Finance Committee

Date: **11 July 2024**

Item: **Energy Purchasing Strategy Update**

This paper will be considered in public

1 Summary

1.1 TfL has reviewed its Energy Purchasing Strategy (EPS) in light of market conditions, carbon targets and our experience to date. Corporate Power Purchase Agreements (PPAs) remain the preferred renewables purchasing option, with the remaining (non-PPA) volumes procured through the existing mechanism with the Crown Commercial Service (CCS) framework. To achieve our target to decarbonise our operations in line with net zero by 2030, this paper explains the intention that TfL increase the flexibility of the current strategy by allowing an increased volume of electricity procured via PPAs from 50 per cent up to 70 per cent, subject to value for money considerations. PPAs were last considered by the Committee at its meeting on 23 November 2022.

2 Recommendation

2.1 **The Committee is asked to note the paper.**

3 Background

TfL ambition

3.1 The Mayor's Transport Strategy, London Environment Strategy and TfL's Corporate Environment Plan set out the vision for a zero-carbon London and a specific target for TfL to achieve net zero carbon from its operations by 2030. Our strategy to achieve this involves removing fossil fuels, improving energy efficiency and installing on-site renewables. It is not currently possible to self-generate enough renewable electricity within London to run our transport network therefore, for the foreseeable future, we will be reliant on grid-delivered electricity for the operation of services across London.

3.2 This paper therefore pertains to electricity directly procured by TfL from the Great Britain (GB) electricity grid, which currently totals 41 per cent of our operational carbon emissions (337,000 tonnes CO_2e), and for the financial year 2023/24 has a cost of approximately £350m. To reach net zero from our operations by 2030 in line

with our strategy, there is a need to transition our supply source 100 per cent renewable electricity.

3.3 This transition needs to be achieved in a way that both accelerates our progress towards decarbonisation, is financially prudent, and aligned with our broader energy purchasing requirements. PPAs satisfy these requirements and are the best organisational fit as they provide the required green credentials and ensure a financially sound approach. These points are explored further below.

Electricity grid generation mix

3.4 In the last decade the carbon intensity of grid electricity has dropped by almost two thirds, with coal power falling from one third of grid electricity generation to less than two per cent, and wind power more than tripling, to 29 per cent in 2023[1]. However, decarbonising the final third of grid supply presents a significant challenge, with the phasing out of gas generation and balancing of intermittent renewables, while meeting increased demand from heat and transport electrification.

3.5 Forecasts from the Government, National Grid and industry experts all demonstrate the electricity grid decarbonising through the late 2020s and 2030s, but even in the most ambitious scenarios, the grid is not seen to be near zero carbon until after 2030. The outgoing government's current target is 2035.

3.6 Even with an extremely ambitious rollout of national policies and reforms relating to aspects such as grid infrastructure and planning alongside interventions in the market, it is still highly likely that TfL will need to undertake renewables purchasing to reduce emissions. This is due to the time taken to build new renewables assets and the 2030 target being just six years away.

TfL strategy

3.7 TfL's current EPS was endorsed by the Committee in November 2020. To deliver upon that strategy, in 2023 TfL launched a PPA procurement (PPA Comet) (subsequent to a previous, withdrawn procurement) which is due to conclude in late summer 2024. It is anticipated that this will provide approximately 10 per cent of TfL's electricity demand, with the contract requiring 80-200GWhs of renewable energy per annum.

3.8 In light of TfL's experience to date, market conditions (including the recent energy crisis and its highlighting of the potential benefits of longer-term hedging mechanisms for energy), and the need to accelerate progress towards the 2030 carbon target, TfL, along with our energy advisors, has reviewed and updated its energy purchasing strategy as set out in this paper.

[1] National Grid ESO, 2024 https://www.nationalgrideso.com/news/britains-electricity-explained-2023-review

3.9 Since the formation of the original strategy, TfL has continued to engage with other public and private sector organisations, along with the renewables industry, to revise the approach. We are also working with other members of the Greater London Authority Group on its own energy purchasing guidelines and collaborative approach to electricity procurement, with which this strategy will be aligned.

