PACE Academy Trust

Our sustainability strategy: how we will decarbonise PACE Academy Trust.

‘I remember thinking that it was very strange, that humans… could be capable of changing the earth's climate. Because, if we were and if it was really happening, we wouldn’t be talking about anything else. As soon as you turned on the TV, everything would be about that. Headlines, radio, newspapers. You would never read or hear about anything else. As if there was a world war going on.

But. No one never talked about it.

If burning fossil fuels was so bad, that it threatened our very existence, how could we just continue like before? Why were there no restrictions? Why wasn’t it made illegal?

So, why are we not reducing our emissions? Why are they, in fact, still increasing? Are we knowingly causing a mass extinction? Are we evil?

No, of course not. People keep doing what they do because the vast majority doesn’t have a clue about the consequences of our everyday life. And they don’t know the rapid changes required.

When you think about “the future” today, you don’t think beyond the year 2050. By then I will, in the best case, not even have lived half of my life. What happens next?

The year 2078 I will celebrate my 75th birthday.

What we do or don’t do, right now, will affect my entire life, and the lives of my children and grandchildren.

Everything needs to change. And it has to start today.’

Greta Thunberg speech 2018 (edited)

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Executive Summary

Our strategy has a dual focus:

Educating our children and harnessing their energy for creating a more sustainable world

Our children are both our greatest asset and most important driver in creating behavioural change and promoting environmental sustainability within our school communities and beyond. We will make a difference.

And

Decarbonising through a policy of using energy from renewable sources and reducing demand – 'generate well, buy well and use well'

We are realistic about how we will secure the necessary investment to support our ambitions which will be through seeking external grants and investment and internal investment where possible, ploughing savings made into further decarbonisation projects.

This strategy sets out our:

- approach to securing investment for projects;
- priorities for action (i.e. those things that will have the most impact); and
- initial understanding of our starting position informed by a comprehensive energy audit conducted across our schools in early 2021.

Actions that contribute to making progress towards this delivering this strategy are managed within our Trust level improvement plan.

Our approach to securing investment for projects

1. Our operating conditions are well understood within the Trust and these shape our strategic choices: our finances are highly constrained given that our three single form of entry schools are not full; and we relentlessly pursue excellence in education across all of our schools and for all of our children irrespective of funding. Given these conditions our environmental sustainability work needs to be relatively self-financing which is to say that we must secure external investment for major infrastructure investments like heat pumps or solar

installations and, that lower cost investments need to be funded through existing small capital budgets or through generating energy savings and ploughing those savings into further improvements.

2. Given our financial context our approach to securing investment will be to:

- **Secure agreement** with the overarching commitments and priorities in this strategy at Board level
- **Require our schools to consider** whether they can programme into premises spending plans some of the recommended changes set out in the Barker/EO audit, such as, for example, the installation of metering and building management systems.
- **Encourage our schools** to consider whether collaboration with their PTFA or community might create fundraising opportunities to invest in some of these smaller scale projects
- **Require our schools to ringfence any savings** generated through reduced consumption of energy to specifically reinvest into further decarbonisation measures
- **Remain vigilant and look for opportunities to apply for grant or other investment funding** for solar, heat pump projects and LED projects
- Consider which, if any, of the identified improvements could be part of future applications for Condition Improvement Funding.

Our priorities for action

Priority 1: Educating our children and harnessing their energy for creating a more sustainable world

3. Within our schools, environmental sustainability will be taught across the curriculum, including practical projects involving reducing energy use, recycling, re-wilding and water use. We will combine both our teaching and our children's intrinsic awareness for 'saving the planet' to bring about behavioural change, which we hope will spread through their friends and families and across our communities.

Priority 2: Decarbonising our schools through a policy of using energy from renewable sources and reducing demand – 'generate well, buy well and use well'

Decarbonise heat in our schools: 'generate well'

4. The true game changers in reducing our emissions would be to no longer use gas fuelled

heating in our schools and to source all electricity from 100% renewable sources – that is, generated on our sites or bought from a renewably sourced provider.

