CITI RIVERDALE DATA CENTER ENERGY SERVICES AGREEMENT (ESA)

SOLUTION OVERVIEW
Citi wanted to implement a pilot project to deliver efficient electricity and cooling in one of their UK data centers. A Combined Chilling/Heating and Power (CHP) system will be installed together with energy efficient cooling units and efficiency improvements to the building’s air conditioning system.

The project is for the installation of a 2.8 MW trigen plant, along with other energy efficiency measures, utilizing an energy services agreement (ESA): a structure that treats host payments as an operating cost rather than a capital expense. For this project, Citi will serve as the host and debt-provider; a first for financial institutions in the pursuit of deepening efficiency improvements and GHG reductions. Two Citi teams, Corporate Realty Services and Asset Finance Group (AFG) collaborated on a solution that addresses the hurdle of internal constraints through use of third-party capital.

While this project is located in the United Kingdom, many of its lessons apply globally, including to projects in the United States, where Citi is analyzing its portfolio for opportunities to implement the new financing structure. It serves as an excellent example of why even companies with access to capital may choose to take advantage of third-party financing. The project will reduce Citi’s costs, greenhouse gas emissions, it provides AFG with a new finance product to offer clients and it makes a meaningful contribution to reducing the data center’s running costs. It is the first project of its kind at a UK data center, and the first project of its kind that Citi has undertaken globally.

This implementation model is part of the Better Buildings Efficiency-as-a-Service Toolkit.

LOCATION
London, UK

CHALLENGE
As a global bank, Citi saw an opportunity to cut energy use by 10% at its London data center but the internal rate of return didn’t meet the company’s criteria to use its own capital

FINANCING SOLUTION
Citi used a third-party energy services agreement (ESA) to innovatively finance and deliver efficient

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electricity and cooling at its London data center, and plans to implement the same model in US facilities in the future

**FUNDS COMMITTED**
£5.2 million ($8 million)

**PROJECT DATES**
Construction start: Q1 2015
Construction expected completion: Q1 2016

**PROJECT PARTNERS**
Citi Corporate Realty Services (UK), Citi Asset Finance Group (AFG), Sustainable Development Capital Limited (SDCL), UK Green Investment Bank

**PLANNING**
The Citi Data Center project received a $8M investment from Sustainable Development Capital’s (SDCL) UK Energy Efficiency Investments Fund, corner-stoned by the UK Green Investment Bank and other institutional investors including the European Investment Bank.

The project involves the installation of two 1.4 MW CHP systems expected to generate 24,000 MWh per year to power the data center in London. It will also provide cooling for the servers housed in the data center. Citi currently uses electricity from the national grid with back-up diesel generators.

Key results of the $8 million upgrade project include:

**Significant efficiency upgrades:**
- New chiller plant
- Lighting upgrades
- Energy management system
- Air-handling unit VFDs
- New booster pumps

**Expected savings:**
- $1,100,000 in annual utility expense
- 3.5 million Kilowatt-hours of electricity
- 10,800 therms of natural gas

**Expected environmental benefits:**

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• Reduction of 3,000 tons of CO2 per year

FINANCING

Summary:
Sustainable Development Capital Limited (SDCL) deployed the ESA structure for the project, using the same basic structure it applies to projects in the United States.

Details on financing structure:
The ESA Structure is based on contractual arrangements among an Equity Investor (SDCL), Lender (Citi), Energy Services Company (Clarke Energy), Project Host (Citi), and Special Purpose Vehicle (SPV) (established by SDCL).

- SDCL as the Equity Investor, who also serves as the project advisor, establishes an SPV ("ProjectCo") to act as owner of the project.
- The ProjectCo enters into a Construction and Maintenance Contract with Clarke Energy, an Energy Services Company (ESCO) to provide, install, and maintain the equipment through the life of the contract.
- At the same time, ProjectCo enters into an ESA with Citi the Project Host. Under the ESA, ProjectCo agrees to provide certain energy efficiency services to the Host and Host agrees to make periodic payments for such services.
- Project Co will finance the project costs through contributions from the equity investor and lender based on a pre-agreed share (e.g. 25/75).
- Typically, as in most ESA structures the savings from the project are more than sufficient to cover 100% of the Host payments to ProjectCo, which means they are more than sufficient to cover 100% of the Project costs including financing costs.
- The ESA structure allows the Host to benefit from reduced energy costs while eliminating the need to use its own capital.
- In certain cases, this structure can be off balance sheet for the Host.

