RICS PROFESSIONAL STANDARD

Valuation of assets in the commercial renewable energy sector

UK

1st edition, April 2018

Effective from 19 April 2018

RICS®

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RICS standards framework

RICS' standards setting is governed and overseen by the Standards and Regulation Board (SRB). The SRB's aims are to operate in the public interest, and to develop the technical and ethical competence of the profession and its ability to deliver ethical practice to high standards globally.

The RICS Rules of Conduct set high-level professional requirements for the global chartered surveying profession. These are supported by more detailed standards and information relating to professional conduct and technical competency.

The SRB focuses on the conduct and competence of RICS members, to set standards that are proportionate, in the public interest and based on risk. Its approach is to foster a supportive atmosphere that encourages a strong, diverse, inclusive, effective and sustainable surveying profession.

As well as developing its own standards, RICS works collaboratively with other bodies at a national and international level to develop documents relevant to professional practice, such as cross-sector guidance, codes and standards. The application of these collaborative documents by RICS members will be defined either within the document itself or in associated RICS-published documents.

Document definitions

Document type	Definition
RICS professional standards	**Set requirements or expectations for RICS members and regulated firms about how they provide services or the outcomes of their actions.** RICS professional standards are principles-based and focused on outcomes and good practice. Any requirements included set a baseline expectation for competent delivery or ethical behaviour. They include practices and behaviours intended to protect clients and other stakeholders, as well as ensuring their reasonable expectations of ethics, integrity, technical competence and diligence are met. Members must comply with an RICS professional standard. They may include: • mandatory requirements, which use the word 'must' and must be complied with, and/or • recommended best practice, which uses the word 'should'. It is recognised that there may be acceptable alternatives to best practice that achieve the same or a better outcome. In regulatory or disciplinary proceedings, RICS will take into account relevant professional standards when deciding whether an RICS member or regulated firm acted appropriately and with reasonable competence. It is also likely that during any legal proceedings a judge, adjudicator or equivalent will take RICS professional standards into account.
RICS practice information	**Information to support the practice, knowledge and performance of RICS members and regulated firms, and the demand for professional services.** Practice information includes definitions, processes, toolkits, checklists, insights, research and technical information or advice. It also includes documents that aim to provide common benchmarks or approaches across a sector to help build efficient and consistent practice. This information is not mandatory and does not set requirements for RICS members or make explicit recommendations.

1 Introduction and scope

1.1 Scope

1.1.1 This professional standard has been prepared with regard to valuation practices in the UK. It is intended to assist the valuer in highlighting the main factors that affect the valuation of commercial renewable energy installations and to outline the valuation process and approaches. It does not set out to provide a comprehensive manual for the appraisal of renewable energy installations. However, it does address some of the more complex issues that might arise when assessing the Market Value, Investment Value (Worth), Equitable Value (Fair Value) and Synergistic Value for such assets and seeks to place them in the context of the RICS Valuation Standards and UK valuation practices.

1.1.2 Valuation specific terms used throughout this professional standard are defined in the Glossary of the current edition of the RICS Valuation – Global Standards (the *Red Book*).

1.1.3 This professional standard is not a treatise on the technical aspects of renewable energy production. A valuer practising in this area should be familiar with the current technological, legal and financial framework for renewable energy production from current, relevant sources. This professional standard is also not intended to cover the subject matter within RICS' *Negotiating options and leases for renewable energy schemes*.

1.1.4 This is a complex and challenging sector and, having regard to VPS1 Terms of engagement (scope of work), particularly the statement confirming that the valuer is competent to undertake the valuation assignment, valuers should consider whether they have sufficient current local, national or international knowledge of the sector prior to accepting instructions.

1.2 Clients

1.2.1 The range of clients will include site owners; site developers; site occupiers; finance providers; government and other statutory agencies; receivers and investors. This is not anticipated to be a comprehensive list and as the sector evolves further this may expand. The type of client and valuation required will need to be recorded carefully in confirmed instructions and reports. Assumptions and special assumptions may need extra attention when confirming their reasonableness.

1.3 Purposes of valuation

1.3.1 This information is key to driving the valuation process. A valuer may face a variety of purposes of valuation, which may influence the valuation process. These include:

- loan finance

- sale and purchase
- option agreements
- rent (for standalone leasehold installations)
- development appraisals
- asset distribution (e.g. probate, estate reorganisation, divorce, winding-up procedures)
- taxation (e.g. inheritance tax, capital gains tax, rating)
- business reorganisation
- financial statements
- compensation for compulsory purchase; and
- compensation to other interests (e.g. tenants) and for overage
- expert witness.

Some of these purposes may require the valuer to report on a basis of value other than Market Value and this will need to be determined at the outset as it will likely inform the assumptions and special assumptions required and the most appropriate methodology.

