

# Chapman's Nocebo Study

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Simon Chapman, a public-health professor in Australia, has long maintained that the health and annoyance issues from wind turbines that people complain about are the result of nocebo. Recently he published [a study](#) that purports to conclusively demonstrate that those health complaints are not caused by the wind turbines; rather they are caused by anti-wind activists (presumably like me) instilling these ideas into people by our writings.

In an effort to give his study the fairest shake I could, I haven't read it yet. Instead, I'm going to put myself in his position and think about what kind of study I'd have to do to and what it would have to show. After that exercise I'll be looking through his paper to see if it in fact shows the things it needs to show to confirm his assertions.

## My Nocebo Thought Study

- 1) I'd start by examining projects and comparing those where there were complaints to those where there were not. I'd see if there was a significant correlation between negative, fear-producing publicity in the area around the complaining projects vs. others. This publicity would have to precede the project.
- 2) I'd check to see if there were any other significant differences between the complaining and non-complaining projects to make sure there's no other explanation, i.e. different setbacks, bigger turbines etc.
- 3) I'd survey the complainers to see what their attitude was before the project went into operation. If they were favorably disposed towards it and then complained the case for nocebo is greatly weakened.
- 4) Finally, I'd check to see if there was any other plausible cause for the complaint. The most obvious one would be that the noise from the turbines is plausibly bothersome enough to cause the complaints. This would require visits and measurements.

I thought the above up in about an hour, so calling them rigorous would be a stretch. Let's now read Chapman's study and see if he meets even these minimal criteria. Read. Read. Read.

## My Summary

It's now 2 days later and I've read through [the study](#). This was a typical Chapman exercise. He designed a study whose outcome could safely be predicted to confirm his prior beliefs. He cherry picks the data, ignoring stuff he doesn't like, and finishes up with unsupported assertions and innuendos. The main value of this study is to demonstrate how "science" can be bent, and how careful we need to read studies written by clever people with agendas. It certainly does nothing to advance our understanding of

the very real health issues that are now affecting thousands of people world-wide. Think I'm being harsh? Read on...

### **Some Background**

The [nocebo](#) theory has been around for a number of years. It recognizes that people may well develop health issues because they believe something will harm them, even when there's no plausible physical way it can. An extreme example is a witch's curse killing someone. A modern example would be cell phones. Just to be clear, nocebo itself is not particularly controversial. With regard to wind turbines, it would be surprising if some complaints about them were in fact not due to the turbines themselves. On the flip side, industries have used various victim-centered defenses (like nocebo) when in fact their product was harmful. It confuses the regulatory bodies for a while and keeps the gravy train going, hopefully until they can retire.

The trick for anyone studying this issue is to separate real problems from induced ones and find out where the predominance lies. For his part, Chapman maintains that: "18 reviews of the research literature on wind turbines and health published since 2003 have all reached the broad conclusion that the evidence for wind turbines being directly harmful to health is very poor." And at the same time, the evidence he has created for his nocebo hypothesis shows that: "the reported spatio-temporal variations in complaints are consistent with psychogenic hypotheses that health problems arising are 'communicated diseases' with nocebo effects". Therefore he concludes nocebo effects are: "likely to play an important role in the aetiology of complaints." So what constitutes "important"? Studies whose value is entirely dependent on the reader's interpretation of (in this case) the word "important" aren't really of much value.

More importantly, note where he's set the bar for accepting his nocebo hypothesis. He hasn't shown any evidence at all that nocebo is the actual cause. Rather, he insists that since the evidence for direct harm is weak and nocebo plausible, ergo nocebo must win by default. Note the use of the word "direct", a topic [I've posted about at some length](#). He is clever enough not to say wind turbines don't cause health effects at all, because they do, and it has nothing to do with nocebo – and the evidence for this is substantial. As [Nissenbaum](#) (a real doctor, unlike Chapman) relates, assigning a patient's chest pains to nocebo would be the height of malpractice, even though nocebo-induced chest pains no doubt do occur.

### **The Hypotheses**

Coincidentally, we each had 4 criteria/hypotheses to guide us through our studies. Mine are above and concentrate on separating the real effects from the induced ones. His are quite different and generally serve to see if Nocebo is a plausible cause in the first place. They are:

1. Many wind farms would have no history of complaints.
2. A small number of complaining residents.

3. Few wind farms would have any history of complaints consistent with claims that turbines cause acute effects.
4. Most complaints would date from 2009 or later, when opposition groups began to publicise health and noise effects.