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PROCESS
Internal Partnership Building:
Citi’s Banking and Operations & Technology (O&T) divisions collaborate across numerous areas in support of each other’s functions, but had not previously collaborated on an energy efficiency project. Thus, the first step for the organization was to convene all relevant business units to discuss how to work together. Initially, the Banking unit was not aware of the fact that there was a dedicated team of colleagues in O&T working to improve the energy performance of Citi facilities. The Banking unit also didn’t fully appreciate that Citi allocated its capital for this purpose, or the extent of the technical expertise that resided within the company. O&T provided Citi and Banking with several key ingredients: 1) technical capabilities, both on the energy side and the financial modeling side; 2) validation of the opportunity, and, 3) credibility when talking with clients and other stakeholders.

While O&T initially helped Banking build knowledge and credibility to support Banking’s quest to serve clients, Banking helped O&T pursue deeper improvements with an alternative finance solution; the ESA. O&T faces a challenge shared by many of its corporate peers: pressure to continuously reduce GHGs, and do so through self-finance with constraining payback (ROI) hurdles. Most corporate retrofit programs have internal criteria that require that projects have a payback of 2-3 years or better. Citi, had, or nearly had, exhausted all of the improvements that meet those criteria, leaving them with two choices: change the internal criteria or pursue third party alternatives. Citi O&T and Banking are currently working together to further develop and deploy solutions, with the idea of then pursuing a portfolio of properties at Citi, and a new product offering for the market.

Project and Contractor Selection:
In order to meet energy demand, reduce operating costs and meet carbon reduction commitment targets, Citibank’s Operation & Technology team identified the data center in London as a possible candidate for installing a Combined Chilling/Heating and Power plant. Citi O&T team commissioned a feasibility study which concluded that the installation of the CHP would generate significant cost savings by allowing the facility to benefit from anticipated low gas prices rather than depending solely on electric power, as well as achieve significant reduction in carbon emissions.

A list of project advisors/developers was developed and after a bidding process, the winner (SDCL) was selected and appointed as the project developer for the Riverdale Data Centre project. SDCL had experience with similar projects as well as the ESA structure. SDCL will fund 100% of the project during construction/installation, and Citi Banking will fund up to 75% of total project costs at project completion.

Citi O&T in conjunction with SDCL reviewed several bids from various ESCOs regarding the installation and operation of the proposed plant. Citi chose Clarke Energy who immediately went through a verification/validation process of the original energy audit and subsequently submitted a formal technical proposal for installation and operation of the CHP plant. After a series of negotiations, a final proposal was agreed to by the parties and the project and financing documents were signed in the fall of 2014. Construction has begun and is expected to be completed in early 2016.

Expansion to the United States

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Citi has used this project as an internal “proof-of concept” and hopes to pursue similar ESA arrangements at its facilities in the United States. While the specific project partners will vary based on the project’s geography and technical characteristics, there are a number of similar project partners available in the United States. As one example, SDCL has launched a new investment vehicle to invest in energy efficiency and distributed energy generation projects for commercial, industrial, and municipal buildings and other assets utilizing Energy Services Agreements with property and infrastructure owners in New York State. Upon closing, NY Green Bank’s credit facility will provide senior loans to SDCL’s investment vehicle, capitalized by First Eastern Investment Group and other investors and managed by the dedicated energy efficiency investment arm of SDCL located in New York. This investment vehicle will finance various energy efficiency and distributed generation projects with the goal of building portfolios of broadly standardized assets that are of sufficient size to attract new, direct investors.

PARTNERSHIPS

Citi, the leading global bank, has approximately 200 million customer accounts and does business in more than 160 countries and jurisdictions. Citi provides consumers, corporations, governments and institutions with a broad range of financial products and services, including consumer banking and credit, corporate and investment banking, securities brokerage, transaction services, and wealth management.

SDCL's investment business is focused exclusively on energy efficiency project finance. SDCL has established specialist funds in the UK, Ireland and Singapore and has launched new funds in New York and China. SDCL's funds in each country are in partnership with governments as an investor, promoter or guarantor. The funds invest in energy efficiency retrofit projects and seek a return based on savings achieved. This generates ongoing operational cost savings and carbon emission reductions as well as improvements to productivity and asset values, in compliance with current and prospective building regulations.

The UK Green Investment Bank was launched in November 2012. With £3.8 billion of funding from the UK Government, it is the first bank of its kind in the world. It is a “for profit” bank, whose mission is to accelerate the UK's transition to a greener economy, and to create an enduring institution, operating independently of Government.

The UK Energy Efficiency Investments Fund consists of £104.1 million capital commitments and is managed by SDCL EE Co (UK) LLP, the dedicated energy efficiency investment arm of SDCL. The Green Investment Bank is the cornerstone investor in the Fund, having committed £50m into the vehicle in September 2012. The Fund makes investments in efficiency projects across the UK.

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