InterGen response to a call for evidence on barriers to securing long-term contracts for independent renewable generation investment

1 Executive Summary

1.1 InterGen is committed to investing in the UK and has planning consent to build 1.8GW of carbon capture ready gas-fired generation (CCGTs) during this decade, reducing the UK's carbon emissions significantly and providing essential generation flexibility. These plans represent £1.4 billion of investment and will create around 1,200 direct jobs over a three year period.

1.2 We set out the barriers to investment in CCGTs in our response to DECC's 'Call for evidence on the role of gas in the electricity market' from May this year (attached at Schedule 1). We have not repeated the contents of that consultation response herein on the basis that the Government is formulating its conclusions to the Gas Generation Strategy and issues for independent renewable generation investment based on responses to both consultations.

1.3 One of the key barriers to investment in our CCGT development projects is the lack of an available toll or PPA. InterGen's existing Spalding and Rocksavage CCGTs were project financed on the back of tolling agreements. Securing a toll or PPA with a credit worthy counterparty means InterGen's new projects would be constructed. Furthermore, a toll or PPA for existing plants is a vital route to market for InterGen. As an independent generator we do not have a retail arm and rely on such contracts for stability of earnings.

1.4 In this response we have focused and elaborated further on the lack of tolls and PPAs from an independent gas generators perspective. Our key points are as follows:

- InterGen's shareholders, Ontario Teachers' Pension Plan and China Huaneng Group, and debt providers require a 15-20 year toll or PPA to support new investment projects. Without a toll or PPA, our proposed new 1.8GW Spalding and Gateway projects are very unlikely to be built. This is consistent with our approach in other geographies;
- Some 40% of the UK's current CCGT fleet, including InterGen's existing three UK plants, was project financed which demonstrates the advantages of a wide pool of investment. Without a toll or PPA, a new CCGT project cannot be project financed based on discussions with InterGen's lending banks. This limits the available investment sources for the UK;
- Based on our market experience, there is currently a very limited market for tolls or PPAs for CCGTs with the normal buyers of such products, the large vertically integrated utility companies (VIs), who are building their own facilities on balance sheet. Their focus on own build limits competition which in turn disadvantages consumers;
- The supplier obligation stimulated the renewable PPA market and supported construction of projects by independent renewable companies. This demonstrates that regulatory measures can have a positive impact. InterGen believes that similar regulatory measures to ensure VIs purchase tolls/PPAs from independent generators (thermal and renewable) need to be implemented for 25% or more of their retail requirements;

- New CCGT projects are much more likely to be financeable if they have a toll (a combined gas supply contract and PPA) and not a PPA only as a result of the contractual differences that can arise between separate gas supply contracts and PPAs for a power project. Consequently, the regulatory measures should allow for tolls and PPAs and not just PPAs;

- The regulatory measures should ensure that VIs need to contract for 25% or more of both their thermal and renewable requirements (separately and not in aggregate). This will ensure independent investment in both intermittent wind generation and flexible gas generation - and not skew investment opportunities for independent generators towards one technology type;

- The market is starting from a distorted position in our opinion and will start to move towards being a more competitive and efficient market with the implementation of such regulatory measures; hence such measures should not be considered as the driver of distortion; and

- The UK will gain from independent generators being freed to invest in their projects with much greater availability of tolls and PPAs, namely:

    - Significant construction jobs will be created in the UK, which will contribute to stimulating growth in the economy;

    - Security of supply concerns will be alleviated (resulting in a reduced need for the contemplated Capacity Market to be utilised);

    - Carbon intensity will be reduced;

    - Stability of revenues for independent generators that do not have a retail arm (or material retail operation) will be maximised. This in turn provides long term sustainability of competition; and

    - Consumers will be advantaged with greater competition, more investment sources and efficient operators helping price competition in generation (i.e. keeping consumer costs down).

2 Fundamental need for toll / PPA regulatory measures

2.1 One of the key barriers to investment in our CCGT development projects is the lack of long term price visibility and liquidity in forward power products. Investors would expect market economics to provide these longer term price signals either through a liquid forward market or through a toll or a PPA. The current deemed improvement in short term (day ahead) liquidity does not address market shape of price beyond the immediate short term. Existing market interventions to encourage investment, compounded by self-supply by large utilities, means that the necessary price transparency will not emerge until it is too late to address the shortfall in generation capacity in our view.