Since I already accept that nocebo is a plausible cause, this study seems to me to be beating a dead horse. But plausibility is not the issue, is it? The real issue is: are most (or essentially all, in his view) of these complaints due to nocebo, or is there some evidence that points to the real effects of wind turbine noise that could explain them? Chapman's study and conclusions adroitly sidestep that. No conclusions to his hypotheses above could falsify alternative explanations, while mine concentrate on doing so.

### His Results

Table 1 contains a list of 49 Australian wind “farms” with sizes, dates, opposition activity and complaint history. The core of his study is the almost perfect correlation of complaints and activist activity; 45 out of the 49 agree. His general conclusion is that the opposition activity led to the complaints. But for us to accept that conclusion we must first eliminate all the alternative explanations: for example that the noise led to the complaints which in turn led to the activist activity. That is especially true when the alternative is not only plausible; it is in this case well documented. He mentions 4 specific projects that should have generated complaints but had no opponent activity and thus no complaints, and 5 equivalent projects that had both activity and complaints. To save my time and your sanity, I've boiled his table 1 down to the following (thankfully clickable) chart:

| Project Name | Capacity | # Turbine | MW/Turbine | Date Operational | # houses < 5 km | Complaints | Opposition Activity | # houses < 1 km | # houses 1 to 2 km | Picture |
|--------------|----------|-----------|------------|------------------|-----------------|------------|---------------------|-----------------|--------------------|---------|
| Albany       | 35.4     | 18        | 1.96       | 2001             | 77              | N          | N                   | 0               | 0                  | N       |
| Challicum    | 52.5     | 36        | 1.50       | 2003             | 55              | N          | N                   | 0               | 7                  | N       |
| Starfish     | 34.5     | 23        | 1.50       | 2003             | 77              | N          | N                   | 8               | 14                 | Y       |
| Wattle       | 91.0     | 55        | 1.65       | 2005             | 215             | N          | N                   | 2               | ~70                | Y       |
| Bungendore   | 140.7    | 67        | 2.10       | 2009             | 76              | Y:10       | Y                   | 5               | 9                  | N       |
| McArthur     | 420.0    | 140       | 3.00       | 2012             | 58              | Y:8        | Y                   | 4               | 25                 | N       |
| Waterloo     | 111.0    | 37        | 3.00       | 2010             | 75              | Y:11       | Y                   | 0               | 18                 | Y       |
| Waubra       | 192.0    | 128       | 1.50       | 2009             | 283             | Y:29       | Y                   | Some            | Many               | Y       |
| Wonthaggi    | 12.0     | 6         | 2.00       | 2005             | 2650            | Y:~10      | Y                   | 5               | 22                 | Y       |

The first 4 projects are the ones that didn't have activity/complaints and the last 5 are the ones that had both. You can see the “complaints” and “opposition activity” columns totally agree, which is the core basis of his conclusions. A secondary result are the dates, with Chapman maintaining that the later dates for the complaint projects supports his conclusions. Chapman generated the “complaints” by doing media and government searches and asking the project operators. He generated the “activity” columns by simply asking the project operators! Asking someone with a direct and substantial financial interest in his results for critical not-easily-verifiable input tells me Chapman wasn't

really serious about getting an honest answer. I have to wonder how this will get by peer review.

The yellowed cells are what I added, using Google Earth to locate each of the projects and counting up the close-in homes. I also took pictures of the projects where a picture was worth the proverbial thousand words. There is obviously a lot of evidence in the above chart to support alternative explanations. The projects are larger (and thus more likely to surround the neighbors), the turbines are larger and there are generally more close-in neighbors. His selection of 5 km to define neighbor is typical of wind proponent behavior – declare the affected area large enough and the unpleasant effects disappear. This is precisely what proponent property value studies do.

To get a sense of how the first 4 “non-complaint” projects are different from the last 5 “complaint” ones, I created pictures of Starfish and Waubra. All of these pictures can be enlarged.

First, Starfish Hill. By the way, other “non-complaint” projects are even more isolated than this one. I show the entire project and the closest concentration of homes, in Cape Jervis. The red line is 3300 m long.



Next below, Waubra. This is just a part of the Waubra project, closest to the town of Waubra, with the remaining turbines spreading out to the west. The red line is 1600 m long. Note the number of turbines on a ridge directly overlooking the town. I didn't bother counting the close-in houses – there were too many. As an aside, I looked at the “non-complaint” projects first and I recall being quite shocked by the density of the surroundings when I came to Waubra.