1.4 Comment on statutory issues

1.4.1 Within this guidance, the legislation relating to renewable energy is not set out, since this is a rapidly changing area. A valuer, although not expected to be a technical expert on all aspects of the sector, should nonetheless remain up to date and stay abreast of relevant legislative and statutory changes.

1.4.2 Key government incentives include:

- **Renewable Obligation Certificates (ROCs)** – digital certificates which set out the details of how units of electricity were generated and to whom they were awarded and by whom they were bought and used. ROCs can be traded separately to the actual electricity. Ofgem publishes guidance for agents and small generators and details the various rates applicable to different types of renewable energy, dependent upon their commissioning date.
- **Feed-in tariffs (FiTs)** – payments from the energy supplier to the generating station for generating their own electricity based on the kilowatt hours generated. This is in addition to any payment for export of the actual electricity (which may be lower than the generated amount due to use on site for the property itself or due to parasitic load).
- **Renewable Heat Incentive (RHI)** – this comprises domestic and non-domestic RHI schemes. This professional standard seeks only to discuss non-domestic RHI. Non-domestic RHI relates to installations in England, Scotland or Wales installed on or after 15 July 2009 (solid biomass, geothermal, solar collectors, energy from waste, biogas below 22kWth), or on or after 4 December 2013 (air to water heat pumps, biogas 200Wth and above, CHP using biomass, biogas or waste). Eligible installations receive quarterly payments over 20 years based on the amount of heat generated. There is a separate

scheme for Northern Ireland (which was suspended for new applications from 29 February 2016). Government incentives can be subject to change and valuers are advised to check the effective time period for any particular incentive.

- **Renewable Energy Guarantees Origin (REGO)** – Generating stations in Great Britain and Northern Ireland that produce electricity from eligible renewable energy sources can apply for and receive Renewable Energy Guarantees of Origin certificates (REGOs). Applicants will need to be registered on the Renewables and CHP Register.
- **Climate Change Levy Exemption (CCL)** – Levy Exemption Certificates (LECs) are no longer in existence. March 2013 was the last month of generation for which a Combined Heat and Power Quality Assurance (CHPQA) accredited station was eligible to receive CHP Levy Exemption Certificates (LECs) and July 2015 was the last month of generation eligible for Renewable LECs.
- **Contracts for Difference (CFD)** – A Contract for Difference (CFD) is a contract between a low carbon electricity generator and the Low Carbon Contracts Company (LCCC), a government-owned company. A generator party to a CFD is paid the difference between the 'strike price' – a price for electricity reflecting the cost of investing in a specific low carbon technology – and the 'reference price' – a measure of the average market price for electricity in the GB market. It gives greater certainty and stability of revenues to electricity generators by reducing their exposure to volatile wholesale prices, while protecting consumers from paying for higher support costs when electricity prices are high.

1.4.3 There may also be various sources of funds and grant aid available to different operators. These are not set out within this guidance as it is a rapidly changing area.

1.4.4 Statutory issues as well as the key government backed incentives, sources of funding and grants will have a significant bearing on the valuation.

2 Categories of renewable energy

2.1 Definition

2.1.1 The most widely used definition of renewable energy is 'energy flows which are replenished at the same rate as they are used.' (Source: Sørensen, 1979)

2.2 Types of renewable energy

2.2.1 The main types of renewable energy considered here are listed below. This guidance does not seek to set out their pros and cons, nor their technical background and advancement, since to do so would likely render the guidance obsolete within a very short time, given the sector's rate of advancement.

2.2.2 A valuer within the commercial renewable energy sector should ensure that they have sufficient access to technical resources to enable sufficient detail and knowledge to be provided to them and for them to query, but should also have a broad understanding of the overall market and the sub-sector (listed below) and details of the technology they are considering.

- On-shore wind (off-shore wind is not considered within this guidance).
- Hydro-electricity – with three main types, (1) impoundment with a dam built across a river forming a reservoir behind it, with water released through a turbine to generate electricity; (2) diversion, which channels a portion of a river; or (3) pumped storage, pumping water from a low to an upper reservoir when demand is low, with water released back through the turbine at high demand.
- Solar thermal (heating).
- Solar photovoltaics.
- Heat pumps – air, ground or water source (occasionally, but incorrectly called geothermal – true geothermal is specialist and not considered within this note).
- Biomass – including wood, wood chip, wood pellets and forestry arisings, and green waste streams.
- Anaerobic digestion (AD) and biogas – biogas produced through anaerobic digestion of plant and animal matter is most commonly used in gas engines to produce renewable electricity and heat or is upgraded and injected into the National Grid. AD may be split into sub-sectors based upon the type of feedstock or input which the plant is built or adapted for.