2.2 Based on discussions with our lenders (banks and investment banks), raising the debt needed for an independent project without a PPA or toll is impossible. This is evidenced by the lack of market references for projects achieving funding without a toll or PPA in recent years (the last such CCGT being Severn Power which was financed pre-financial crisis in 2008 – when banks were taking much more risk).

2.3 Historically, some 40% of the UK's CCGT fleet was project financed which demonstrates the need for a wide pool of investment. Without a toll or PPA, a new independent CCGT project cannot be project financed. This limits the available investment sources for the UK. The estimated £200 billion of investment required in generation and networks in the UK before the end of this decade cannot be sourced from the VIU's balance sheets alone, therefore it is essential that the Government encourages funding diversity through independent power projects, both thermal and renewable (which will bring additional equity and debt sources into the industry to fund investment).

2.4 Some 16GW of CCGT are currently consented under DECC's S36 regime and not yet under construction. Of these projects, 7.4GW are owned by independent generators (46%) which normally use project finance based on historical precedent. Without a toll or PPA these projects are very unlikely to be built as they will not secure funding. The projects could be purchased and built on balance sheet by some of the VIs – but they have finite access to capital and the UK needs to ensure that it has a wide pool of investment. We also consider that independent CCGT companies ensure competition by keeping construction and long term maintenance costs down and hence reducing the cost to the consumer, reflecting our low cost base and approach to contracting.

2.5 While EMR may deliver a Capacity Market to incentivise new CCGT build, the Government's central case currently shows a need for the use of this market towards the end of this decade. Consequently, as InterGen's consents for its proposed new CCGTs expire by 2016 (and the majority of other independent generator's consents) it is highly unlikely that this mechanism will provide an appropriate incentive to commence construction before the consent expires. Consequently, a toll or PPA is needed to support financing and construction of these projects.

2.6 InterGen also considers that mandating the VIs to enter into tolls and PPAs will result in a reduced need for the Capacity Market as security of supply concerns will be alleviated by the independent generator projects being built. Moreover, the UK will gain much needed construction job creation over the next 5 years.

2.7 Given the above, InterGen supports regulatory measures requiring VIs to source a 25% or more of their medium to long term power needs from independent renewable and gas generators.

2.8 PPAs for independent renewable projects were secured on the back of the supplier obligation which effectively forced many of the large power companies to purchase PPAs (mainly for the ROCs and not the power as evidenced by the steeper discount on power prices within such contracts). The supplier obligation stimulated the market and showed that regulatory measures can have a positive impact.

2.9 InterGen believes that additional regulatory measures (either via the Energy Bill/secondary legislation or Ofgem) to incentivise suppliers to purchase tolls/PPAs from independent CCGT and renewable generators need to be implemented. Such intervention is proven, has minimal financial impact on the Government, will ensure that the investment pool is wide, create competition and deliver a more efficient market. Critically, the consumer should be better off with competition in the generation market – which is as important as competition in the retail market.

2.10 Such regulatory measures represent a practical approach; avoiding the need for a break-up of the VIs to create a more competitive generation market.

2.11 If a policy is implemented that incentivises PPAs for renewable projects only, one unintended consequence is likely to be the VIs not contracting any CCGT plants via a toll or PPA (in which case no new CCGT plants are likely to be built by independent companies). Such an approach would discriminate against competition in the CCGT market. Consequently, the policy should ensure that VIs need to contract for 25% or more of their thermal and renewable requirements (separately, so as to avoid one generation type being favoured) – giving independent generators scope for investment in both areas and maximising the wide pool of investment.

2.12 The market is starting from a distorted position in our opinion and will start to move towards being a more competitive and efficient market with the implementation of such regulatory measures. Consequently, regulatory measures should be seen as part of the solution to and not creating distortion.

3 PPA vs. Toll

3.1 Independent renewable projects require a PPA whereby the power and ROCs are sold to a third party at a discount to market. For an independent CCGT project, a tolling agreement is the normal method of contracting. Such an agreement has the following key traits, many of which are similar to a PPA:

- The toller purchases gas and then provides it to the CCGT plant/independent generator free of charge;
- The power station then generates electricity from the gas in return for a fee, some or all of which is fixed in order to be bankable;
- The counterparty is credit worthy; and
- The contract tenor is around 20 years.

3.2 For a gas generator, a separate PPA and gas supply contract are more complex and contain greater risk than a toll. For example, gas contracts contain indexation and it is normal for this to be linked to gas and/or oil prices. A PPA would normally be linked to power price indices and, consequently, there can be mismatches in indexation between a PPA and a gas supply contract which create more risk. For these reasons, an independent gas generator prefers a toll and normally transacts on this basis.