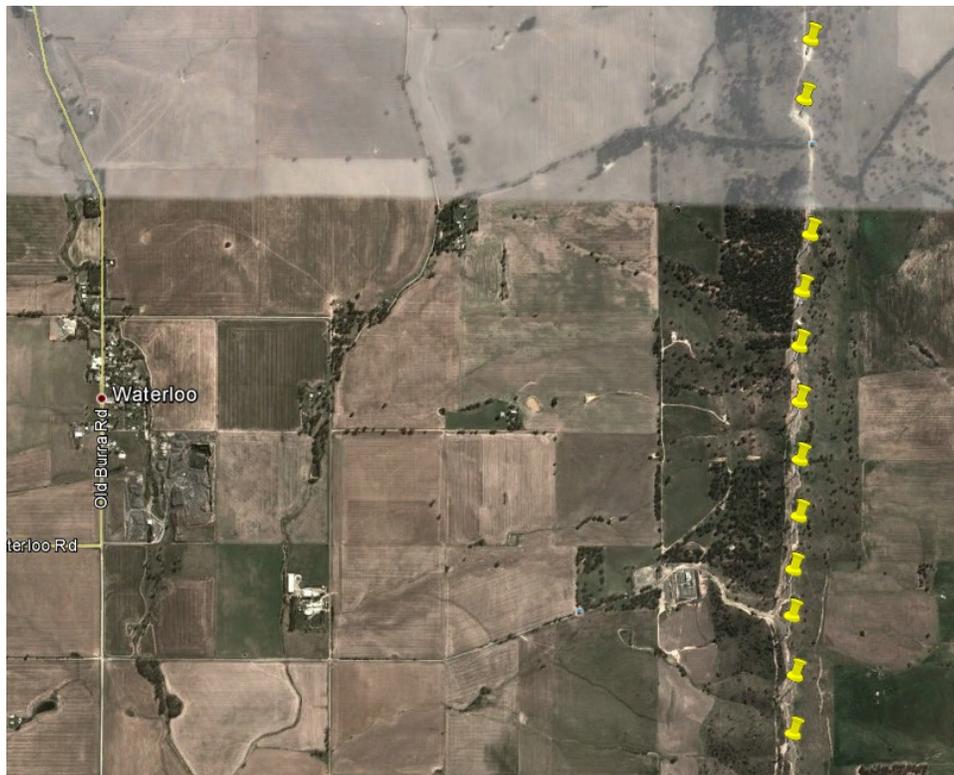


Based on my close-in numbers, I noticed some anomalies in my chart, namely Wattle (should have had some complaints but didn't), Waterloo and Wonthaggi (shouldn't have had many but did). So I prepared the following pictures to get some insight into why. Of course there may be additional reasons, like payments or poor performance, but I don't have the ability to research those. But just the pictures are instructive.

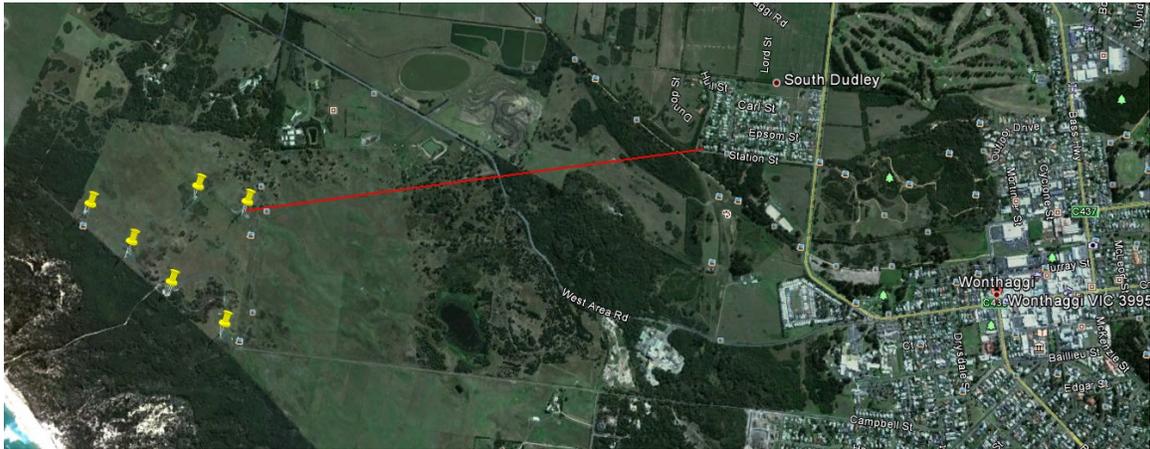
First, Wattle. I estimated the cluster had 60 houses in it, which represents a substantial majority of all the close-in houses in Chapman's 4 non-complaint projects. The other turbines in that project are strung off to the west of the two closest ones shown here. The shorter red line is 1700 m long. I'd guess the turbines are audible in the cluster, but two 1.65's at 1700 m may not be enough to create complaints.



