Carbon dioxide) | 0.324757 | 0.324757 |
| | | CH ₄ (Methane) | 0.000028 | 0.000784 |
| | | N ₂ O (Nitrous oxide) | 0.000004 | 0.001060 |
| 01/01/2016 | EPA eGRID2016 (by Subregion) - reference eGRID2016 V1.0 [02/2018] | CO ₂ (Carbon dioxide) | 0.343904 | 0.343904 |
| | | CH ₄ (Methane) | 0.000023 | 0.000644 |
| | | N ₂ O (Nitrous oxide) | 0.000004 | 0.001060 |
| 01/01/2014 | EPA eGRID2014 (by Subregion) - reference eGRID2014 V1.0 [01/2017] | CO ₂ (Carbon dioxide) | 0.386868 | 0.386868 |
| | | CH ₄ (Methane) | 0.000034 | 0.000952 |
| | | N ₂ O (Nitrous oxide) | 0.000005 | 0.001325 |
| 01/01/2012 | EPA eGRID2012 (by Subregion) - reference eGRID2012 V1.0 [10/2015] | CO ₂ (Carbon dioxide) | 0.389436 | 0.389436 |
| | | CH ₄ (Methane) | 0.000012 | 0.000336 |
| | | N ₂ O (Nitrous oxide) | 0.000005 | 0.001325 |
| 01/01/2010 | EPA eGRID2010 (by Subregion) - reference eGRID2010 V1.0 [02/2014] | CO ₂ (Carbon dioxide) | 0.454371 | 0.454371 |
| | | CH ₄ (Methane) | 0.000012 | 0.000336 |
| | | N ₂ O (Nitrous oxide) | 0.000007 | 0.001855 |
| 01/01/2009 | EPA eGRID2009 (by Subregion) - reference eGRID2009 V1.0 [04/2012] | CO ₂ (Carbon dioxide) | 0.429744 | 0.429744 |
| | | CH ₄ (Methane) | 0.000012 | 0.000336 |
| | | N ₂ O (Nitrous oxide) | 0.000007 | 0.001855 |
| 01/01/2007 | EPA eGRID2007 (by Subregion) - reference eGRID2007 V1.1 [12/2008] | CO ₂ (Carbon dioxide) | 0.480499 | 0.480499 |
| | | CH ₄ (Methane) | 0.000012 | 0.000336 |
| | | N ₂ O (Nitrous oxide) | 0.000008 | 0.002120 |
| 01/01/2005 | EPA eGRID2005 (by Subregion) - reference eGRID2007 V1.1 [12/2008] | CO ₂ (Carbon dioxide) | 0.516675 | 0.516675 |
| | | CH ₄ (Methane) | 0.000014 | 0.000392 |
| | | N ₂ O (Nitrous oxide) | 0.000008 | 0.002120 |

Scope 2 // Electricity - location-based reporting



Use location-based factors from EPA (US) eGrid, IEA and other agencies

Scope 2 // Electricity - market-based reporting

| Source | PJM* System Mix | Large Commercial WGL Energy Fuel Mix | Small Commercial (3.5% PJM* Wind Included) | Residential (5% Wind PJM* Included) | 50% Local PJM* Wind | 100% Local PJM |
|-------------------------------------|-----------------|--------------------------------------|--|-------------------------------------|---------------------|----------------|
| Coal | 21.3% | 18.5% | 17.7% | 17.4% | 7.8% | |
| Gas | 38.7% | 34.1% | 32.8% | 32.2% | 14.8% | |
| Nuclear | 33.0% | 28.7% | 27.6% | 27.1% | 12.2% | |
| Oil | 0.2% | 0.2% | 0.2% | 0.2% | 0.1% | |
| Renewable Energy | | | | | | |
| Captured Methane Gas | 0.2% | 0.2% | 0.2% | 0.2% | 0.1% | |
| Geothermal | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | |
| Solar Voltaic | 1.0% | 2.9% | 2.9% | 2.9% | 2.4% | |
| Solar Thermal | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | |
| Solid Waste | 0.5% | 1.4% | 1.4% | 1.4% | 1.2% | |
| Hydro-electric | 1.2% | 2.6% | 2.5% | 2.5% | 2.0% | |
| Wind | 3.6% | 8.3% | 11.7% | 13.1% | 56.5% | |
| Wood or other Biomass | 0.2% | 3.1% | 3.1% | 3.1% | 3.0% | |
| Other | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | |
| Total | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |
| Air Emissions (lbs. per MWh) | | | | | | |
| Sulphur Dioxide (SO ₂) | 0.48 | 0.48 | 0.46 | 0.46 | 0.24 | |
| Nitrogen Oxides (NO _x) | 0.36 | 0.40 | 0.39 | 0.38 | 0.22 | |
| Carbon Dioxide (CO ₂) | 827.52 | 750.85 | 721.89 | 709.47 | 337.09 | |