2.2.3 Each of these sub-sectors within the broader renewable energy category have been established to be of differing appeal to investors, with different likely construction costs, maintenance costs, reliability, risk, life spans, payback periods and yields achieved upon sale.

2.3 Standalone or integrated renewable energy

2.3.1 This professional standard considers, in the main, standalone renewable energy which has been built as a separate commercial entity or could operate as a separate commercial entity. There will be different implications (including differing incentives) for valuations of renewable energy assets which are integrated within other property types.

2.3.2 To date, there has been mixed evidence as to whether renewable energy within residential or standard commercial property adds further identifiable value to the underlying existing building. In most instances, this will be difficult to assess as a separate element of value, distinct from the many other factors influencing the purchase or sale price of an asset. There may be a clearer distinction for trading property (see VPGA4) and it will be for the valuer's judgment to ensure that there is no double counting of value if renewable energy is integrated within a trading property. In all circumstances, the valuer is seeking to replicate the market and how they would approach the assessment of any additional value, however, as noted above, it is likely that distinguishing this factor among all others affecting purchase or sale price will be difficult.

2.4 Tenure and holding mechanism

2.4.1 The property may be freehold or leasehold, held as an investment or operational asset, held in a Special Purpose Vehicle or Trust, or as a company. This will alter the approach and method of valuation and is likely to have taxation implications and vary the purchaser's costs and value. In all instances, clear unambiguous advice setting out the assumptions and special assumptions which have been agreed with the client should enable each scenario to be dealt with.

2.5 Valuation

2.5.1 A valuation can be requested at any point in the life cycle of the renewable energy asset and the following six stages summarise the most likely points:

- pre-consent
- pre-construction
- mid-construction
- post-construction
- maturely trading; and
- end of life.

These will influence the due diligence required, the most appropriate method of valuation, whether deadlines for incentives are critical to the valuation and how construction costs should be dealt with, among many other points. Valuations mid-construction should be avoided if possible, since the value may change on a day-to-day basis. In addition, valuers may need to confirm to the client that valuation tolerances are liable to increase the further from post construction or maturely trading the property status is.

3 Establishing the facts: preparatory work and inspection

3.1 Information to be relied upon, source and acceptance by the client

3.1.1 It is particularly important for the valuer to obtain prior written agreement with the client on the scope of investigations to be undertaken, assumptions and special assumptions. In addition, the information to be provided by the client or from other sources and the extent to which this will be relied on in the formulation of an opinion of value, needs to be determined beforehand.

3.1.2 The valuer should make clear, both in the instructions and within the valuation report, the limitations of their investigations and report. Where possible, the valuer should rely on technical due diligence reports from a reputable source, accepted by the client, having undertaken a broad check that these are within reasonable parameters. The stage of the project should be accounted for and it is likely that pre- and post-construction technical due diligence reports should be available, or actual operational data. In the case of actual operational data, several years' data will be required, since an individual year or part thereof may not accurately reflect the long-term average output which will be achieved. If no such reports are available, the valuer should make reasonable assumptions and state clearly what these are and the potential effect if these are varied. Where, for example, the valuation is for internal purposes, for taxation or financial reporting purposes, then it is likely that extensive due diligence will not be available and the valuer must identify key issues which will need to be covered by assumptions and special assumptions.

3.1.3 Renewable energy valuations will always be underpinned by assumptions regarding power output, efficiency and costs and the client should be in no doubt that the valuer is not a technical specialist and that any alteration to these key underlying assumptions is likely to affect the value.

3.1.4 In addition to the information that is always needed by the valuer concerning site, tenure, etc., the following information may also be required:

- lease or other terms
- management agreements
- operational practices
- business rates assessment
- easement/wayleave agreements
- generating capacity

- parasitic load of equipment
- planning and other consents and any planning obligations
- construction costs
- full grid connection details including costs and timescales
- power purchase agreements, where available
- incentive confirmation agreements and registration
- warranties and guarantees
- environmental permits
- feedstock agreements (where appropriate)
- control over feedstock supply (where appropriate)
- digestate disposal agreements (where appropriate)
- assumed duration of generation use; and
- assumptions regarding after-uses, or continuation and redevelopment.

3.1.5 The valuer should be wary of the interrelation of the information and the limitations which may be imposed upon the property. For example, despite a higher potential capacity and grid connection the site may be restricted in its output due to a planning condition.

3.1.6 In all cases, it will be essential to set out clearly a full description of the terms (legal, financial, physical) under which the interest has been valued, with comment on how these have been addressed in the valuation report. This should include a careful description of the terms on which the site itself is occupied and the extent of that site and occupation for the terms of the valuation.

3.1.7 Occasionally, the superior interest for consideration may itself be a long leasehold (e.g. a long-term forestry lease and some trust arrangements on rural estates). In this case, assumptions or verification that the development, or sublease, is within the terms of the head lease may be required, as well as claims by other interests in the property regarding their own enjoyment of their rights (e.g. sporting interests, or agricultural tenancies and sub-tenancies).