3.3 InterGen urges the Government to consider ensuring that any obligation on parties to contract for PPAs includes tolls (and is not restricted to PPAs only).

4 InterGen answers to DECC call for evidence questions

4.1 Please could you provide a summary of your experiences with the PPA market over the past three years?

4.1.1 InterGen has marketed its two UK development projects (Spalding Energy Expansion and Gateway Energy Centre) and its existing 800MW merchant CCGT plant at Coryton to the main industrial and financial players in the UK market over the last three years. This has included two formal toll/PPA marketing processes and regular meetings with the main market participants (including the VIs).

4.1.2 We have not been successful in securing any tolls or PPAs in the market over the last three years, reflecting a combination of poor market prices and sentiment owing to over-supply of thermal generation and the focus on self-development/build by the VIs.

4.1.3 The last CCGT project to be funded on the back of a third party toll was Marchwood in around 2006, with SSE the tolling counterparty (and 50% owner of the project). Since 2006, the majority of VIUs have developed their own portfolio options for new CCGTs and built a significant volume of new (mainly large) gas plants.

4.2 **Have you seen significant changes to the PPA market over the past three years and, if so, what do you think has driven this? If you have asked PPA providers for explanations of why changes have occurred, what reasons have been provided?**

4.2.1 For CCGT projects, the toll and PPA market position is as per the question above. We have seen no changes in the last three years with VI companies continuing to develop their own CCGT projects and not pursue toll/PPA opportunities with independent companies. We note that the PPA market for renewable projects has declined in recent years with VIs focusing on own build and bidding on fewer projects. In addition, the main purchaser of PPAs over the last few years for renewable projects only has been Statkraft and without them it is possible that many renewable projects would not have succeeded.

4.3 **How does the GB market for PPAs compare to other international markets? If you operate in other markets, how do PPA structures and terms differ? If terms differ what are the drivers behind the differences?**

4.3.1 In addition to the UK, InterGen operates in Mexico, the Netherlands and Australia. We have tolls (as defined earlier in this document) rather than PPAs in Mexico and the Netherlands. The Australian assets are merchant i.e. they sell into the wholesale markets.

4.3.2 All of our Mexican and Netherlands assets are tolled with credit worthy counterparties (in Mexico a state backed counterparty, in the Netherlands with two utilities). Such tolls enabled these assets to be constructed and the structure of these agreements is very similar to our experience of tolling agreements in the UK.

4.3.3 InterGen is close to completing a toll agreement and debt funding in Mexico for a new project with a large credit worthy industrial counterparty and considers that there are other opportunities available in that market.

4.4 **What are the factors preventing or encouraging participation in the GB market? How (and why) do you expect these to change over time?**

4.4.1 InterGen set out its key barriers for gas investment in its response to DECC's 'Call for evidence on the role of gas in the electricity market' attached at Schedule 1 to this response.

4.5 **Do you expect the EMR package to change the PPA terms that you might offer/receive and if so how do you believe they will change? What do you think is the primary driver for this change?**

4.5.1 The principal EMR measure that will impact gas fired generation is the proposed Capacity Market, the details of which are currently being developed by DECC.

4.5.2 InterGen considers that available tolls and PPAs for gas fired stations will result in many of the independent generator consented gas fired stations being built including our Gateway and Spalding projects (15-20 year toll/PPA needed). Furthermore, availability of tolls or PPAs for existing independent generator gas plants will ensure the sustainability of these plants through reduced income volatility (say 3+ year agreements). Overall, this will result in a reduced need for the Capacity Market to stimulate investment as security of supply concerns will be alleviated by the independent generator projects being built and existing projects remaining viable and open.

4.5.3 Given the Capacity Market will only be utilised by Government if it projects that there is a looming security of supply shortfall, tolls and PPAs are unlikely to be based on the assumption that the Capacity Market will deliver revenue for the project. This reflects the lack of certainty of being successful at the Capacity Market auction and the lack of certainty of the auction occurring in the first place (in other words – the Capacity Market is unlikely to be bankable hence the project will discount it). Also, for new projects the mooted tenor of the Capacity Market contracts is insufficient to promote investment hence such projects are unlikely to rely on this measure (no details on revenue levels are yet available). Consequently, the likelihood is that the toll/PPA will need to contain a significant change of law clause in the event the Capacity Market is introduced and then run to ensure that the project could be part of that mechanism.