City Buildings > City Hall > City Hall-ELE01 [CITY HALL-ELE01]

Bills Billing Period Data Calendarized Data Normalized Data Interval Data Savings CarbonHub Properties Flags

GHG Scope Category: Scope 2 - Purchased Electricity

GHG Factor: Wind Power Co - 50% Wind (PPA)

Total Emissions

Mar 2022 - Feb 2023: 94.87 t CO₂e

Mar 2021 - Feb 2022: 194.94 t CO₂e

↓ 51.3%

Mar 2021 - Feb 2023 (Calendarized Data)

Carbon Footprint - Total Emissions

Fiscal Years 2018-2022 (Calendarized Data)

Report both **location-based** and **market-based** emissions

Scope 3 Categories

| Upstream | Downstream |
|--|--|
| 01. Purchased Goods and Services | 09. Downstream Transportation & Distribution |
| 02. Capital Goods | 10. Processing of Sold Products |
| 03. Fuel and Energy Related Activities | 11. Use of Sold Products |
| 04. Upstream Transportation & Distribution | 12. End-of-life Treatment of Sold Products |
| 05. Waste Generated in Operations | 13. Downstream Leased Assets |
| 06. Business Travel | 14. Franchises |
| 07. Employee Commuting | 15. Investments |
| 08. Upstream Leased Assets | |

<https://ghgprotocol.org/scope-3-calculation-guidance-2>

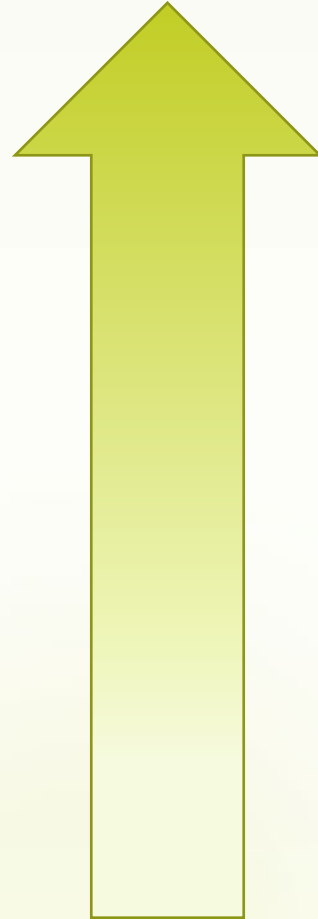
Scope 3 Categories // As it applies to EnergyCAP

| Upstream | Downstream |
|--|--|
| 01. Purchased Goods and Services | 09. Downstream Transportation & Distribution |
| 02. Capital Goods | 10. Processing of Sold Products |
| 03. Fuel and Energy Related Activities | 11. Use of Sold Products |
| 04. Upstream Transportation & Distribution | 12. End-of-life Treatment of Sold Products |
| 05. Waste Generated in Operations | 13. Downstream Leased Assets |
| 06. Business Travel | 14. Franchises |
| 07. Employee Commuting | 15. Investments |
| 08. Upstream Leased Assets | |