3.1.8 Clearly some elements in the valuation process may be specific to the site under consideration. In this respect, these approaches may be taking the valuer closer to an appraisal of worth than of market value. It is therefore important to stand back from the work at all stages and to consider objectively the hypothetical seller and buyer in the transaction under consideration and make such appropriate adjustments to the information provided and inputs, as the market would do.

3.2 Property Inspection

3.2.1 An early decision will be needed on the extent of the site for valuation purposes. This may not always be clear from the initial instructions and little further light may be shed by other documentation in the case of a joint venture. If valued as a separate entity, the

extent of the site and its location should be such that it could be sold separately from its surroundings if required, even if the two are currently in the same ownership. This will also require the identification of rights of access and any easements required for grid connection.

3.2.2 Once the extent of the site has been verified the valuer should, dependent on the purpose of the valuation, consider a site inspection and the points to be verified upon inspection. Despite the often small or 'standard' nature of installations, there are certain factors which can be verified upon an inspection and the valuer should take this into consideration. Where a large portfolio is being valued, the valuer may conclude that an inspection of a sample of the properties is sufficient. However, the sample should be representative of the overall portfolio and of sufficient size to provide the valuer with assurance of the characteristics of the assets.

3.2.3 In addition to the usual inspection requirements, the valuer will be required to consider different key requirements for each technology and different factors dependent on whether the site is developed or pre-construction. Examples include whether the site is level, if there is vegetation cover, access arrangements, surrounding buildings and vegetation and shading of the site, the extent of vision surrounding the site, and the type of surrounding properties – are there competing sites? For developed sites a site inspection would clarify if there is a dual use to the site, for example grazing between solar panels or wind turbines.

3.2.4 This will also enable the valuer to identify any negative effects of the installation on other elements of the property under consideration, for example the potential damage to visual amenity on an elegant house caused by an anaerobic digestion plant located nearby.

3.2.5 Of perhaps equal importance to the site inspection (if the operating property is being valued) is an interview with the operator to enable key facts to be clarified and further details to be obtained regarding the sources of information discussed earlier and their reliability and clarification, or support through further facts and on-site verification.

4 Methods of valuation

4.1 Introduction

4.1.1 RICS, and this professional standard, do not seek to set out the valuation method which should be applied in each situation – this is the responsibility of the valuer to assess, dependant on the facts, basis of valuation and client's requirements. In addition, this professional standard does not set out how to undertake each method, since this is detailed elsewhere within RICS standards and information.

4.1.2 It does, however, seek to set out the pros and cons of each method and comment on general practice, particularly the emergence of the discounted cash flow as the most commonly adopted method of valuation within the sector for non-investment/let assets.

4.2 Direct comparison

4.2.1 The most useful evidence for any instruction that requires a market valuation is direct transactional evidence, i.e. comparables. For renewable energy projects, the challenge will likely be that each one is unique and the added financial value of any improvements may differ substantially. Due to the rapidly changing subsidy market, two schemes on two almost identical sites, with identical output, built within a month of each other but under different subsidy regimes, could have significantly different values.

4.2.2 This is a common problem with using the comparable approach, and with more established classes of property in more mature markets, valuers are well versed in the adjustment of market evidence to the appraisal of the subject property. While the market may now be considered relatively mature, and the extent of this varies even within the sector by technology type, it is by no means transparent. Many deals within the sector occur between connected parties or off-market. Further complications in comparable analysis are due to the method of transaction, with several properties purchased through Special Purpose Vehicles set up for the transaction or through share purchases. Taxation and purchase costs will also be affected by the method of sale/purchase and may therefore affect the values achieved.

4.2.3 In summary, the valuer should be wary of an overly simplistic approach to comparative analysis. It may however provide a useful check method or support approach in tandem with another methodology.

4.3 Profits

4.3.1 The value of renewable energy installations is inextricably tied to their ability to generate a profit over their lifetime, if not immediately. The profits method will raise similar

issues to that of the investment method. Instead of forming a clear view on sustainable rent levels, a clear opinion on sustainable levels of profit will be needed. Where there is a recent history of successful power generation, it may be relatively straightforward to establish this. An example would be if three years' trading accounts are available and these can be supported by physical information concerning plant output and costs over the same period.

4.3.2 However, factors such as varying costs over the lifetime of the plant, degrading or varying output over the lifetime, and the impact of these on turnover, costs and profitability, has led to difficulties in adopting a standard profit methodology and often led valuers to the more explicit discounted cash flow approach, where these points can be dealt with. If adopting a traditional profits methodology, the valuer should ensure that the profitability is sufficiently simplistic to maintain constant returns over the valuation period – which should be considered carefully and is unlikely to be in perpetuity.

