Scottish Government on-shore wind farm appeal and consenting performance – a critical appraisal

Summary

This paper examines data supplied by the Scottish Government on the approval rate for onshore wind farm appeals of up to 50MW capacity and consented wind farms exceeding 50MW, i.e. Section 36 applications, over the past five years.

The examination takes the form of a longitudinal study over the period 2017-2021 with a view to testing whether an observation by several wind farm campaign groups – that approval and consent rates are high, especially over the recent past, has merit.

The analysis shows, with a high level of confidence, an association between an increase in appeals allowed (for wind farms up to and including 50MW capacity) together with the consenting of Section 36 applications between 2020-2021 in relation to the earlier period of 2017-2019. In other words, the rate of appeals allowed and consents granted has been statistically and significantly higher over the past two years than one might expect in relation to pre-Covid levels.

This association has been wholly influenced by Minister and reporter-led decision making during 2021, at a 99% level of confidence, and is unlikely to have happened by chance.

The paper discusses these findings and invites further investigation.

Author

Dr A Jones, 26 June 2022

1 Introduction

The Scottish Government published information in January 2022 following a request from Oliver Mundel MSP, on the approval rate for wind farm applications in each local authority area broken down by those a) determined and b) not determined by Scottish Ministers in the last five years.¹ A copy of the Scottish Parliament's answer to this request is shown in the Annex while Table 1 below provides a summary showing approvals and consents over the 5-year period of interest.

Year	Appeals (<=	=50MW)		Section 36 (>50MW)					
	Allowed	Allowed	Refused	Minister	PLI	Refused			
	Minister	Reporter		Consent	Consent ²				
2017	1	10	5	2	7	2			
2018	0	7	9	3	2	3			
2019	1	8	6	8	2	5			
2020	0	2	5	6	2	1			
2021	0	4	0	12	6	1			
Total	2	31	25	31	19	12			

Table 1 Summary of Scottish Government response on wind farm appeals and consents

The summary figures for appeals in Table 1 are taken from Table A1 of the Annex, which illustrate the Scotland-wide position in relation to on-shore wind farm planning appeals of up to and including 50MW capacity covering the period 2017 to 2021. All but two appeals (in Argyll and Bute – in 2017 and 2019) were decided by reporters from the Planning and Environmental Appeals Division of the Scottish Government. The two in Argyll and Bute were allowed by Scottish Ministers. Meanwhile, the consent figures in Table 1 are taken from Table A2 of the Annex from determinations made by applications for wind farms under Section 36 of the Electricity Act 1989 (over 50MW capacity) where a Public Local Inquiry was held and chaired by a reporter following an objection by the relevant planning authority. Where the planning authority did not object consent was granted by Scottish Ministers.

Using the data from Table 1 an evaluation of the percentage of appeals allowed and the Section 36 applications consented compared to those refused is provided in Table 2. From here it can be seen that what may be considered as the Covid-19 period (2020-2021) has had little impact on the rate of appeals allowed compared with the pre-Covid-19 performance although, significantly, the rate of appeals allowed in 2021 has almost doubled compared to the pre-Covid-19 rate.³ On the other hand, the rate for consents during the Covid-19 period increased for both 2020-2021 (93%) and 2021 (95%) compared to the pre-Covid-19 rate of 71%.

¹ This information was published in the form of a written answer by the Scottish Parliament, reference S6W-05215, dated 24 January 2022.

 $^{^2}$ The term, PLI, refers to a Public Local Inquiry, which is held following an objection by the relevant planning authority

³ Appreciating, of course, that the small sample size can increase the volatility of the result.

Period		Appeal Allowed (%)	Consented (%)			
2017-2021	Overall	57	81			
2017-2019	Pre-Covid Period	57	71			
2020-2021	Covid Period	53	93			
2021	Covid Period	100	95			

Table 2 Percentage (or rate) of appeals allowed and Section 36 applications consented

This simple comparative evaluation helps substantiate observations made by several Scottish wind farm campaign groups – local and national. Examples of these qualitative observations include: "...we have noticed that approval rates are high..." (Personal communication, Milligan, I. email reply from Save our Hills, 13 June 2022), "...as far as we are aware there has only been one wind farm refused at appeal since covid began..." (Personal communication, Proctor, T. email reply from Help Save Mochrum Fell, 12 June 2022), and "...there were no S36's refused for over a year until Glenschero was refused in March 2022 as far as I remember..." (Personal communication, Jackson, I. email replies from Scotland Against Spin, 12 and 26 June 2022).