4.6 **What has been the determining factor in selecting a preferred PPA and PPA provider?**

4.6.1 The key determining factor is the credit worthiness of the toll/PPA counterparty. The party must be acceptable to banks in order for debt to be raised and for equity to ensure that it is likely to achieve a reasonable return. Without a credit worthy counterparty behind the toll/PPA, neither debt nor equity would be available and the project will not be constructed.

4.7 **Have you seen a change in investment returns as a result of the changing nature of PPA terms and can you provide an example, including how this has been calculated? Do you expect the EMR package to change investment returns, and if so what is the driver for this?**

4.7.1 As a result of the dearth of tolls/PPAs for CCGTs we have not invested in new CCGTs in the UK for some years. Currently, InterGen has invested in two CCGT development projects in the UK and, despite receiving full planning consent for both projects, is sitting on a loss of investment as it cannot complete its projects (banks and our shareholders will not fund a project without a toll/PPA).

4.7.2 The Capacity Market may change the investment position for new CCGTs but this may not be for some time and is unlikely to support InterGen's existing development projects i.e. EMR will not change InterGen's investment returns. For example, the Government's central case shows that the mechanism may not be used until nearer the end of this decade for new plants and InterGen's project consents run out by 2016 – likely to be too late to benefit from EMR. InterGen is highly unlikely to re-consent these projects as it risks "throwing good money after bad" and would instead invest in other geographies.

4.8 **What are your views (costs, benefits and risks) on the potential options discussed in this call for evidence that may be necessary to achieve the Government's objectives?**

4.9 InterGen believes that additional regulatory measures (either via the Energy Bill/secondary legislation or Ofgem) to incentivise suppliers to purchase tolls/PPAs from independent CCGT and renewable generators need to be implemented. Such intervention is proven, has minimal financial impact on the Government, will ensure that the investment pool is wide, create competition and deliver a more efficient market. Critically, we believe that greater competition in renewable and CCGT generation will ultimately lower costs to the consumer. For example, independent companies can in many cases deliver lower cost projects than VIs owing to their size, cost base and expertise.

4.9.1 InterGen does not believe that any of the other options will achieve a competitive or efficient market. In particular:

- Market led initiatives: there is no requirement for all market participants to embrace this approach and actually implement it which means that VIs will be slow on the uptake. Furthermore, the position with tolls and PPAs has been known in the market for a number of years and market participants have not sought to correct it as it is not in their interests. Consequently, such an initiative is in our view unlikely to succeed.

- Competition measures: improving the likes of liquidity has become an industrial holy grail in recent years with no material improvements in liquidity achieved other than the "news worthy" day ahead position. As noted recently by Ofgem, medium and long term liquidity continues to worsen. Given the complexities involved, we believe that this is not an area that will result in the availability of tolls or PPAs improving and hence is unlikely to succeed.

- Financial incentive to purchase low-carbon power: InterGen agrees with the Government that the carbon price floor should be the mechanism used to purchase such power. Additionally, it would only resolve the position for renewable projects and risk being discriminatory to CCGT competition.

4.10 **What are your views on the potential for market distortions and possible impact on the wider market?**

4.10.1 The market is starting from a distorted position with VIs generation/wholesale arms able to self supply. Regulatory measures to enable tolls and PPAs to be made available for independent generators will improve this position, thereby stimulating competition by ensuring that all parties need to build competitive projects and then operate them efficiently.

4.10.2 As noted above, InterGen considers that the regulatory measures to be introduced should ensure that both renewable and gas projects can secure tolls/PPAs otherwise there is a risk of VIs contracting for one of the asset types only.

4.11 **Can you identify and explain any other viable options (voluntary, competition based, regulatory or otherwise) that should be considered?**

4.11.1 InterGen believes that the proven regulatory measures are appropriate.

Schedule 1: InterGen response to a call for evidence on the role of gas in the electricity market (submitted to DECC 27 June 2012)

1 Executive Summary

1.1 InterGen is committed to investing in the UK. InterGen is planning to add 1.8GW of carbon capture ready gas-fired generation (CCGTs) to the UK during this decade, reducing the UK's carbon emissions significantly and providing essential generation flexibility, representing a further £1.4 billion of investment. InterGen's planned investments will create around 1,200 direct jobs over a three year period and then long term skilled jobs thereafter.