4.4 Residual

4.4.1 This is likely to be the required method for property to be valued pre-consent, pre-construction or mid-construction.

4.4.2 The residual method will require a value using one of the outlined approaches referenced below (4.4.3, 4.4.4, 4.4.5) for the completed development, from which development costs, fees and developer's return will be deducted. All sensitivities already mentioned will therefore be equally applicable to a valuation based on this approach, with the additional uncertainties over timing of development, securing generation contracts, grid connections and the negotiation of the terms of planning permission. The determination of 'hope value' by the residual or other methods is likely to be particularly challenging because of these reasons and the risk arising from uncertainty at the earlier stages of consideration of a proposed development.

4.4.3 The attribution of hope value to a site will reflect the valuer's confidence in the prospects for development of that site, as well as the valuer's judgment that the market would reflect that confidence in the prices offered by willing buyers, acceptable to willing sellers. The assessment of hope value for future renewable energy development may present specific challenges for the valuer in the pre-planning stage. Confidence can be demonstrated relatively easily for other types of commercial development, for example housing or commercial sites with good planning prospects and no undue obstacles to construction. However, sites for renewable installations are likely to have considerably lower prospects at the earlier stages of the development cycle. The valuer is advised to consider very carefully what progress has been made to date and what remains to be done before a site is developed and operational.

4.4.4 Key considerations will involve planning permission and other consents (and the various steps in obtaining planning permission), reaching Final Investment Decision for larger schemes and the availability of grid connections and formal contracts with a site operator. Where hope value for renewable energy development can be attributed to a site, it is likely that it will progress in a series of steps, with each subsequent stage heading

towards final development and operation – in contrast to the steadier upward trend that might be associated with other types of development. It will be largely for the valuer to judge regarding the individual circumstances, as the market has yet to offer much evidence in this area.

4.4.5 Valuations using this method are already particularly sensitive to variation due to the number of inputs and assumptions required. Add to this the issues with determining the end gross development value and the lack of transparent transactions at such stages within the market, and the valuer is likely to be required to (a) comment on uncertainty and (b) undertake sensitivity analysis in their reporting.

4.5 Depreciated replacement cost

4.5.1 DRC is often referred to as the method of last resort and may need to be considered where market evidence of sales, rents, yields or financial information needed for the other methods is scarce or non-existent. However, other methods more directly connected with a site's revenue potential will always be preferable. The use of DRC will need specialist knowledge of renewable generation plant and equipment to estimate the cost of modern replacement plant.

4.5.2 Advances in technology will adversely affect the depreciation rate and allowances should be made for this in the valuation range. For example, a straight-line reduction on plant costing £200,000 over 20 years would leave a DRC of £150,000 after five years. In contrast, depreciation based on 10 per cent of the reducing balance would leave a DRC of £118,100 after the same period, with a residual value of £24,000 at the end of the 20-year period. This may more accurately reflect the actual depreciation of the asset and may be calculated for any period by use of the formula (1-i)n, where i is the depreciation rate (expressed as a decimal) and n is the number of years. A depreciation rate of 15 per cent would leave a DRC of £88,700 after five years and a terminal value of £8,000 after 20 years. It should also be recognised that some significant elements (for example, inverters) require more frequent replacement. Changes in technology and the costs of different technology have changed rapidly in the preceding few years and therefore a simplistic straight-line depreciation may not accurately reflect likely advances or depreciation.

4.5.3 A value for the underlying site will also be required, which will often need to be based on the next best alternative use. For rural sites, agriculture or amenity land might be the only alternative use. Despite this, it is likely that the hypothetical owner would expect a premium over agricultural value to sell the land for development and this should be reflected in the choice of value. For more detailed guidance on the application of DRC, see Valuation Standards UKGN2, *Depreciated replacement cost method of valuation for financial reporting*.

4.6 Investment

4.6.1 The investment method places considerable emphasis on the determination of appropriate rental levels, which are then capitalised by a market rate of return to arrive at an

opinion of value. Nevertheless, an investment approach may be useful where the property under consideration is a freehold subject to a lease and there is evidence of the rent and the basis on which it has been set.

4.6.2 Assessment of current market rent for the property should be in accordance with RICS Valuation – Global Standards 2017, VPS 4.5, Market rent. Other approaches discussed below may be useful here.

4.6.3 There may be reversionary aspects to consider: for example, if the lease allows for conventional rent reviews, the valuer will need to decide on what assumptions to make as to the level of rents likely to be achieved and that reflect the lease terms. Alternatively, rent may be pegged to another index, such as energy prices, in which case the challenge will be how to deal with a varying rent.