It should, perhaps, come as no surprise if the rate of appeals allowed and Section 36 applications consented have been influenced by Covid-19 and the subsequent lockdown in Scotland, which commenced on the 24 March 2020, along with a further lockdown on the 5 January 2021 (Scottish Parliament, 2022). The Scottish Government, in reviewing planning performance statistics over this period acknowledge that the number of applications submitted as well as the processing and deciding of applications was impacted from several perspectives (Scottish Government, 2021).

Some authorities commented, for instance, that there had been a noticeable reduction in the number of applications, especially over the first two quarters of 2020 with a marked increase in the last two quarters. Furthermore, following lockdown planning application processing was impacted by the move to home working, restrictions on travel and site access, reduced availability of agents and consultees as well as staffing and resource issues.

The Scottish Government report also highlights the negative impact from the ability of planning committees to meet as a result of lockdown restrictions and while these combined restrictions affected each authority differently with varying degrees, and durations of impact, the overall effect on both submissions and processing may help explain the higher than normal number of Section 36 consents occurring in 2021 (as shown in Table 1), which may have, in part at least, been due to delays in determination in 2020. It is possible too that resource availability and restrictions at local authority level negatively impacted determination where at least one local authority (Dumfries & Galloway) is cited as "...failing to participate meaningfully, or at all, in the decision making process..." (Personal communication, Proctor, T. email reply from Help Save Mochrum Fell, 12 June 2022).

The question this rather simple evaluation raises and which is the subject of this paper, is:

In light of the quantitative data along with these qualitative observations from several sources; is the change in the rate of appeals allowed and Section 36 applications consented between the pre-Covid (2017-2019) period and the Covid-19 period (2020-2021) statistically significant? In other words, if there is a difference is it unlikely to have occurred by chance?

The following Chapter discusses this issue and begins by setting out the methodology adopted by which to address this question.

2 Methodology

The methodology adopted in this paper is used to examine whether there is a statistically significant relationship, or association, in the rate of decision making to accept following an appeal or to consent a Section 36 application pre-Covid compared to similar outcomes made during Covid, when many of the normal operating procedures of government along with resource availability, local and central, may have been impacted. It has to be appreciated, however, that even if association is shown to exist it does not imply causation.

The analysis of data in Tables A1 and A2 in the Annex and as summarised in Table 1 is made against the following criteria:

2.1 Timing

The period 2017-2019 is assumed to be representative of pre-Covid and is regarded as a collective or pooled period during which, it is assumed, normal accepting and consenting decisions are deemed to have occurred. However, the period representing performance during Covid is more difficult because while Covid resulted in a period of 'lockdown,' with work from home except for essential workers, this did not occur until part way through 2020 and as the data in both tables (provided by the Scottish Government) gives no indication of the point leading up to lockdown when applications were made, heard and decided the Covid period for this analysis is assumed to be represented by the period 2020-2021.

2.2 Sample Size

As a general rule, the level of confidence in statistical models increases with sample size - to some upper level, while on the other hand small samples sizes can present challenges and become less accurate. Consequently, and because interest here lies in the decisions reached by representatives from the Planning and Appeals Division of the Scottish Government – nominated reporters, along with those of Scottish Ministers, data from Tables A1 and A2 in the Annex has been combined. In practice, this means columns 2,3,5 and 6 from Table 1 has been combined to represent the combined rate of appeals allowed and Section 36 applications consented. In a similar manner, columns 4 and 7 are combined to represent the overall refusal performance for each year.

This pooling of data is considered both desirable, in increasing sample size, and compatible in so far as all decisions have been reached by representatives of the Scottish Government using, presumably, similar procedures, guidelines and professional judgements.

2.3 Exceptions

Notes to Table A2 in the Annex mentions consents relating to Fallago Rig and Farr wind farm and these have been ignored as were both extensions to existing operational wind farms.

2.4 Analysis

Pooled frequency data (based on reporter and Minister decision making) is calculated and displayed in a contingency table to reflect the relationship between the categorical variables of interest, namely: Period of Approval and Reporter+Minister Decisions. Pearson's chi-square test of association is then used to test the hypothesis about the distribution of observations in the different categories. The null hypothesis, H₀: is that the observed frequencies are the same as the expected frequencies except for chance variation. Expressed another way – the null hypothesis, H₀: represent no difference in the combined approval and consent rate over the two periods of interest.

If the observed and expected frequencies are the same then the value of chi-square, denoted X^2 , is equal to zero. If on the other hand there is a difference between observed and expected frequencies the value of X^2 increases and when this value is sufficiently large in relation to published tables of chi-square distribution the more likely it is that the distributions in this example, for Period of Approval and Reporter+Minister Decisions, is significantly different.