1.2 However, there are barriers that make investment in these CCGT projects unattractive compared with other markets. Many of these are captured by DECC in the consultation document.

1.3 In our view the key barriers are as follows:

1.3.1 Slow delivery of policy encouraging investment in new CCGTs. The current investment climate is challenging given the long recession and introduction of new capacity onto the system. But InterGen believes a capacity crunch is emerging by the middle of this decade, driven by closure of older generation facilities as demand recovers. Closure of older facilities – driven by environmental regulation – should be matched by regulation which encourages new investment. Given timescales to put new facilities onto the system, such regulation should be implemented without delay.

1.3.2 Historically, CCGTs have operated maximum capacity (baseload). Going forward, stations will increasingly operate intermittently as a backup to wind generation and will therefore have to rely on higher prices when they operate in order to cover fixed costs. Such higher prices are by no means certain and the shorter running periods make generation income riskier. The current outlook makes investment a lottery. We need some certainty on returns and hope that the Capacity Payment Mechanism will achieve this.

1.3.3 As a result of increased vertical integration, there is lack of long term price visibility and liquidity in forward power products. Given the likely reducing load factors and more volatile operating regime and prices, the investment rate of return is uncertain. When we look elsewhere we see low load factors in Spain (average about 40%) and many brand new CCGT plants mothballed in the Netherlands. We hope that the Capacity Payment Mechanism will help address this.

1.3.4 Investors would expect market economics to provide these longer term price signals either through the traded markets or through long term supply contract or a Power Purchase Agreement (PPA). However, existing market interventions to encourage renewable investment, compounded by self-supply by large utilities, means that the necessary price transparency will not emerge until it is too late to address the shortfall in generation capacity in our view.

1.3.5 We must have a long term toll or PPA contract with off takers to underpin both equity investment by our shareholders, Ontario Teachers and China Huaneng Group, and also the lending of debt by banks. We note that this is highlighted by UK Government in the draft Energy Bill. InterGen supports some form of regulatory intervention / legislation requiring larger energy companies to source a proportion of their medium to long term power needs from independent generators for renewable and gas generation.

1.3.6 Based on discussions with funders (banks and investment banks), raising a significant amount of debt without a PPA or toll and the lack of a Capacity Market is highly challenging / unlikely to succeed. Funding may be possible if a toll is in place with a well rated company but the current message from the banks is that fund raising is highly challenging, mainly owing to the Euro crisis and Basle III, and there is little appetite for risk (including Government policy and regulatory risk).

2 About InterGen

2.1 InterGen is owned by Ontario Teachers Pension Fund (one of the world's largest pension fund investors in infrastructure projects) and China Huaneng Group (the world's second largest power generator). Both of these companies are entities which the UK recognises as being highly attractive to bring much needed foreign investment to the UK and to its energy sector.

2.2 InterGen is one of the UK's largest independent generators, operating a portfolio of high efficiency gas-fired power stations (totalling 2,490MW; an investment of some £2.1bn in today's money) and actively trades in the prompt and forward wholesale power, carbon and gas markets.

2.3 InterGen's shareholders are very keen to invest in the UK and, through InterGen, have invested substantial sums since 2008 developing the Spalding Energy Expansion and Gateway Energy Centre 900MW CCGT projects in the UK. Both projects are designed to be carbon-capture ready.

2.4 These projects, as well as assisting with lowering carbon emissions and providing electricity will create much needed construction jobs in the UK – some 1,200 over both projects.

2.5 Both of these projects are two of the optimal CCGT development opportunities in the UK owing to their locations. For example, Gateway Energy Centre is on the site of the UK's strategically important London Gateway Port and Business Park project and we will once built provide them with up to 150MW of power and rental income – providing them with financial benefits.

2.6 Each project will cost around £700m including interest over their three year build programme – a total of some £1.4bn in today's money.

2.7 This investment hinges on the gas fired generation sector being attractive for our owners. Principally, they seek adequate stable long term returns commensurate with an appropriate degree of risk.

2.8 InterGen's existing and planned gas fired power stations are vital to the long term sustainability of the UK's security of supply.

3 InterGen answers to DECC call for evidence questions on the role of gas

3.1 What are the main strengths and weaknesses of gas generation in helping deliver a secure, affordable route to decarbonisation through to 2020 and then by 2050?