4.6.4 Another reversionary aspect concerns the assumptions that will be made following the lease expiry. It is likely that a significant part of the investment will be in the plant itself rather than the land. Therefore, great care will be needed over valuation assumptions regarding the ownership of this plant and the requirement for its replacement. These assumptions will also need to be related to the period over which contracts and guaranteed prices will remain in place for the energy produced by the plant. Assumptions over plant life and replacement will, in turn, need to be linked to the terms on which planning permission has been granted. If a continuation is assumed, it will therefore be left to the choice of all-risk yield to reflect the risks associated with continuation of the planning consent.

4.6.5 Some sites with grid connection and service supplies may have a future in energy generation beyond the period subject to the valuation. Whether this will attract value beyond alternative uses is a matter for valuers' knowledge and judgment.

4.6.6 Some leases may provide for a stepped or turnover rent, where a basic rent is topped up by further payments based on achieved output from the site. However, there are cases where site output has never achieved the levels necessary to trigger the additional payments. Data on the site's historic performance will therefore be important in forming a view on how to capitalise the additional revenue. Where such data is not available (e.g. on a new site), considerable caution may be necessary over the choice of rates at which to capitalise additional rental payments. While the basic rent may be regarded as a relatively secure income (subject to the normal landlord risks of tenant default, void periods, and continuing site liabilities in the absence of a tenant), the level of risk associated with the additional rent might be appropriately regarded as much higher, even to the point where it is discounted entirely. Arrangements like these may best be served by a 'hardcore and layer' approach to the valuation, rather than the more traditional 'term and reversion' or simpler single year's purchase in perpetuity. This reinforces the importance of the valuer understanding the importance of relying on third party due diligence reports, for example regarding energy output, which then in turn will be linked to the prevailing value.

4.6.7 In addition to the usual property and covenant factors outlined in paragraph 4.6.6, the standing, skill and experience of the tenant is also likely to be important. The contrast here would be between a well-established energy company with extensive renewables interest

and experience on the one hand and a new entrant to the market on the other. Clearly the latter tenant will be the riskier proposition and this alone is likely to justify a higher yield. However, when assuming a lower yield for an operator with a well-established track record, regard should also be had to the terms of the lease regarding assignment, subletting or other terms on which operation of the site may be devolved.

4.6.8 The valuer may need to take care in determining the degree of connectedness between parties with an appearance of a landlord and tenant relationship, given that some landowners may establish separate ventures for power generation to manage their exposure to risk, or for other financial reasons. Therefore, some consideration may need to be given to the extent to which the arrangement represents the terms of an 'arm's length' transaction, which will also apply to interpretation of comparable evidence for rents and yields.

4.7 Discounted cash flow

4.7.1 A DCF appraisal will allow the net present value and internal rate of return of a project to be determined. Considerable input from the client and other advisers will be needed to establish robust cash flows for the appraisal, involving consideration of all the sensitivities outlined earlier.

4.7.2 It is also considered an invaluable tool for a detailed appraisal of the potential returns from a site under several assumptions. However, the lack of historic performance data adds to the uncertainty of the appraisal, which may dictate the examination of several scenarios of alternative energy outputs, costs, revenue streams, financing and timing considerations. This emphasises that the net present value is only likely to equate to Market Value if the DCF appraisal makes all the same assumptions as those made implicitly and explicitly in the market. The purpose of the valuation will be particularly important here and will dictate whether the basis of value is Market Value, Investment Value (Worth), Equitable Value (Fair Value) or Synergistic Value. If the basis is Market Value, then the valuer should check that the assumptions and data provided by the client are representative of what would be adopted by the market in general and are not specific to this asset alone. This is likely to require benchmarking against other schemes.

4.7.3 The valuer should initially decide the period over which to run the DCF. Key factors influencing the decision will be the length of the planning permission, the length of the lease, the anticipated plant and equipment life and the period of government incentives to be received. The length of the lease, planning permission and incentives will be matters of fact which the valuer can verify. The life of the plant and equipment may be more difficult to ascertain and will require reference to warranties and technical due diligence reports. Typically, the plant and equipment life is unlikely to be guaranteed beyond the incentives period and therefore many valuers have concluded that a cautious approach is to assume a reversion to land value after this point. However, as the market evolves there are more likely to be examples of the options available to sites after their initial incentives period. In all instances, actual data within the market is the best evidence. In addition, valuers should note that different technologies are likely to have different life spans – for example hydro-

electricity may last over 40 years, with minor maintenance and replacement of electrical and mechanical parts.