In this particular analysis the value of X^2 was calculated manually, but computer programs are available for such tasks.

3 Results

The combined, or pooled, data is shown below in the form of a contingency table where the relationship between the two variables, Period of Approval (Pre-Covid, 2017-2019 and Covid, 2020-2021) and Reporter+Minister Decisions (Allowed or Consented, and Refused) is shown with individual cell values representing the combination of count or frequency values from Table 1 based on the data provided by the Scottish Parliament. These cell values therefore represent the observed frequencies.

Observed frequency	of decisions	by	Period of Approval					
reporter+Minister			Pre-Covid (2017-19) Covid (2020-21)					
Decision	Allowed or		51	32				
	Consented							
	Refused		30	7				

Table 3 Observed frequency of Minister+reporter decisions 2017-2019 vs 2020-2021

With this categorical data describing the relationship between the independent variables, Reporter+Minister Decisions and Period of Approval, Pearson's chi-square test of association has been used to determine if there is an association between them. In other words the goal of this test is to determine whether the null hypothesis, H_0 : stands, and if not then the alternative hypothesis, H_1 : can be accepted - the frequency or rate of pre-Covid decision making differs to that during Covid.

Table 3 therefore reflects the decisions reached by the reporter+Minister during both these periods and it appears from the data that there is a difference, with 30 cases refused pre-Covid to 51 allowed or consented while only 7 cases were refused yet 32 allowed or consented during Covid. The question is whether this observed difference is significant from the pattern of frequencies one would expect to see by chance – if there was no relationship between the variables and only random variation.

While it is possible to calculate the value of the X^2 statistic using programs such as IBM's SPSS or even MS Excel as this is a 2x2 matrix it is possible to calculate the value manually by determining the expected count, or the expected frequency of decision making by reporters and Ministers, using the equation:

Expected cell frequency = (Row Total x Column Total)/Sum of Row or Column Totals(1)

in which non-integer values are expressed to the nearest integer value. Table 4 shows the result of this exercise to calculate the expected frequencies.

Expected frequency	of decisions	by	Period of Approval						
Minister+reporter			Pre-Covid (2017-19) Covid (2021-2021						
Minister+Reporter	Allowed or	56 27							
outcome	Consented								
	Refused	25 12							

Table 4 Expected frequency of Minister+reporter decisions 2017-2019 vs 2020-2021

Table 4 suggests that if there were no relationship between the variables – other than by chance, then a greater number of refusals would have occurred during Covid. The question is, is this statistically significant?

By making use of the cell values for observed and expected frequencies from Tables 3 and 4 the value of X^2 can be calculated from the expression:

 X^2 = Sum of (((Observed Cell Frequency – Expected Cell Frequency)²)/Expected Cell Frequency)(2)

which yields a result of 4.46.4

As has been stated, the null hypothesis, H_0 : represents no association between the two variables and if there is sufficient evidence to reject H_0 : the alternative hypothesis, H_1 : is accepted - suggesting an association exists between the variables.

The remaining task needed to accept or reject H_0 : is to look up the critical values of the chisquare distribution and compare it with the X^2 value of 4.46 obtained from the calculation above.

As the contingency table forms a 2x2 matrix there is only 1 degree of freedom ((n-1)x(n-1)) and choosing a suitable probability level of p = .05 (to represent a 95% level of confidence in the result) yields a critical value of 3.84.⁵

Because the test statistic X^2 , of 4.46, is greater than this critical value it is considered too large to have arisen by chance so it can be assumed there is a real difference between the observed and expected frequencies from Tables 3 and 4 leading to a rejection of the null hypothesis and acceptance of the alternative hypothesis. In other words, there is an association, or relationship, between the reporter+Minister decisions pre-Covid to that during Covid.

However, because Pearson's chi-square test only tests for association it is not possible to imply causation, namely it is not possible to say Covid caused the frequency or rate of reporter+Minister decisions to accept or consent, to change – but there is a relationship, and it is one that deserves to be explored further.

⁴ Taking cell data from Table 3 (observed values) and Table 4 (expected values) the chi-square test statistic is equal to the sum of (5x5/56) and (5x5/25) and (5x5/27) and (5x5/12) = 4.46

⁵ Field (2013) in Appendix A.4. shows that with 1 degree of freedom, as is the case here, the critical value of X^2 taken from the chi-square distribution is 3.84 with p = 0.05 (95% probability) and 6.63 with p = 0.01 (99% probability).