3.1.1 Strengths

- Carbon emissions from gas generation are some 50% lower than traditional coal plant and gas generation has been the single greatest reducer of carbon emissions since 1990 onwards;
- It has no odour and (other than carbon) no materially harmful emissions to the environment. Gas also has much lower NOx emissions than coal and negligible SOx emissions. NOx reduction techniques for gas are well proven and less expensive compared to coal;
- Gas delivers flexible generation to provide a foil to the intermittency of wind generation – vital with ever reducing flexible coal generation. Currently, there is no large scale alternative to gas;
- Existing gas plant offers economical and efficient generation to help meet peak power demand;
- Gas generation is a mature technology and as such can be constructed extremely cost effectively – at a fifth of the cost of new nuclear and one tenth of the cost of offshore wind;
- New gas plant offers a low capital cost solution and a rapid construction timescale - some three years from when a construction contract is placed. Furthermore, gas is a source of generation with a strong and safe track record of delivery;
- Diverse sources of gas internationally/geographically and ample gas globally;
- Gas is mainly provided by large and stable energy companies such as Shell, Statoil, and BP i.e. the perception that gas comes from unreliable regimes holding the UK to ransom is misplaced;
- Capable of being retrofitted with CCS to eliminate up to 90% of its carbon emissions when this technology is proven technically and commercially on a large scale; and
- Gas generation has minimal impact locally on the environment due to relatively small site size, compared to nuclear, coal and onshore wind, as well as an underground fuel supply negating the need for fuel storage, and dedicated road and rail networks.

3.1.2 Weaknesses

- Poor public perception: a) rising consumer bills being attributed to gas (where as gas had been one of the main reasons for prices being low for so long compared to other countries); and b) security of supply – not borne out by recent estimates of global gas reserves;
- Lack of proven flexibility of gas plant with CCS attached. This technical hurdle will need to be overcome and the solution proven on a large commercial scale before it is implemented (note – the same applies to coal);
- Gas, even indigenously produced gas, will be sold by upstream parties in the global gas market. Hence, UK power prices from CCGTs will be driven by global gas prices (may eventually be a strength as we move from regional models, for example, oil linkage in Europe);
- Linkage to oil prices – though this will decrease as gas becomes a more global commodity; and
- UK has limited gas storage capability compared to other geographies.

3.2 **What role can gas fired generation play in the future and what level of gas generation capacity is desirable?**

3.2.1 Gas plant will provide flexible, reliable and efficient capacity which is needed to be able to react to drops in wind generation. Without gas generation, the lights will go out especially once significant volumes of wind are in the UK system.

3.2.2 Existing gas plant offers economical and efficient generation to help meet peak power demand.

3.2.3 New gas plant, which can also help meet peak power demand, offers a low capital cost solution and a rapid construction timescale - some three years from when a construction contract is placed. Such plants can plug the supply gap that is likely to be created with the slower build of new nuclear and off shore wind farms than is envisaged in DECC's Central Scenario as set out in its December 2011 technical update.

3.2.4 With CCS, gas offers the potential for low carbon generation that is flexible. Such technology still needs to be developed and then proven on a large scale. Government should be focusing on developing flexible CCGT with CCS to be a global leader (and not just CCGT with CCS that is inflexible).

3.2.5 Gas generation can help lower carbon intensity in the short to medium term as it replaces the coal plant that closes (with its 50% lower carbon emissions).

3.2.6 Gas generation provides back up to nuclear in the event of that fleet closing and new or very limited new nuclear plants being built.

3.2.7 The UK should continue to pursue a portfolio of generation types to maximise security of supply. We believe that a mix of up to around 40% of gas generation capacity by 2030 is appropriate and that this should decrease gradually thereafter as technology and demand side measures progress.

3.3 **What are the key factors driving the economics of investing in new gas-fired power generation and how are these factors likely to change?**

3.3.1 There is an interplay between gas-fired and coal-fired generation - key to gas plant economics is which of coal and gas is "on the margin" i.e. sets the marginal price for the market. Marginal plant is the first to be exposed to fluctuations in levels of demand and power prices. At the moment, gas is more expensive than coal and so sits on the margin, with cheaper coal sheltering under gas. Currently, income for coal stations (via the dark spread) is higher than gas (via the spark spread), as highlighted in DECC's Call for Evidence document. Coal moving to the margin will improve spark spreads (gas) at the expense of dark spreads (coal). The Carbon Price Floor (CPF) should encourage this transition.

