

Operational carbon and energy analysis

Building tools to gather data on the operational performance of buildings to inform investment strategies for decarbonization.

Challenge

Our client sought to understand the carbon footprint associated with their portfolio of over 1,300 assets ahead anticipated future requirements for carbon reporting. These confidential findings would then inform investment strategies.

Solution

We developed bespoke tools to gather and interrogate data on building operational performance. This data was then analyzed and interpreted to identify key findings, trends and comparisons against AECOM's extensive database of similar operational buildings. This then informed investment recommendations to meet carbon reduction ambitions.

Implementation

This tool integrates with the Carbon Risk Real Estate Monitor (CRREM) tool to show decarbonization pathways and carbon stranding of assets.

Highlight

Mobilizing technical expertise from across the globe to provide solutions for our client that are responsive and appropriate to local context.



1,300 assets analyzed to inform investment

Client
Confidential Global Fund

Location
Global

Duration
2021 - 2022

Services provided
Benchmarking & Decarbonization planning

ScopeX elements



Mobilizing technical expertise to provide a truly global solution



Data analyzed and presented in an interactive dashboard at asset and portfolio level



Developed bespoke tools to gather and interrogate data

Commercial portfolio decarbonization

Integrating digital tools to determine decarbonisation priorities across a portfolio based on operational energy performance and adherence to policy.

Challenge

In seeking to meet the ambitions and commitments within the UN Net Zero Asset Owner Alliance (NZAOA), our client wanted to understand the decarbonisation areas that could be more quickly implemented with rapid payback and the areas where a longer-term strategy would be required.

Solution

To support our client in decarbonizing 25 percent (by value) of their estate portfolio by 2025, we mapped the portfolio using existing data with the Carbon Risk Real Estate Monitor (CRREM) and identified years of standing. We gathered data for 150 assets to benchmark operational energy performance and determined compliance of each asset to the EU Taxonomy requirements.

Implementation

The output of the energy audits determine pathways to decarbonise assets as far as practical and include a phased implementation plan for each recommendation, assessing the opportunities and constraints for each asset in relation to energy and water.

Highlight

Integration with CRREM tool and with multiple AECOM digital tools to enable assessment at different levels of detail without any repetition of data. All communications at building level were undertaken in the local language, with all reporting standardized in English.



Up to **25%**
carbon reduction

Analysis of **150** assets
to benchmark operational
energy performance

Client
Confidential Global Fund

Location
Pan-European (nine
countries)

Duration
2022 ongoing

Services provided
Portfolio benchmarking,
decarbonization plan

ScopeX elements



Identification of
decarbonization
priorities to meet
net zero targets



Conducted
energy audits of
330 assets with
REACT



Produced costed
decarbonisation
plans using
OCEAN

BBC decarbonization

Conducting feasibility studies across the BBC's sites in Glasgow, Newcastle, Cardiff and London to reduce carbon while minimizing impact on building operations.

Challenge

To reduce carbon emissions and reliance on fossil fuels at their sites, the BBC are aiming to minimize operational energy, reduce embodied and operational carbon, while minimizing impact on building operations.

Solution

We completed carbon reduction feasibility studies at sites including the BBC Scotland headquarters in Glasgow, BBC Newcastle Broadcasting House, London Broadcasting House in central London and 1 Television Centre in West London. These studies reviewed the MEP impacts, embodied and operational carbon, acoustics, installation costs, and the phasing approach associated with several plant replacement options. We are now undertaking the design and cost management of the selected Air Source Heat Pump option in Glasgow and Newcastle.

We also carried out CIBSE TM54 energy modelling at the Glasgow site to help optimise the performance of the existing building and the proposed design, as well as detailed operational energy reviews at 1 Television Centre and BBC Wales' headquarters in Cardiff which focused on optimising the energy performance of the existing systems.

Implementation

We will be reviewing monthly energy data and monitoring the systems in use for a year after installation, working alongside the onsite building management team to ensure the performance is optimized and achieving the best possible energy and carbon reductions compared to the existing plant.