4 Discussion and Conclusions

The analysis in Chapter 3 proves the presence of a statistically significant relationship between the rate of appeal approvals and consents during 2020-2021 compared to what is considered the base-line period, 2017-2019, prior to Covid. This result also supports the qualitative observations made by several campaign groups across Scotland.

This increased rate of approvals and consents during 2020-2021 does not necessarily chime well with what might be expected based on the planning performance statistics report (Scottish Government, 2021), which describes the impact Covid had on Scotland's national and local planning system. Nothing in this report refers to any change of emphasis, urgency, process or procedure in on-shore wind farm approvals that might lead to such an increase. On the other hand, this report only covers the first-year of Covid, namely 2020, and it is possible that the next annual report⁶ might allude to such matters.

Two further hypotheses emerge from this discourse, both of which can be tested from the data shown in Table 1. These represent a more granulated evaluation of the hypothesis described in Chapter 2 and are represented as:

 $1\,H_0$: there is no difference in the approval and consent rate by Ministers and reporters during 2020 compared to 2017-2019, and

 $2 H_0$: there is no difference in the approval and consent rate by Ministers and reporters during 2021 compared to 2017-2019.

Before testing these hypotheses there is a caveat relating to the un-pooling of the previous pooled data. This relates to Pearson's chi-square test and small expected cell values that result in inaccuracy if any cell is lower than the prerequisite value of 10 (Horn, 2012). Saunders, Lewis and Thornhill (2007), on the other hand argue that this value is excessive and is only for guidance while Silver (1997, p.110) takes a pragmatic view by stating that expected values should be "…not too small…," suggesting that providing the smallest expected value is greater than three the test statistic, X^2 , may be used.

Sapsford (2007), on the other hand, proposes a rule of thumb whereby every expected cell value must be greater than five, although in larger tables a few less than five is acceptable so long as they are randomly distributed. Field (2013) also supports the notion of five as the minimum value, because at this level the sampling distribution is close enough to a perfect chi-square distribution. Consequently, in the following evaluations with the use of un-pooled observed data from Table 1 if any expected cell value is less than this minimum the more demanding Fisher's exact test for statistical significance will be used (Freeman and Campbell, 2007).

To test the first hypothesis – the performance in 2020 against 2017-2019 Table 5 shows the observed data extracted from Table 1 in the form of a contingency table.

⁶ It is expected that statistics for 2021 will be published in July 2022. See <u>https://www.gov.scot/collections/planning statistics</u>

Observed frequency	of decisions	by	Period of Approval					
reporter+Minister			Pre-Covid (2017-19) Covid (2020)					
Decision	Allowed or		51	10				
	Consented							
	Refused		30	6				

Table 5 Observed frequency of Minister+reporter decisions 2017-2019 vs 2020

Using equation (1) the expected cell data has been computed and is shown in Table 6.

Expected frequency of	f decisions by reporter	Period of Approval						
		Pre-Covid (2017-19)	Covid (2020)					
Reporter outcome	Allowed or	51	10					
	Consented							
	Refused	30	6					

Table 6 Expected frequency of Minister+reporter decisions 2017-2019 vs 2020

In this case the observed and expected cell values from the two Tables are identical, which means that applying these cell values to equation (2) results in a chi-square test statistic, X^2 that is equal to zero. In other words, the null hypothesis, H₀: cannot be rejected - there is no difference in the approval and consent rate by Ministers and reporters during 2020 compared to 2017-2019, only random variation.

Turning now to the second hypothesis – comparing the frequency of decisions by Ministers and reporters over the periods 2019-2019 against 2021 the observed cell data is shown in Table 7 while the expected data can be seen in Table 8.

Observed frequency	of decisions	by	Period of Approval					
reporter+Minister			Pre-Covid (2017-19) Covid (2021)					
Decision	Allowed or		51	22				
	Consented							
	Refused		30	1				

Table 7 Observed frequency of Minister+reporter decisions 2017-2019 vs 2021

Table 8 Expected frequency of Minister+reporter decisions 2017-2019 vs 2021

Expected frequency of	f decisions by reporter	Period of Approval					
		Pre-Covid (2017-19)	Covid (2021)				
Reporter outcome	Allowed or	57	16				
	Consented						
	Refused	24	7				

As all expected cell values exceed five Pearson's chi-square test of association is valid, and using equation (2) and inserting the respective observed and expected cell values results in a value for $X^2 = 6^2/57 + 6^2/24 + 6^2/16 + 6^2/7 = 9.8$. In this instance the null hypothesis H₀: can

be rejected and by comparing the test statistic against footnote 5 it is possible to infer an association exists between Minister and reporter decision making pre-Covid against that of 2021, and in this instance with a 99% level of confidence.