Waterloo was the site that [Wang studied in 2011](#). Note that Chapman reports 11 complaints. Wang, who surveyed the area, reports 34 (70%+ times 48). The town is 3300 m from the ridge. Note how many turbines there are, arrayed on a ridge overlooking the town. Aside from the distance, this looks pretty much like Waubra.



Finally, Wonthaggi. There's not so many turbines, but there's a lot of houses just outside my 2 km red line. According to Chapman the complaints there have been resolved: "Some of these former complainants had had their houses noise tested with the results showing they conformed to the relevant noise standard, some received noise mitigation (eg: double glazing), while others simply stopped complaining." I have to ask: is this history consistent with nocebo?



Even with my cursory look at the actual projects Chapman cites, it is apparent that there are consistent and substantial physical differences between the complaint-prone and non-complaint-prone projects. I'm pretty sure that if you were shown overhead pictures of the 9 projects you could pick the ones where complaints were registered more often than randomly. If nocebo was in fact the determining factor, as Chapman would have us believe, you couldn't.

### Chapman's "Scientific Consensus"

In his conclusion he states: "In view of scientific consensus that the evidence for wind turbine noise and infrasound causing health problems is poor..." And how does he know this? "18 reviews of the research literature on wind turbines and health published since 2003 ([references] 3-20) have all reached the broad conclusion that the evidence for wind turbines being directly harmful to health is very poor." This is simply a rehash of his 17 reviews (plus one from Massachusetts), [about which I posted previously](#). To sum that posting up, Chapman has misused the conclusions of many of these reviews, some of which misused the results of the actual studies they were reviewing. Ontario's Hazel Lynn, a pesky real doctor with actual experience with victims, in association with a real epidemiologist, [did her own review](#) and concluded that her 18 studies (many were the same ones scooped up by Chapman and his reviews) indicated wind turbines had a "noise-induced" effect on the neighbors. As an aside, none of these reviews, nor any of the studies underlying the reviews, even mentions nocebo.

As an example of how Chapman misuses both the reviews and the studies, let's look at his first assertion on page 3: "Small minorities of exposed people – typically less than 10% – claim to be annoyed by wind turbines (15)." Reference 15 happens to be

[Knopper 2011](#), which in itself is a review, and about which [I have serious problems](#). Regardless of my issues, nowhere in Knopper is 10% mentioned in any form. As close as Knopper comes is: “Results of the Pedersen and Persson Waye studies [13-15] also suggested that the proportion of participants who were fairly annoyed or very annoyed remained quite level through the 29-37 dB(A) range (no more than roughly 5%) but increased at noise levels above 37 dB(A), with peaks at 38 dB(A) and 41 dB(A), where up to 30% of people were very annoyed.” I guess if you define “exposed people” carefully enough, his assertion could be correct. But that is by any standard I’m aware of terribly dishonest, and this type of dishonesty permeates Chapman’s writings.

### **On to the Innuendos**

If Chapman stuck to exploring the evidence regarding noise, health, nocebo and so on we’d simply be having a disagreement. Unfortunately he goes way beyond that. It is though he takes the wind turbine issues viscerally, attacking anyone or anything that is inconvenient. Take the very first sentence in this study: “With often florid allegations about health problems arising from wind turbine exposure now widespread in parts of rural Australia and on the internet, nocebo effects potentially confound any future investigation of turbine health impact.” Florid? My my. Scientific terminology at its finest.

He also has a great deal to say about the Landscape Guardians, implying they are merely fronts for fossil fuel interests. Now I don’t know what they might be fronts for, if anything. I’ve been associated with anti-wind activists for going on 6 years now, and I’m not aware of any significant fossil-fuel money. Actually, I’m not aware of any significant money at all, darn it. An inconvenient fact for Chapman is that oil and gas interests are major wind-energy players, the linkages (i.e. Mitchell) all involve oil and gas – not coal. Does Chapman bother to level similar charges against the wind energy industry? Scientific disinterest at its finest.

Finally, Chapman seems to have a special place in his heart for Sarah Laurie. He mentions her 3 times in this study, and I don’t recall anything he’s written about wind turbines where he hasn’t mentioned her. In his “[17 reviews](#)” paper she got over a page’s worth. Here his attack was more subtle, linking her to fossil fuel interests via Waubra and the Landscape Guardians. Could this be unrequited love? There’s as much evidence for that as there is for nocebo. Scientific hypothesizing at its finest.

Chapman may still consider himself a scientist, but he certainly looks like an advocate to me.

Wayne Gulden is retired after a long career in network engineering with IBM and as an independent consultant. Before that he was a pilot in the USAF. He has an MBA in finance and an undergraduate degree majoring in Psychology with a minor in Physics. His biggest credential is having the time to actually read and analyze material, along with a lifelong addiction to going wherever the evidence takes him.