<https://ghgprotocol.org/scope-3-calculation-guidance-2>

Options for Scope 3 reporting

**Most
Detailed/Accurate**



Detailed GHG values from suppliers/vendors

Actual use/purchase quantities x GHG factors

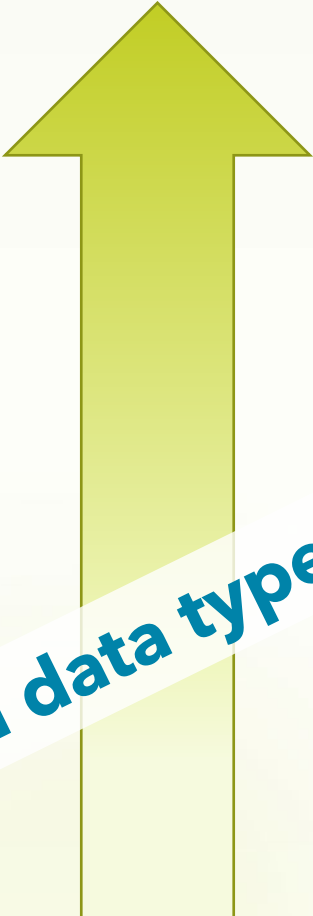
Estimated use/purchased quantities x GHG factors

**Least
Detailed/Accurate**

Actual spending/cost x spend-based GHG factors

Options for Scope 3 reporting

**Most
Detailed/Accurate**



Detailed GHG values from suppliers/vendors

Actual use/purchase quantities x GHG factors

Estimated use/purchased quantities x GHG factors

**Least
Detailed/Accurate**

Actual spending/cost x spend-based GHG factors

Not all data types require the same level of detail

Live Demo

Tracking Scope 1, 2, and 3 emissions in CarbonHub

Track purchased utilities at the level of detail you have

Track individual utility bills when available or

Track monthly, quarterly, or annual data

Record date range and quantity

Map supply chain and other data to GHG factors

CarbonHub includes many built-in factors:

Published **EPA & IPCC** values for raw fuels

EPA eGrid & IEA electricity factors

EPA, Defra, EcolInvent, and other published Scope 3 and lifecycle assessment (LCA) factors

CarbonHub enables custom factors:

Factors from suppliers/vendors (PPAs)

Custom fuel mix for your organization

Custom supply-chain emission factors

GHG Protocol provides guidance for capturing
Scope 3 for your business

CarbonHub can accommodate all those scenarios

https://ghgprotocol.org/sites/default/files/2022-12/Intro_GHGP_Tech.pdf

Track Offsets and Renewable Energy Credits (RECs)

Carbon Offsets and RECs

- Carbon Offsets: Scope 1
- Carbon Offsets: Scope 2
- Carbon Offsets: Scope 3
- Electric RECs (non-solar)
- Solar RECs (SRECs)

GHG Scope Category
Scope 2 - Carbon Offsets and Adjustments (Scope 2)