Highlight

Integration of technical disciplines across engineering consulting and cost management to deliver maximum carbon reduction while minimizing cost.

Up to **38%**
carbon reduction

Detailed analysis of **5** assets to optimize current performance and identify and deliver decarbonization opportunities

Client

British Broadcasting Corporation (BBC)

Location

Glasgow, Newcastle, London and Cardiff, UK

Duration

2022 ongoing

Services provided

MEP engineering, energy and sustainability, cost management, soft landings



ScopeX elements



Successful feasibility approach extended to multiple sites in portfolio



Energy modelling to understand and optimize design

Siemens Energy sustainability and decarbonization

Supporting Siemens Energy's success in achieving its carbon neutrality goals.

Challenge

We were engaged to support our client in achieving their carbon neutrality goals across their portfolio which comprises offices, laboratories, warehouses and production facilities.

Solution

We are providing services across four project phases: property condition assessments, a decarbonization roadmap, a sustainability assessment of the portfolio and a digital dashboard for data management. We are also integrating AECOM's proprietary software tools and resources for the project, including PlanSpend — Digital AECOM's funding allocation tool to gather facility data, along with Rosetta and OCEAN for carbon calculation and reduction, which speeds up the reporting process and accuracy.

Implementation

The software output includes an internet-accessible facility condition database and dashboard-based reporting which allows readily accessible visualization of the data and recommendations for further action to manage real property assets and examine options for sustainability and decarbonization.

The project has expanded since its initiation to include the design of a rooftop, ground mount, and covered parking photovoltaic cells for manufacturing plants, offices, and warehouse facilities.

Highlight

Integration of the PlanSpend, Rosetta and OCEAN tools to provide an accelerated reporting process which produces easily digestible recommendations via dashboard-based reporting.



ScopeX elements



Supporting our client to meet net zero carbon emissions by 2030



Integration of PlanSpend, Rosetta and OCEAN tools to provide dashboard-based reporting and decarbonization recommendations

Port Authority of New York & New Jersey net zero roadmap

Prioritizing carbon reduction projects across all of our client's activities including airports, maritime ports, tunnels and bridges and buildings.

Challenge

The PANYNJ has committed to a 50 percent reduction in operational emissions below 2006 levels by 2030 and a net zero target for all emissions, including Scope 3 by 2050. We are developing a net zero roadmap that will provide the agency with a detailed implementation plan to meet this target.

Solution

We led a materiality assessment process which included over 60 interviews with the Port Authority staff to understand priorities and barriers to integrating sustainability broadly within day-to-day operations. This informed seven sustainability guiding principles for the net zero plan and future activities.

We also built a GHG reduction scenario planning tool that is customized to the Port Authority emissions inventory and reduction strategy opportunities. Based on the results, we led working group sessions with Authority staff to identify and prioritize actionable items.

Implementation

The net zero roadmap identifies short, medium, and long-term actions to guide Port Authority staff in the development of their implementation plans and helps prioritize carbon-reduction projects.

Highlight

A decision tree/matrix was developed that summarized sustainable strategies, sub-strategies, implementation actions, primary and supporting departments and timelines, to help the Port Authority prioritize climate interventions to achieve their goals.



50% reduction in operational emissions by 2030

Client

Port Authority of New York & New Jersey (PANYNJ)

Location

New York, New Jersey, USA

Duration

Ongoing

Services provided

Prime option development, strategy and program design, implementation planning

ScopeX elements



An extensive stakeholder engagement process including virtual workshops and stakeholder interviews



Developed a customized GHG reduction scenario planning tool

University of Colorado Boulder Energy Master Plan

Enabling the implementation of a decarbonization program while preparing for future changes across the campus in a rapidly changing environment.

Challenge

The University of Colorado Boulder sought to establish its energy vision and a decarbonization roadmap over the next 30 years.