4.7.4 Once the period is established the valuer may consider whether there are likely to be variables over that period and how to reflect these. The advantage of a DCF approach allows the valuer to explicitly model such variables as the reducing output from solar panels due to degradation, the gradual build up to a maturely trading position of an anaerobic digester, or changes or additions to the original project. The technical due diligence and other reports, and due diligence which the valuer has gathered, will also be key in determining other 'events' within the life of the DCF. Some common examples of factors to consider include:

- the requirement for a community fund contribution within x years of the property – often for example within the first five or last five years of the permission
- the reversion to a standard operations and maintenance contract at the end of the warranty period
- known renewal required of parts of the plant and equipment, say at the 10-year interval
- variations within contracts for output and input
- variations to rent, rent reviews, stepped rents, performance linked rental increases; and
- requirement for a sinking fund or reinstatement bond – this may be required from the outset or to be put in place at a set date in the lease, or simply allowed for at lease end and it may have to be given to a local authority as a planning requirement or it may have to be provided to the landlord.

4.7.5 The key inputs will fall within the categories of:

- income – dependent on output, government incentives, the use of the electricity and/or heat on site, the export of the electricity and/or gas and/or heat on site and potentially other ancillary income such as gate fees, digestate sales, CO^2 sales and grazing rent; and
- expenses – the categories of which can be extensive but are likely to include (dependent on the type of renewable energy), rent, business rates, administrative costs, insurance, operation and maintenance contract, feedstock decommissioning fund, power usage, community fund, electricity company metering costs, and other miscellaneous costs.

4.7.6 Once the income and expenses are established and explicitly modelled over the DCF period, the valuer will arrive at an adjusted net profit. Further details regarding valuing trading property are detailed in VPGA 4.

4.7.7 The other key variables within the calculations which will require determination are the discount rate and whether growth/inflation is to be applied. The discount rate should be determined from comparable evidence.

4.7.8 For the valuer this is likely to be a challenging task in an unclear market, with similar difficulties to those discussed in the comparable evidence section. The valuer should regularly undertake work within the sector so other transactions may be available with the level of detail required for analysis of discount rates. Additionally, support could be drawn from anecdotal evidence and comparison with other technologies and sectors. In cases

where a project has been operational for some time the valuer may consider it offers a less risky proposition (and apply a lower discount rate) especially where consistent historical data is available. However, valuers should be mindful that discount rates may vary considerably between what appear to be similar projects albeit with different project lives remaining. In these instances, the capital payback point is a useful comparable check rather than solely relying on the discount rate.

4.7.9 The market appears divided on the issue of growth/inflation. In all circumstances, valuers should make clear the assumptions that they have used for the client to receive an unambiguous report. In addition, the use of sensitivity analysis is likely to assist in demonstrating the variations which could occur if different assumptions – particularly those which relate to valuer judgment – are adopted.

4.7.10 In many instances, the property is likely to be a depreciating asset, which the valuer will need to note.

5 Market sector issues and challenges

5.1 Decommissioning and end of life

5.1.1 As mentioned within the DCF methodology, a major question for the valuer is the period over which to value the asset, or more accurately the period over which to value the main income stream and profitability arising from the renewable energy asset. This is unlikely to be in perpetuity, although if the freehold is to be valued then the reversion to underlying land value at the end of the income stream should be considered. The key factors which are likely to determine the valuation term are:

- any lease length
- any planning consent restrictions
- the life of the equipment, degradation and warranties and
- the length of the government incentives and/or the potential for ongoing profitable operation.

5.1.2 Many planning consents for renewable installations are subject to a time limit. Current practice reflects the view that there is no certainty that such permissions will be renewed at the end of their term (e.g. 20 or 25 years for wind turbines). This is based on the view that other sources of energy may be more widely available by then, rendering onshore wind generation or extensive photovoltaic arrays, for example, out-of-date technologies and that current political stance suggests that incentives for renewable energy are unlikely to be repeated or extended.

5.1.3 The life of the equipment will be for determination by technical due diligence and reports – not for the valuer to estimate. As technology improves, this is likely to vary as much as the original costs of construction.

5.1.4 The length of government incentives will also be a matter of fact, although the valuer is likely to be required to remain up to date with changes in the sector which could alter or extend these and to advise the client if this appears likely. To date, legislation has not had a retrospective effect on incentives already in place, and it is considered unlikely that this would occur – however it cannot be ruled out and hence valuers should remain vigilant.

5.1.5 The terms of the lease and the contractual requirements for the supply of electricity, the availability of FITs/ROCs and the anticipated life of plant and machinery all indicate an investment life of 20 to 25 years. Coupled with consideration of planning permission this may be the appropriate period over which to capitalise rental income or profitability. However, some hydroelectric schemes can be expected to have a much longer working life and solar

photovoltaic cells are required to be capable of operating at 80 per cent of their original efficiency after 25 years, although this does not deal with the question of the reversion, i.e. the longer-term future use of the site. It would therefore seem to imply that electricity generation will be abandoned at the end of the term (except to the extent that this aspect of risk is also reflected in the choice of yield for the site).