It can be concluded, therefore, that if there was any change of emphasis, urgency, process or procedure in approving and consenting on-shore wind farm proposals by Ministers and reporters then it can be said, with a high level of confidence, that this occurred during 2021. Whether this change occurred by design or chance, or whether it was a short-term anomaly or longer-term in nature cannot be determined, but the upcoming annual report from the Scottish Government's planning performance statistics may shed some light on these matters.

While evidence from these latest planning performance statistics may provide further insight there is sufficient evidence in this paper to act as a basis for discussion with the relevant Scottish Ministers.

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Annex

The tables below shows the position in relation to planning appeals and consents over the period 2017-2021 supplied by the Scottish Parliament as a written answer under question S6W-05215.

In Table A1 all bar two appeals were decided by reporters from the Planning and Environmental Appeals division of the Scottish Government. The two appeals not decided by reporters, but shown in Table A1, were in Argyll and Bute - one in 2017 and one in 2019, and both were allowed by Scottish Ministers.

2017					2018			2019			2020)		2021		
Planning Authority	Cas es	Appe al	Percent age	Case s	Appe al	Percent age										
rationcy		Allo wed	Allowe		Allo wed	Allowe		Allo wed	Allowe d		Allo wed	Allowe	5	Allo wed	Allowe d	
Aberdeen shire										1	1	100%	1	1	100%	
Argyll and Bute	1	1	100%	1	1	100%	2	1	50%							
Scottish Borders				3	3	100%	2	1	50%	2	0	0%				
Dumfries and Galloway	2	0	0%	1	0	0%	3	1	33%	1	0	0%	2	2	100%	
East Ayrshire	6	4	67%	5	1	20%	1	1	100%							
East Renfrews hire				1	0	0%										
Fife	1	1	100%													
Highland	4	3	75%	2	0	0%	2	1	50%				1	1	100%	
Moray							1	1	100%							
North Lanarkshi re	1	1	100%													
Orkney Islands							2	2	100%							
Perth and Kinross				1	1	100%	1	1	100%							
South Ayrshire	1	1	100%				1	0	0%	2	1	50%				
South Lanarkshi re				1	1	100%				1	0	0%				
West Lothian				1	0	0%										
Total	16	11	69%	16	7	44%	15	9	60%	7	2	29%	4	4	100%	

Table A1 Planning Appeals

The following table confirms determinations made by Scottish Ministers on applications for wind farms made under Section 36 of the Electricity Act 1989 where a Public Local Inquiry was held following an objection to a wind farm by the relevant planning authority(s) (i.e. the planning authority(s) for the land on which the wind farm would be built). Where the planning authority did not object consent was granted by Scottish Ministers. The percentage consented column therefore only refers to cases where a public inquiry chaired by a reporter was necessary.

Table A2	Section	36 Consents
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	2017		2018 2019 2020				2021								
Plannin g Authorit y	Deci sion s	PLI req uire d	Perc enta ge Cons ente d (post PLI)	Deci sion s	PLI req uire d	Perc enta ge Cons ente d									
Argyll and Bute	2	2	0%				3	2	0%	2	0		1	1	100 %
Dumfrie s and Gallowa y	1	1	100 %				1	0		2	0		3	2	50%
Dumfrie s and Gallowa y/ South Ayrshire										1	0		1	0	
East Ayrshire				2	1	100 %	1	1	100 %	1	0		3	0	
East Ayrshire / Dumfrie s and Gallowa V	1	1	100 %												
, Highlan d	4	3	67%	3	3	33%	4	2	50%				3**	2	100 %
Moray	1	1	100 %							1	1	100 %	1	0	,-
North Lanarks hire			100 %												
Perth and Kinross							1	1	0%						
Scottish Borders	1	1	100 %	1	1	0%				1*	1	0%	1	0	
Scottish Borders /East Lothian							1	0					1	1	100 %
Shetlan d Islands	1	0					1	0							
South Ayrshire				1	0					1	0		1	0	
South Ayrshire / Dumfrie s and Gallowa y													1	1	100 %
South Lanarks hire							3	1	0%	1	0		3	0	
South Lanarks hire/We st Lothian				1	0										

Total	11	9	78%	8	5	40%	15	7	29%	9*	3	67%	19* *	7	86%
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* Does not account for Fallago Rig variation which was for an extension of operational period to a wind farm which was already built and operating.

** Does not account for Farr Wind Farm variation which was for an extension of operational period to a wind farm which was already built and operating.