Solution

We assisted our client in the development of an Energy Master Plan (EMP) to provide a framework that enables the campus to implement a financially sustainable decarbonization program while preparing for changes in the campus' use of space, capital renewal investment, and technology innovation in a rapidly changing environment. The EMP prescribes a route to achieving its energy and carbon goals through the key areas of energy conservation and efficiency, energy management, on-site energy generation and storage,

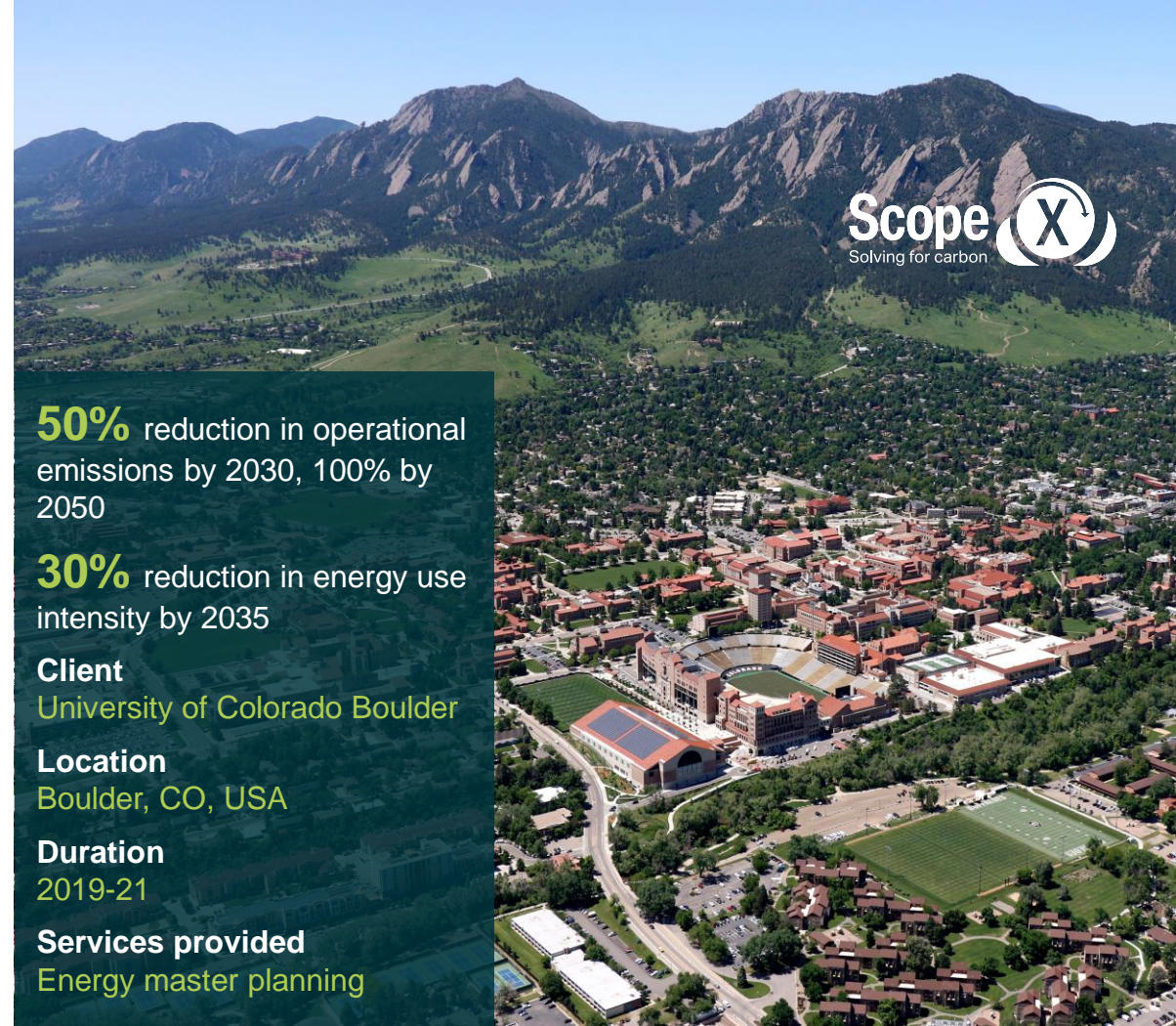
decarbonization of thermal energy systems, and the mechanisms to engage the broad spectrum of campus stakeholders.