5. We already have solar photovoltaic installations in place on both of our Merton schools (and some panels on part of Chipstead Valley Primary School). The panels on our Mertons schools operate under a 'Power Purchase Agreement' whereby they produce electricity which goes to the school first. The school uses what it can of that electricity and any excess goes to the grid which largely only happens at weekends and during the summer. During the normal school day the school will be using most or all of the electricity produced. The school then buys in any power they need above this which is drawn from the national grid. At the moment the schools benefit from free to them power from their panels. The solar installations were installed when the schools were maintained by Merton LA and are leased to us by Merton LA under a Power Purchase Agreement[1].

6. The energy audit and associated feasibility work enabled Barker and EO to create detailed project specifications for the installation of full solar PV on our three Croydon schools and indeed, we applied into the main grant Salix scheme to have these funded by grant. Whilst this initial application was turned down due to the vast over subscription to the Salix scheme we must now consider what alternative options might be available to obtain the necessary investment to proceed with these installations. We could look for a company to work with to install solar on the basis of another *Power Purchase Agreement* or better still, seek full grant funding/ invest in all the up front costs ourselves. Both the business case for installing solar on the schools and the environmental case for such are strong:

    - An initial investment of £90,592 could be fully recovered through energy savings in under 8 years. After 8 years these solar installations would impact on operating costs by delivering savings to energy bills. [This is predicated on us securing all of the initial investment without a tie in agreement.]
    - Solar PV would significantly reduce the demand from a building for its power from the grid.

7. For further detail on the case for solar photovoltaic installations in our three Croydon schools see section 5.1 of the Barker/ EO Summary Report at Annex A. Total project cost for 3 installations is £90,592 – payback is over 7.4 years as annual energy savings are estimated at £12,245.

Using energy from renewable sources 'buy well'

1. [1] Under this arrangement Merton will shortly instigate the arrangement in the lease whereby Merton will invoice Stanford/Beecholme at 75% of the grid rate for the electricity that the school generates. This will enable Merton LA to recover the costs of the upfront installation.

8. We have a number of electricity suppliers in place across our schools. To date our approach has been to procure energy at the lowest cost tariff. Whilst we will remain focused on price, when we renew contracts we will consider switching suppliers to those which can offer 100% renewably sourced grid power, so called 'green tariffs'.

9. The objective should also be to move to centralised billing with aligned renewal dates in order to maximise buying power and minimise management/administration resource. This will also help us in recording and reporting our energy use and monitoring the impact of actions taken.

Understand and reduce demand – 'use well'

10. We already have a statutory obligation to report our energy use through the Streamlined Energy and Carbon Reporting (SECR) on an annual basis. This has created a benchmark for us which we will use as our starting positon on consumption. We must now begin to manage our energy use more closely, to set and monitor targets for reductions and to use energy well, reducing consumption when and where we can.

11. Part of reducing demand will be through behavioural change within our schools.

12. Whilst metering needs to be improved we need to upskill school business staff and site managers to use existing metering to better manage use in schools. We can then go on to improve the measurement and manage usage (and therefore reduce consumption) in our schools through the installation of building management systems and smart metering which can facilitate proactive energy reduction initiatives (largely behavioural change) within the school. A behavioural change programme in a school will require a champion and a sustained effort but could be highly impactive and have a wider reach beyond our schools (i.e. into the homes of our children and our staff.)

Our understanding of where we are from our 2021 energy audit

13. A comprehensive energy audit was conducted in early 2021 as a result of our successful bid to the Department for Business Energy and Industrial Strategy 'Skills Fund'. Whilst the audit did not explicitly look at water use in itself, reducing water use is in scope for our environmental sustainability strategy as are the important principles of reduce, reuse and recycle.