4 Electricity purchasing options

4.1 Grid electricity purchasing is a contractual arrangement rather than a physical connection directly to a renewable asset. Therefore, the degree to which a renewable electricity contract can be understood as "green" depends on the contractual relationship between the end user and the renewable generation asset. The relationship is strongest where the contract brings new renewable generation online that would otherwise not have been developed. This is referred to as "additionality". A relationship is weaker where the contract is for renewable generation that already exists or was always going to be developed irrespective of supply arrangements. In this respect, TfL aims to use its purchasing power to bring new renewable generation online where possible (maximising additionality), stimulating the market within GB and creating jobs.

4.2 TfL considered a range of routes to procure energy as outlined in Figure 1.

4.3 Options 1 and 2 are available through our current contract procured through the CCS framework, with option one being our current BAU approach, which is the grid-mix. Option 2 (green tariff) offers the purchase of Renewable Energy Guarantees of Origin certificates, which are traded independently of the energy and therefore do not provide clear additionality to the GB grid. Option 3 is not currently available but would see an organisation such as the CCS providing a simpler route to market for renewable energy that provides additionality. Option 5 would involve capital expenditure, additional risk, alongside a PPA, but would provide additionality. Option 4 is via a PPA, which remains the best strategic fit, as outlined below.

	1) Grid procured (with grid-mix)	2) Green tariff	3) Public Buying Organisation PPA Solution	4) Power Purchase Agreements	5) Direct investment in assets
Is this route currently available / advisable?	✓ BAU Route	✓ Available through CCS	✗ Solutions are being developed but not yet available	✓ PPA market growing	✗ High risk to TfL and needs PPA
Does this meet our 'green credentials	✗ Grid not due to decarb till 2035	✗ Available Green Tariffs use REGOS and are not PPA backed	✓ Solutions in development should allow us to specify additionality	✓ Can specify an 'additional' PPA	✓ Would satisfy additionality

Figure 1 – Routes to purchase renewable energy, whether they are currently available to access and whether they satisfy TfL's aim for additional renewable generation

4.4 Within the GB wholesale electricity market the ability to hedge prices is limited to three to five years. PPAs can provide a long-term hedge (typically 10-15 years), removing exposure to volatile short-term pricing which supports TfL's risk appetite. Moving from wholesale exposure to CPI exposure more closely tracks to TfL's income, and helps support our budgeting process.

4.5 The key risk of a PPA is the opportunity cost, as we may lock in higher prices that subsequently fall in the future. Future PPA / market prices and mitigations are discussed below in sections 5 and 7 respectively. TfL also must be mindful of the need to demonstrate value in wider delivery and that achieving a competitive price vs. wholesale should not be the sole objective. Corporate PPAs accelerate GB grid decarbonisation, support green jobs and aid national security of supply. This consideration should help frame what represents value for money as we consider issues other than simple cost alone, acknowledging there may be a premium for a renewables long-term hedge.

5 Current Strategy

5.1 In November 2020, the Committee endorsed an approach to build up to 50 per cent of our total demand through PPAs in long-term agreements, with an incremental approach of going to market every two years. The remaining 50 per cent was assumed to be satisfied by a flexible green tariff, which would provide flexibility via emerging products in the market.

5.2 TfL has been utilising the procurement services and frameworks of CCS for energy purchasing since 2013. This has enabled us to take advantage of additional commercial leverage by subscribing to the largest procurer of energy in the UK and aggregating our volume with other public sector organisations.

5.3 Although the CCS has provided competitive prices in the past which have delivered cost savings against wholesale prices, they do not currently have an option available which is consistent with our net zero ambitions of additional renewable electricity. We will however continue to procure from CCS as the framework enables PPAs to be incorporated into our existing supply contract and the framework will still be used to procure non-PPA volumes.

6 Market Context

6.1 Figure 2 highlights how the wholesale electricity market moved from relative stability to extreme volatility in 2022. Following this period of volatility electricity prices have begun to soften once again, albeit not quite returning to previous levels, and retaining higher levels of volatility. Wholesale electricity prices are driven by the price of gas, as gas-fired electricity generation typically sets the marginal wholesale price. While current forecasts project gradual price decline of electricity wholesale prices for the next two decades, the GB energy market remains exposed to gas price shocks as it remains reliant on imported gas.

