Case Study

Solar Thermal Air Conditioning – Performance Overview

In Mid 2015 BTC commenced the installation of LED lighting and Solar Thermal Supported HVAC technologies into a number of the facilities situated in the Bahamas.

The collective installation of both LED lighting and Solar Thermal Supported HVAC resulted in total building energy consumption reductions exceeding 32%.

This illustration shows the facilities with available measurable data to produce a real world conclusive comparison. The data represents the average kWh used in each building, taken directly from BTC's energy invoices from the comparative years.

Data shown in yellow highlights that zero data was available for the comparative 2014. Therefore 2015 data was used as the comparative.

	Daily Usage in KWh		% change
	2016	**2014**	**vs 2014**
CAMPERDOWN	2,580.0	4,304.5	40.1%
DELAPORTE	1,186.4	1,656.1	28.4%
EIGHT MILE ROCK	1,219.3	1,810.7	34.1%
PERPALL TRACT	1,715.3	2,446.5	29.9%
PIONEERS WAY	1,336.2	1,984.3	31.7%
LYFORD CAY	370.0	722.8	48.8%
MARATHON MALL	170.0	223.9	24.1%
PINEWOOD	450.9	627.1	28.1%
SETTLERS WAY	214.7	318.8	32.4%
SOUTH CENTRAL	897.0	1,424.5	37.0%
JFK	1,764.9	2,376.8	25.7%
LUCAYA	714.2	1,060.6	31.7%
Sub-total	**12,618.7**	**18,956.5**	**32.7%**

The purpose of this document is to clarify the ability and relevant return on investment potential of the Solar Thermal Support HVAC for consideration on future and existing projects.

The Camperdown facility is BTC's largest energy consumer, certainly in the Phase 1 project, and is responsible for around 25% of the kWh consumption for the collective facilities shown above. Therefore to illustrate the efficiencies provided by the HVAC system alone, we have taken Camperdown in isolation breaking down the data for this single facility.

Prior Data		Post Data	
Daily lighting consumption	- 337kWh	Daily lighting consumption	- 133kWh
Daily everything else consumption	- 3,571kWh	Daily everything else consumption	- 2,376kWh
Total Daily Consumption	- 4,305kWh	Total Daily Consumption	- 2,580kWh

Therefore, as LED and Solar Thermal HVAC were the only technologies installed on these buildings, everything else being equal, the HVAC solution was clearly responsible for 88% (or 1,521kWh) of the achieved savings for this facility on a daily basis.

HVAC supply and installation costs on the Camperdown project - $330,189

ROI1 – at the time of installation the unit price for electricity was $0.40c, - providing a **ROI of 1.48yrs**
ROI 2 – a unit of electricity (at publication of this document) was around $0.27c - providing a **ROI of 2.13yrs**

Further considerations

- The unit price of electricity over the next 5-years is expected to average in excess of $0.33c. Assuming this is the case, we can confidently project that the savings achieved by the HVAC solution alone on the Camperdown facility would generate savings just short of $1m in energy costs, thus achieving a significant net positive of over $660,000.
- It should also be noted that a huge portion of the above install cost was necessary capital expenditure on end of life equipment. Therefore, for facilities with the potential to install retrofit Solar Thermal on the existing HVAC, the ROI would be considerably lower, furthermore a very attractive solution to other facilities within the group with lower utility prices.
- SolX Energy's Solar Thermal solution additionally increases the lifespan and maintenance of the existing and/or new systems. The simple fact is, they just don't work as hard. None of this potentially substantial cost has been factored into any of the above ROI calculations, and would likely reduce the ROI's somewhat further.

"I can confirm that the original energy consumption figures from BTC's prior and post invoices, from which the HVAC savings were calculated, are factual and were provided by the BTC engineering team"

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Senior Property Manager
Date: March 3rd 2017

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