GHG Factor
Carbon Offset

Actions

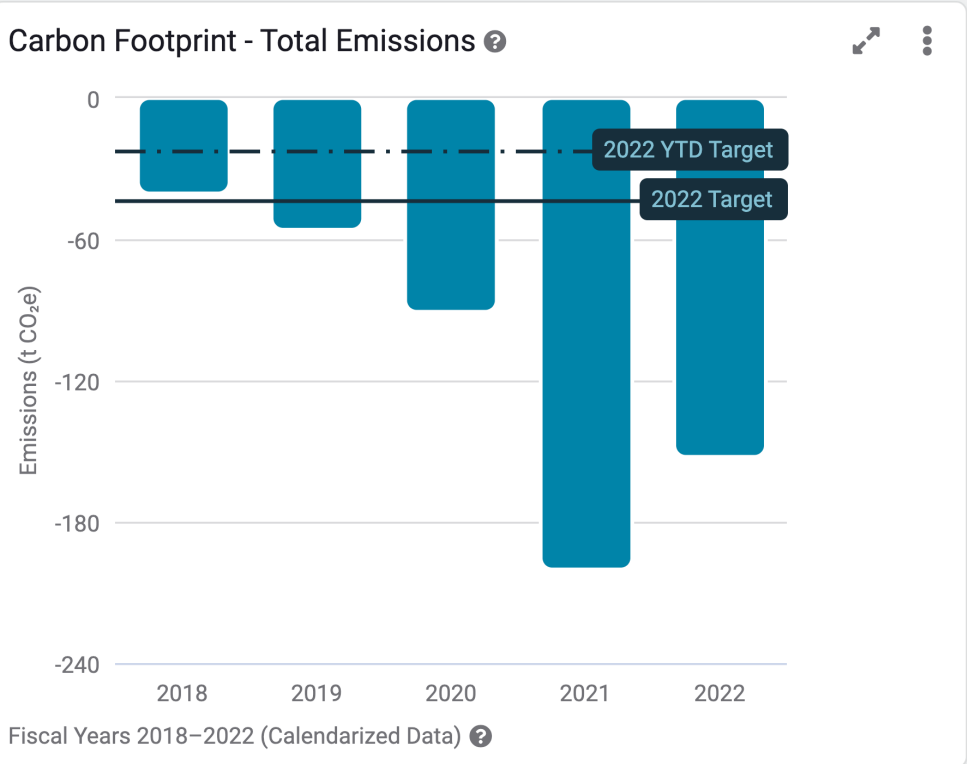
Total Emissions

Mar 2022–Feb 2023
-251.51 t CO₂e










Mar 2021–Feb 2022
-132.33 t CO₂e

↓ 90.1%

Mar 2021–Feb 2023 (Calendarized Data)



Scope 3 // Use, volume, distance, and weight-based tracking

- ▼  06. Business Travel
 -  Long Haul Flights
 -  Medium Haul Flights
 -  Rental Cars
 -  Short Haul Flights
- ▼  07. Employee Commuting
 -  Bus
 -  Commuter Rail
 -  Passenger Vehicles

SCOPE 3

01. Purchased Goods and Services
02. Capital Goods
03. Fuel and Energy Related Activities
04. Upstream Transportation & Distribution
05. Waste Generated in Operations
06. Business Travel
07. Employee Commuting
08. Upstream Leased Assets
09. Downstream Transportation & Distribution
10. Processing of Sold Products

What's Next

Energy and sustainability ERP // The single source of truth

Get instant access to validated, actionable data you can trust to better manage resource consumption, reduce your carbon footprint, reach net-zero, and drive massive savings.



Financial-grade greenhouse gas accounting

Target and track emissions.

An advanced, holistic view of financial-grade emissions data across your business with automatically applied factors to meet your ESG reporting needs.

Customer Data Type:

GHG activities

Persona:

Sustainability



Portfolio-level energy & sustainability reporting

Manage and see it all.

Get accurate and reliable energy and utility data across your entire portfolio and streamline energy and accounting workflows.

Customer Data Type:

Utilities/Bill/Resources

Persona:

Finance/energy



Real-time energy and sustainability analytics

Dive deep. Respond quickly.

Dive deep into real-time performance of assets, devices, and sensors. Make quick, data-driven decisions for high-performance, net-zero buildings.

Customer Data Type:

Time-Series/Interval Energy

Persona:

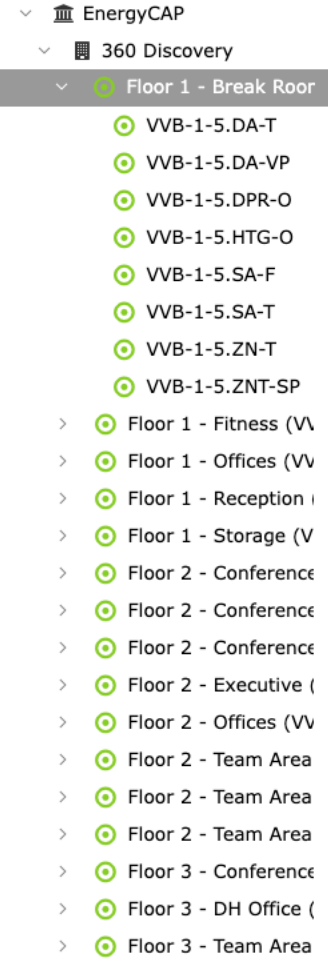
Energy/facilities

CAPture Services: Bill CAPture, Bill Processing/Managed Services

Real-time Smart Analytics // Wattics

- Integrate BAS data (MetaSys)
- Analyze building HVAC performance
- Better manage our facilities

We have good reporting, now we focus on detail tracking, alarming, alerting, and **actionable intelligence**