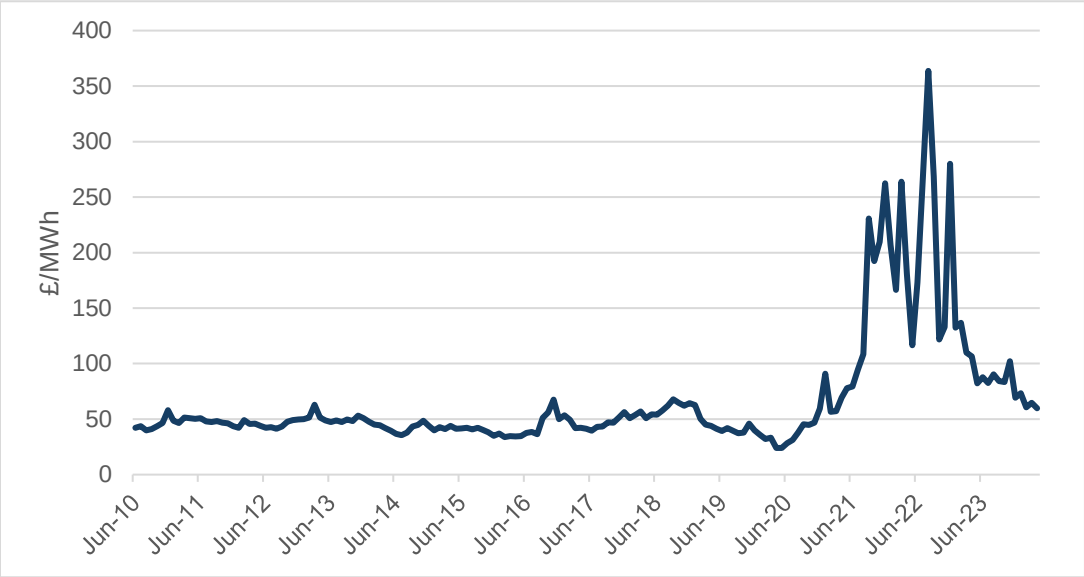

Figure 2 - Electricity Prices: day ahead baseload contracts- monthly average price (GB), Ofgem

6.2 In recent years there has been increased demand for renewables. Sustainability targets are pushing an increasing number of corporate buyers to pursue renewable PPAs. Although the number of PPA transactions is increasing, TfL remains ahead of the curve within the public sector, but others are now accelerating efforts and this is likely to increase long-term demand. To date, only a very small number of public sector PPAs have been entered into; the two most relevant being the City of London, and Network Rail. TfL often engages with peer organisations such as these, as well as large corporates in the private sector to share knowledge and lessons learned on renewables procurements and strategy.

6.3 The renewables industry has faced a number of challenges in recent years including the increasing cost of raw materials, rising cost of debt, longer-term supply constraints such as land availability and delays to grid connections. These factors have led to upwards pressure on PPA prices, and as long-term demand increases this is likely to push up against these longer-term supply constraints, and lead to increases in prices.

6.4 PPAs are typically priced with reference to both wholesale markets and the levelised cost of electricity (LCOE) – the cost associated with building and operating the asset. PPAs have historically tracked LCOE, though have been much more heavily influenced by wholesale forecasts in recent years given these represent the opportunity cost in the market at any given time. The LCOE is not forecast to reduce in the near term due to those upwards facing pressures referred to in 6.3. With a longer-term view, the Department for Energy Security and Net Zero (DESNZ) LCOE estimates for offshore wind project higher costs for a project commissioning in 2040 verses those with a commissioning date in 2025 (in real 2021 prices)[2]. For solar projects, DESNZ continues to forecast a real terms improvement in costs, but at a slower rate when compared to historic improvements. The last round of Government renewables auctions, Contracts for Difference (CfD), saw prices increase from previous years due to high inflation and rising project costs.

6.5 As the cost of energy and decarbonisation of the grid rise on the agenda, the policy and regulatory landscape in this area is evolving. DESNZ are undertaking a comprehensive assessment of electricity market design under the Review of Energy Market Arrangements (REMA) to ensure that it is fit for purpose, ensuring energy security, affordability, and decarbonisation. After two consultations, various new mechanisms, such as locational pricing, remain on the table and both the outcome and the exact timing of an announcement are yet to be known.

6.6 The imminent 2024 General Election sees a range of manifesto commitments around renewables and commitments to net zero. The Conservative Party commits to decarbonise electricity generation by 2035, while The Labour Party commits to clean power by 2030 along with the formation of Great British Energy. The challenge in the sector is about the ability to deliver. To accelerate, it will be essential for the Government to address the physical barriers to market, such as grid capacity constraints and planning system inefficiencies. Addressing these issues is expected to have a significant lead time and is unlikely to impact the PPA market ahead of any additional procurement launch dates. Some policies put forward mechanisms aimed at unlocking investment for projects, which may increase the number of projects available to TfL.