5.1.6 The valuer should consider practical matters at the end of the valuation period, which will include reinstatement of the site, decommissioning costs, and any remaining value in the equipment. These may already have been accounted for with sinking fund, decommissioning bond or escrow account or may simply be a residual liability.

5.1.7 A valuer may consider applying a reversion to existing use value (before the renewable energy scheme was developed), whether that is an agricultural or industrial land value. Such sites may command a premium, arising from the infrastructure constructed, however the valuer would be required to consider the market at that time and comment as to whether there appears to be comparable evidence or sentiment to suggest this is occurring in the market. To date, such assumptions do not appear certain.

5.2 Pitfalls of comparison and market transactions

5.2.1 The pitfalls of comparison and market transactions are discussed within this professional standard in the methodology section under direct comparison.

5.2.2 There is a high risk in this sector that comparable evidence, if not dealt with first hand, reflects circumstances unknown to the valuer which serve to distort the analysis of the transaction. While direct comparable evidence therefore remains of importance and underpins other methods of valuation, valuers should acknowledge its limitations in relation to this sector.

5.3 Issues when renewable energy is interrelated with other property

5.3.1 This professional standard has dealt with the valuation of renewable energy installations on a standalone basis only. The market in this respect remains unclear but may be considered relatively mature.

5.3.2 There has also, however, been large take up of renewable energy on existing property – for example incorporating rooftop solar panels, biomass boilers, and ground source heat pumps. There are further valuation issues arising from these in respect of the interrelation of the renewable energy and the value of the existing property. There are risks and complications of varying ownership structures and rights; the risk of double counting value and that a given property may be adversely affected rather than the installation increasing value. The additional knowledge and queries required in these situations is extensive and will vary not only by the type of renewable energy installation, but also by the property sector

which it interrelates with – for example industrial, office, retail, agricultural, trading property or residential property.

5.4 Issues with comparison to other asset classes

5.4.1 Due to the unclear nature of the market, valuers may consider reference to wider economic conditions and yields achieved within other asset classes in relation to valuations. Where there is no market evidence available then it may be logical that this approach is adopted, so long as there is evidence of a market for the property. However, there are many factors which make valuation within this sector unique and only a thorough explanation of the valuer's considerations and thought process is likely to make such comparisons acceptable, explaining the differences and strengths and weaknesses of the approach and asset. Specifically, the limited economic life of the property is unlikely to be found in many similar asset classes and therefore may distort the market's appetite for such property.

5.5 Secured lending reliance

5.5.1 If the valuer is undertaking the valuation for secured lending purposes, then it would be usual for the valuer to comment on the suitability for security. Areas which are likely to require noting include covenant strength of any tenants, previous experience within the sector of any operators/ developers/construction teams, any sensitivity analysis, any guarantees and warranties which should be verified, and any warranties and guarantees linked to decommissioning, the depreciating nature of the assets and re-highlighting of any major assumptions which may require reiteration.

5.6 Quick changing market for incentives and technical issues

5.6.1 The renewable energy sector is so reliant on policy that any policy changes – either positive or negative—will have an almost immediate impact on a market's attractiveness. Valuers should therefore be up to date with current policy regimes and proposed policy changes. While it is anticipated that a valuer will always rely on a technical due diligence report, it will also be important for the valuer to be aware of any major technological changes as background to the instruction and to be able to flag any potential issues or further reports which they may be required to rely upon.

5.6.2 There is currently insufficient information on various emerging technologies such as tidal energy or geothermal.

5.7 Timescales, fees, risks to the valuer

5.7.1 Valuers should be particularly wary of requests for valuations within a tight timescale, where full due diligence is unlikely to be achievable or available, or with a valuation date where key assumptions may be subject to change – such as prior to an incentive cut-off date. This is a complex area of valuation and the risks to the valuer are high.

6 Dealing with uncertainty

6.1.1 VPGA 10, Matters that give rise to material valuation uncertainty, suggests the use of special assumptions and – in some limited circumstances – sensitivity analysis, to address concerns over confidence and accuracy in valuation reports. This advice may be particularly relevant to renewable energy generation, as the resulting valuation may be sensitive to modest changes in assumptions and special assumptions.

6.1.2 It may, therefore, be important for the client and others with an interest in the valuation (e.g. lenders) to understand the impact that the changes in these assumptions will have on the valuation, the sensitivity of the final valuation figure to the assumptions used, and to verified and unverified data. This may in turn point to the need for some commentary on the level of risk that may be associated with the valuation itself.

6.1.3 It is imperative that the valuation is soundly based in every step of the process and fully and clearly explained in the report, including all assumptions made. This should serve the best interests of clients, practitioners and other users of the valuation by providing the valuation advice they need while ensuring that the prevailing challenging conditions are fully appreciated. With this accomplished, the valuation should enable clients and valuers to proceed with the appropriate level of confidence.

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