14. The Energy Audit Outputs Report (summary) produced by Barker and EO, our contractor, is attached as Annex A. Full supporting data and analysis is retained by the Trust. This full data set includes specification documents for solar projects at the three Croydon schools and some initial commentary on the replacement of swimming pool boilers with heat pumps.

15. This audit showed that there are opportunities within all of our schools to invest in technologies to reduce our energy and water consumption and to manage it more closely. Specifically, the energy audit and feasibility work showed opportunities to:

    a. to install electricity-generating solar Photo Voltaic (PV) systems at three of our schools (Keston, CVPS and NV)
    b. replace the two pool boilers in the longer term with air source heat pumps in place of gas fuelled boilers
    c. install building management systems and smart metering in all schools
    d. implement small changes that could improve zoning, insulation and vary room temperature in our schools
    e. replace boilers at Stanford and Beecholme

Replacing fossil fuel powered boilers with heat pump powered boilers

16. Replacing gas fuelled boilers with ground/ air source heat pump boilers represents a very significant shift in approach since they utilise the air or the ground to generate energy which can be used to heat a building rather than using non-renewable sources which create emissions. All heat pumps work in a similar way, by extracting heat from their surroundings (from the ground, the air, or from water) and converting it into useful energy which can heat a building. They need some electricity to run, but because they are extracting renewable heat from the environment, the energy output is much greater than the electricity input, making them an energy efficiency method of heating.

17. In the feasibility works conducted by Barker and EO they considered the case for replacing gas boilers in our two swimming pools with heat pumps. The limited analysis suggests that there is a case for the replacement of these boilers with heat pumps but that significant upgrades would be required to the electrical infrastructure of the schools to enable such. Timing precluded an application into the Salix grant round on this occasion but beyond that the business case for such conversions remains uncertain as they would require significant investment which would not necessarily be recovered through energy savings: in some cases heat pumps actually use more energy than the solution that they replaced and without a parallel installation of technologies to generate that power [ie solar], both the economic and environmental benefits look less convincing. Nonetheless we have identified that there are some more steps we can consider taking to prepare us: if solar were to be installed at Chipstead or Keston there would be a case for the solar installation to be sized appropriately to generate power for the pool and at that time a consideration should also be given to upgrading the electrics such that heat pumps could become a viable option. Once solar is in place we can explore commissioning a detailed feasibility and business case for pool heat pumps to prepare ourselves for making the change when technology and investment allows.

18. Note that the case for installing heat pumps *for pools* is far stronger than generally for our schools (ie to replace other boilers for heating and water). This is due to the nature of the constant demand for heat that a heated pool creates – i.e. a year round demand at about

the same level to keep the pool at a consistent temperature. The case for installing heat pumps into schools as part of a heating or water works upgrade is currently less convincing as, for example, there would need to be more radiators in a building heated by heat pump as the heat generated is at a lower temperature than a conventional gas heating system. This is a fast evolving picture and we should watch with interest projects where a hybrid solution is being introduced as part of a heating upgrade. Ultimately, there will need to be a significant shift from government, and/or advances in technology, to support the conversion of the school estate from gas fuelled boilers to heat pumps.

Conclusion

19. Without implementation plans our strategy will be meaningless. We will take a dynamic approach to implementation setting out actions within our annual Trust improvement plan to begin making these commitments real. Our action will include:

- changes in how we manage our environment (our buildings and sites) by seeking to renew old gas boilers and looking for incremental opportunities to manage our energy consumption more closely energy use more closely.
- using the huge opportunity that we have with our children, our staff and their families to effect social change through their understanding and commitment to change, to bring about behavioural and attitudinal shifts, taking our initiatives wider than our own schools.
- drive and leadership through our governance to ensure that our approach is cumulative and, over time, transformative, in our use of fossil fuels.

ANNEX A: Barker & EO – Energy Audits Output Report

Under separate attachment

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