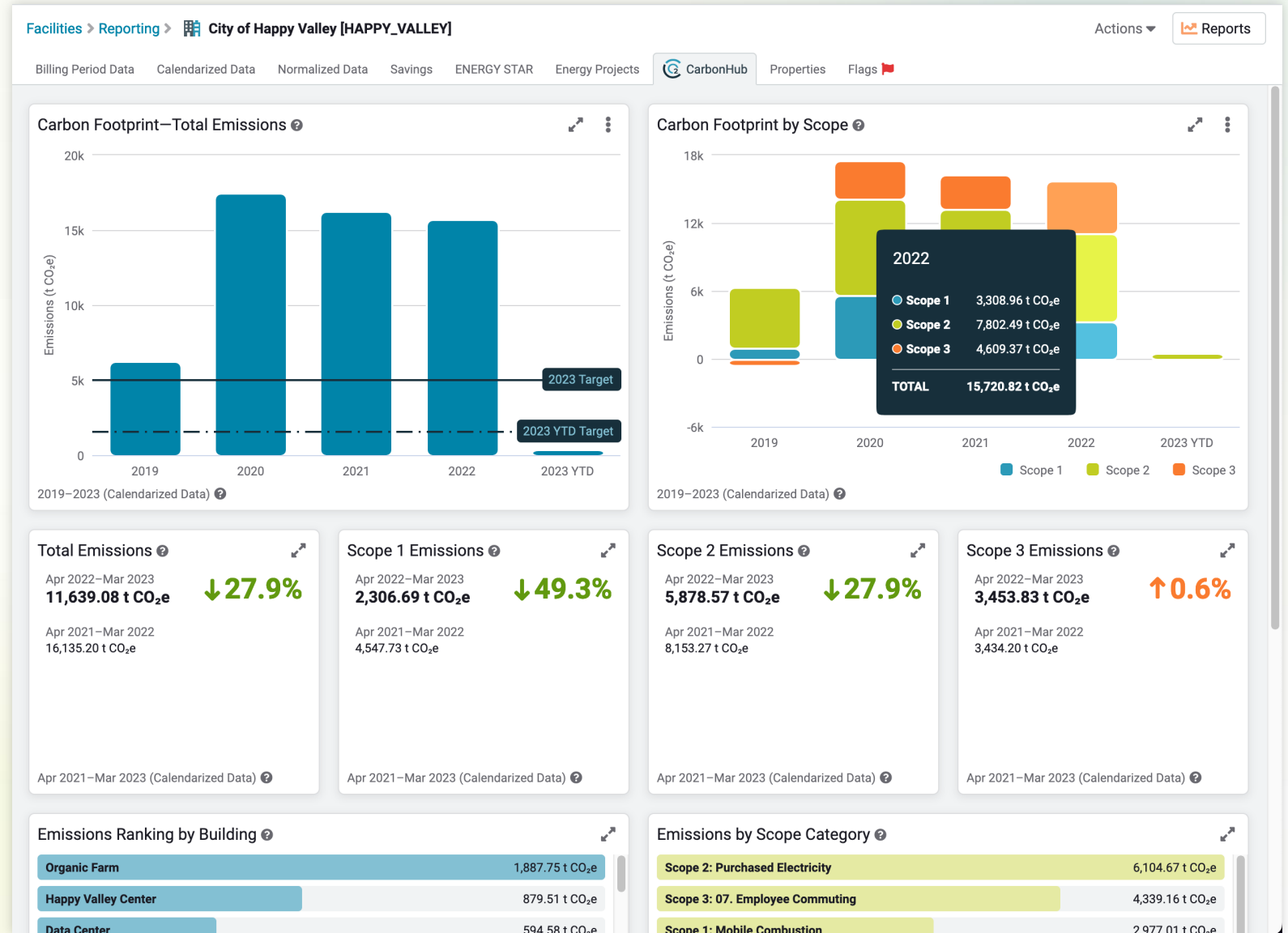
Single Source of Truth

Insights into your organization's Energy and Sustainability

Aggregate energy and emissions data across your organization

Visual insights into where your energy and emissions are allocated and opportunities for improvement projects

Report progress towards goals over time



CATALYST ROADSHOW

Tuesday September 12th - **Oakland, California**

Friday September 15th - **Frisco, Texas**

ENERGYCAP[®]

Thank you