6.7 TfL will continue monitoring developments in the sector and remain engaged with trade bodies and other organisations as the outcome of REMA and the election become known.

7 Proposed strategy

7.1 TfL's objective is to meet net zero from its operations by 2030 via credible means and within our affordability constraints. For PPA Comet, which was launched in February 2023, a successful asset will be due to start generating electricity between

[2] Department for Energy Security and Net Zero, 2023
https://assets.publishing.service.gov.uk/media/6556027d046ed400148b99fe/electricity-generation-costs-2023.pdf

April 2025 and December 2028. Given these lead times, it is clear that it will not be possible to launch four additional procurements, each to secure a single asset PPA in a stepped approach, and expect those assets to deliver power by 2030. In the short-term, between now and 2027 (which is the period of time during which TfL would need to be active in the market in order to secure volumes able to come online by 2030), PPA prices are not expected to fall (in part, because corporate net zero ambitions over the coming years will continue to support prices around current levels). Therefore, there is a need and rationale to accelerate progress in order to meet our net zero target.

7.2 The experience TfL has gained through the PPA Comet procurement has demonstrated the need for flexibility in procurement approach, enabling greater agility in the way TfL is able to respond to the market. It is imperative over the coming years that TfL's strategy, and the way it is implemented, is therefore flexible and resilient to changing conditions, allowing us to act fast and capitalise on opportunities that present good value. Emphasis should therefore be placed on how TfL defines 'good value'.

7.3 Given Corporate PPAs still represent the only way for TfL to credibly secure renewable energy at scale and meet its net zero objectives, it is now appropriate to increase the ambition in this area and target up to 70 per cent of our required total supply needs (1.6TWh) via PPAs. Allowing this increase brings about flexibility to further capitalise on competitive prices, provided that TfL is able to find a way of intelligently and robustly assessing bids.

8 Delivering the strategy

8.1 In light of a strategy that sees TfL being responsive and opportunistic, the next PPA tranche must be capable of awarding larger volumes, should conditions be right, and target multiple PPAs / assets.

8.2 This approach, and the discretion that would therefore be needed for flexing award volumes, heightens the need for sound and reasoned decision making during the procurement; the methodology through which TfL will exercise its discretion will need to be clear upfront to bidders. This is likely to take the form of an intelligently-set price cap mechanism to guard against the key risk of locking in prices that may fall in the future. TfL has a strong preference not to publish a numerical cap, so as to avoid target pricing by bidders; instead, we would look to publish a methodology for how TfL would arrive at the cap, with the actual number agreed internally prior to receipt of bids in order to avoid any perceived bias.

8.3 The detailed methodology for a potential price cap or similar mechanism are still to be determined and subject to legal advice, but we would expect any price cap to consider long-term wholesale forecasts over the time horizon of PPAs being considered, and other possible benchmarks (e.g. CfD administrative strike prices, which consider LCOE and would therefore introduce assessment of 'fair price' in considering underlying costs, and CfD clearing prices). Assets considered to

present value for money in this way would be eligible for award subject to other evaluation criteria and final rankings.

8.4 Also to be considered is the use of award ranges, whereby the volume TfL awards is dependent on pricing ranges of assets. This would allow TfL to contract for greater volumes where the cost savings appear more compelling. This will also mitigate the risk of measurement error in the price forecasts (an important benchmark which will likely be the basis of the price cap) as they are uncertain by their very nature.

8.5 In the short-term, TfL expects to continue to approach the market independently; suitable frameworks do not currently exist for the procurement of PPAs. TfL will continue to monitor market developments, including in relation to the CCS (and other public buying organisation) options, considering new routes to market which complement or better facilitate delivery as they emerge.

9 Next steps

9.1 The project team will consider the detailed mechanics and procurement strategy over the coming months. An outline of the procurement strategy including the PPA parameters will be brought to the Committee prior to commencing the next procurement.

List of appendices to this report:

None

List of background papers:

Finance Committee, TfL Energy Purchasing: Crown Commercial Service and Power Purchase Agreements, 25 November 2020

Finance Committee, GLA Group Collaborative Procurement of Power Purchase Agreements, 9 March 2022

Finance Committee, TfL Power Purchase Agreements, 23 November 2022

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