3.3.2 Initially the CPF will benefit gas as it will push coal to the margin owing to coal's higher carbon intensity. However, as the carbon floor rises it will make gas generation more expensive relative to renewable sources of generation. This scenario raises the possibility that gas plant, from an investor's perspective, is at higher risk of not making returns in the medium to longer term which increases investor risk.

3.3.3 Change from base load to intermittent generation (income) – historically, investment decisions were on CCGTs operating with a high load factor (baseload). As increasingly significant amounts of intermittent generation come online, gas plant will operate less frequently and will have to rely on prices being significantly higher when the station is operating, which is not certain. From an investment perspective, there will be no track record of this impact in the UK, which raises risk. Hopefully, the Capacity Payment Mechanism will bridge this gap and support investment. To support investment, the mechanism will need to allow for gas plant's load factors to decrease over time (i.e. a plant running 80% of the time should not need support compared to one running 40% of the time, all other factors such as price being equal).

3.3.4 Change from base load to intermittent generation (costs) – with intermittent generation comes the potential to be operating at lower loads (i.e. not full station output capability) which lowers efficiency and increases the amount of starts and stops the plant will have to do. The former increases costs to consumers / means the generator gets a lower margin and the latter means that the costs of operating the plant rise significantly through a combination of higher maintenance costs and the possibility that stations become less reliable through such a regime which raises the spectre of greater imbalance charges. Furthermore, the cost of generating per MWh will rise as the station's fixed costs are recovered through fewer operating hours. Subsidies are currently provided to renewable generation. Gas generation receives no subsidies. The introduction of a Capacity Mechanism will help ensure that the right generation mix is built to ensure that the Gorvernment's 'trilemma' is addressed optimally. Without such a mechanism, investment in gas plant may not happen and will certainly not happen in time.

3.3.5 The independent generation sector accounts for around 30% of UK power production and is a key source of competition to the vertically integrated companies (VIs). But InterGen and other independent generators need routes to market to sell their power. In particular, PPAs or tolling agreements (whereby a counterparty provides the gas and then receives the electricity in return for a fee) are required to secure and underpin funding for projects. Without such a contract, no financing is available. Tolls/PPAs pass a substantial amount of the risk of market fluctuations to the offtaker, enabling cheaper finance to be raised. The market for PPAs / tolling agreements for gas fired generation is currently very challenging with most large power companies focusing on self-build. InterGen believes that the independent sector often secures cheaper solutions which ultimately benefits consumers. InterGen estimates that over 40% of gas-fired plant constructed in the UK during the last 20 years has been done so by independents. Historically, the project finance required by independents has been sourced from very diverse regions, giving access to highly competitive WACC rates which ultimately lowers capital costs over the project lifetime. In addition, in our experience, EPC contractors report that gas plant developed in the independent sector traditionally negotiate the most cost efficient construction packages in order to secure attractive revenues for banks and investors, ultimately delivering savings for consumers. Currently, the toll/PPA market is being impacted by poor long term market liquidity and the increasingly vertically integrated structure of the Big 6 energy suppliers (who are becoming more balanced in terms of consumer demand vs. supply from their own generation). InterGen urges the Government to address / force firms to sell longer term products in the market so as to improve liquidity further out. InterGen supports some form of regulatory intervention or legislation requiring larger energy companies to source a proportion of their power from independent generators via PPAs and will continue to engage with DECC and Ofgem on this matter.

3.3.6 Rising capital costs – capital costs for new CCGTs are currently attractive mainly as a result of the downturn in demand in Europe. However, as these geographies recover and demand rises across Europe, capital costs will rise sharply as will supply chain lead times. This will result in project economics becoming tighter and normal build periods of around 36 months increasing.

3.3.7 Debt cost and availability of debt – we normally use project finance for new projects with shareholders injecting around 25% of the project's capital. With the introduction of Basle III and the seemingly ever reducing number of banks, the costs of this form of funding are rising with no alternatives yet in place e.g. over the last few years there have been discussions on the likes of a Eurobond that would cover the construction of infrastructure projects but this has yet to materialise. The upshot is that: a) There is potential for there to be insufficient banks to raise around £500m (the debt element of a new 900MW CCGT); b) Remaining banks may push up margins to unsustainable levels; c) banks will only entertain a hard mini-perm model which means that the project must refinance or risk being in breach of its funding conditions / have to hand the station back; d) Debt is being sized over 10 years and not 18 years – which means more debt has to be paid back sooner which all but eliminates the equity return; e) Equity investors need to build in a refinancing to their base case investment model which carries significant risk – as this is at the mercy of the funding markets.