Implementation

For each goal, the University has developed specific targets, using metrics where applicable, to track the success of the program as well as map a set of over 140 actions that will guide them in achieving their goals.

Highlight

AECOM's Rosetta energy planning analytics platform allowed the integration of campus energy modeling with campus growth projections and other evolving financial, environmental and technological factors to develop a robust strategy set and optimized implementation schedule to validate goals and quantify required investment.



50% reduction in operational emissions by 2030, 100% by 2050

30% reduction in energy use intensity by 2035

Client
University of Colorado Boulder

Location
Boulder, CO, USA

Duration
2019-21

Services provided
Energy master planning

ScopeX elements



Enabling the implementation of a decarbonization program while preparing for future change in use of space, capital investment, and technology innovation.



Rosetta helped to develop a robust strategy set and implementation schedule to validate goals and quantify required investment.

San Diego Gas and Electric net zero strategy

The development of a portfolio-wide strategy to help our client achieve its net zero goals by 2030.

Challenge

San Diego Gas and Electric (SDG&E) has organizational goals of achieving net zero energy, water, and waste for its facilities operations by 2030. To achieve these ambitious goals, SDG&E recognized that it needed to develop a comprehensive, portfolio-wide strategy that is both sustainable and immediately actionable while being aligned with its short and long-term capital planning efforts.

Solution

We are supporting SDG&E with the development of their first net zero strategy, which summarizes its current facility operations and performance, articulates its goals and targets, quantifies energy, water, and waste strategies, describes regulatory and financial mechanisms for implementation and develops a prioritized roadmap for implementation.

Implementation

ASHRAE Level 2 assessments were undertaken across 17 SDG&E owned sites to quantify existing performance and identify energy and water opportunities for improvement. The projects developed for energy and decarbonization included facility conservation, electrification, and on and off-site solar and storage projects. The detailed project list developed by this process was then integrated into SDG&E's capital renewal program, allocating sufficient funding to ensure their ambitious targets can be met.

Highlight

Benchmarking of current performance across 17 sites to identify priority projects for energy and decarbonization and thus help to achieve SDG&E's ambitious targets.



ScopeX elements



Development of a portfolio-wide strategy that is aligned with SDG&E's short and long-term capital planning efforts.



Analysis of performance across 17 sites

National Western Center integrated campus energy system

Creating a net zero campus that champions operational excellence and provides future flexibility.

Challenge

Our client's goal was to transform the National Western Center (NWC) into a modern, collaborative, and sustainable net zero campus with an emphasis on operational excellence and cost certainty, leveraging a triple bottom line approach to balance environmental, social, and economic objectives.

Solution

Our client selected the EAS Energy Partners consortium which includes AECOM to develop, design, engineer, construct, fund, operate, and maintain an integrated campus energy system for the 250-acre NWC. We are overseeing and managing design and construction, including the coordination of all parties through all phases. We are also providing most of the design working closely with design and construction partners.

Implementation

Our integrated technical approach will see the implementation of various features including:

- a sewer heat recovery system to use raw wastewater flowing through the nearby Delgany interceptor containing thermal energy for heating
- creating an energy design center
- an ambient piping system
- a building interface enabling each building to be connected to the ambient loop via central water source heat pumps
- three initial power systems options for consideration

Highlight

- Design adapts to changes in the NWC Capital Build Program by phasing equipment installations to match capacity growth to demand
- A scalable and phaseable design that provides flexibility and future proofs the system



Heat pump electricity savings of 2 million kWh annually equating to **\$150K** savings each year

Client

City and County of Denver (CCD) and The National Western Center Authority

Location

Denver, Colorado, USA

Duration

2018 – ongoing (under construction)

Services provided

Design and construction management services

ScopeX elements



Providing full turnkey design and construction services that delivers a net zero campus while enabling economies of scale and cost efficiencies.