3.3.8 Regulatory uncertainty – there has been and continues to be significant uncertainty which means that investor confidence is low. In particular, Project TransmiT has meant that the actual locational benefits of InterGen's development projects when the projects were conceived (based on encouraging generation mainly near where it was needed to reduce transmission losses) have been reduced. While there are indications that this risk has lowered, it still remains and the potential swing in grid charges has a material impact on our projects. Additionally, it remains unclear as to whether any project that has commenced construction or commercial operations will receive the same Capacity Payment Mechanism as a plant that has not reached that phase yet. This results in equity not wishing to invest until such time as it is clear that it will not be prejudiced.

3.4 **What barriers do investors face in building new gas generation plants in the UK? What are the key regulatory uncertainties that may prevent debt and equity investors making a final investment decision in gas generation and supply infrastructure?**

3.4.1 Barriers to entry:

- Lack of long term toll / PPA appetite with large power companies building themselves and stifling competition and consumers ultimately not getting value for money;
- Lack of forward pricing / poor market liquidity;
- Lack of available credit support alternatives;
- Potential lack of funding liquidity in banks owing to Basle III restrictions and risk aversion;
- Rising generation intermittency make economics highly challenging;
- Lack of a Capacity Mechanism to off-set the changing market dynamics; and
- Slow delivery of policy and lack of stable regulatory environment.

3.4.2 Key regulatory uncertainties:

- Project TransmiT – impacts economics materially, particularly for projects sited near to centres of demand which were financed on the basis of reduced transmission charging relative to more remote generation. Additionally and on a similar subject, there is the European legislation that could be in place by 2018 that could impact electricity and gas charging.

- Capacity Payment Mechanism – whether this will give material support / who is backing the payments / whether an auction based approach means that we are likely or not to succeed / whether some parties and not others buy the capacity / concern over not receiving it if a station is built before the mechanism is operable.

- PPA / toll market – the difficulty of building a 35 year asset when market signals beyond 12-18 months out are limited requires independent companies to have a PPA / tolling route to market to secure funding for projects.

- Market liquidity – the need for a robust (liquid) forward market in power (such that if the toller falls away during the life of the project, there must be an alternative route to market or the station could be a stranded asset). In addition a liquid forward market sends out more accurate investment signals to banks and overseas shareholders to the viability of a project – signals that are currently hidden from the market. The current deemed improvement in liquidity does not address market shape or prices beyond the immediate short term. This matter, which is a difficult issue to resolve, has been languishing for some time.

- Carbon Price Floor – the raising of this price too quickly will make gas plant uneconomic unless consumer bills / Capacity Mechanism compensates. For an independent generator that does not have a retail arm it raises significant risk that prices cannot be passed on.

- Time taken to deliver policy and the increasing risk of further changes to the Energy Bill.

3.5 **Are there any other policy issues that need to be addressed beyond the Government's proposals for the capacity mechanism and the EPS?**

3.5.1 The Government has recognised in its draft Energy Bill that there needs to be a market for PPAs as these underpin investments in energy projects for independent parties. This does need to be addressed for gas plant as well as renewable projects and should be expanded to include tolls (for gas plant and even biomass).

3.5.2 Consideration needs to be given to expanding the funding routes available for new projects. Project finance is becoming much harder to secure and new long term debt is hard to procure. Potentially, some form of credit support on a pooling arrangement by key market participants could provide an "emergency fund" and could be used to support new projects (similar to captive insurance). This would be funded by all power companies, governed by Ofgem, and encourage new investment without Government's balance sheet involvement.

3.6 **Given a continuing role for gas and the potential for increased volatility in gas demand, to what extent is gas supply and related infrastructure a barrier to investment in gas fired generation? What impact will unconventional gas have on the case for investing in gas generation and the supporting infrastructure?**

3.6.1 Currently, gas supply is robust but UK gas supplies will increasingly come from the likes of LNG. A rise in the need for gas generation during the winter, which could arise as coal plant shuts, increases the need for gas storage to ensure consistent affordable supplies during periods of high gas demand.

As for unconventional gas, as noted above, it could be sold in the international gas markets or used in the UK. As in the US where gas was retained (at least initially) for domestic use, such supplies could lower the price of gas and electricity prices, make returns on gas plant less challenging and hence increase investment appetite, and increase security of supply. Additionally, it could mean that less supporting infrastructure like gas storage is needed which is an additional benefit to consumers.