

THE NORTH CAROLINA

“Energy
Ratepayers
Protection Act”

**An Economic
Assessment**

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Assessing the “NC Energy Ratepayers Protection Act” (H681)

EXECUTIVE SUMMARY

Since most legislative Committees have an interest in the *economic* impact of proposed legislation, these comments will emphasize that aspect of [H681](#)

Even with that restricted perspective, this is still a complicated situation that requires an in-depth understanding of the electricity business. To simplify this matter somewhat further, my remarks will primarily focus on wind energy.

The reasons for this choice are:

- 1) if [Senate Bill 3](#) (SB3) is left unchanged, wind energy will ultimately most likely provide the majority of the renewables mandate, *and*
- 2) some of the economics regarding wind energy also apply to other renewables (e.g. solar).

When faced with matters of this complexity, we often want it simplified as a sound bite. For those so inclined, here it is:

Wind energy is a NC net economics loser, and a NC net jobs loser.

H681 is proposing to reduce the renewables mandate of SB3 — which would have ultimately resulted in North Carolina being increasingly burdened by the drain of these job and economic losses. As such, H681 is beneficial to the vast majority NC businesses, taxpayers and ratepayers.

For those who are interested in wading through the technical details of why this is so, please see the attached information. [EnergyPresentation.Info](#) can also be very helpful in understanding the electrical energy situation. Let me know any questions about anything in this report.

I am respectfully requesting that every House and Senate Committee give it's full support to H681. If needs be, I'd be glad to testify in person.

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[Note: There will likely be a parallel NC Senate version of this bill.
Since H681 was introduced first, we will exclusively refer to that version.]

Assessing the “NC Energy Ratepayers Protection Act” (H681)

SOME DETAILED ECONOMIC INFORMATION

The essence of what H681 does is to reduce the renewable energy mandate from [Senate Bill 3](#) (SB3). Such a mandate certainly favors a small niche market, but the question is: *is H681 a **net** economic benefit to North Carolina businesses and citizens?* The objective evidence says **YES**. Let’s break it down:

1 - The state should not be in the business of picking energy winners and losers. (In some situations there may be good justification for the state to encourage the R&D of some promising technology, but that is another matter.)

In the case of SB3, it **legally requires** that NC utilities **must** supply (to NC businesses and consumers) a certain percentage of renewable energy, by certain dates. As well-intentioned as this may sound to some, there is **zero scientific proof that this provides any net benefits** to NC businesses, or to NC citizens, or to the NC environment (see Appendix A for the details).

Additionally, what expertise does the state have for creating such a mandate in the first place? Even the La Capra [Report](#) gave only a lukewarm, very qualified support of SB3 — saying that the majority of any savings would be due to energy efficiency, *not* renewables. The overwhelming evidence from other studies by independent financial experts is that **renewable mandates provide no proven net benefits** (see Appendix B).

If renewables made financial sense, then the market would gravitate towards that economic motivation, without intervention by the state. Forcing North Carolina utility companies to have a set amount of *anything* is an unwarranted and counter-productive intrusion into free markets. SB3 may have been well-intentioned, but H681 corrects that policy misjudgment.

2 - The supporters’ main claim for continuing the SB3 renewables mandate, appears to be that it will supposedly result in a certain number of wind energy jobs being created. (See **Appendix C** for studies by independent experts on the veracity of such claims.) There are several deficiencies in this argument:

a) SB3 states four purported reasons for having the renewables mandate. However, nowhere in SB3 does it specify that the renewables mandate was intended to be a small-segment jobs provider. So, how can the removal of SB3’s mandate be criticized on the basis that it won’t provide any of these artificially created jobs, which were simply an accidental byproduct?

Note also, as energy expert attorney Chris Horner stated: "There is nothing – no program, no hobby, no vice, no crime — that does not ‘create jobs’. Tsunamis, computer viruses and shooting convenience store clerks all ‘create jobs’. So that claim misses the point; **it applies to all, so is an argument in favor of none**. Instead of making a case on the merits, it is an admission that one has no such evidence."

- b) We don't choose energy sources by the number of jobs created. If source X created 1000 jobs, and source Y created 2000 jobs to provide the same amount of electricity, that would **not** be an important consideration in deciding between X and Y.

If the job creation aspect was considered at all, supporting the **lower** direct employment alternative would ordinarily be preferred, as that would decrease the operating (O&M) cost of that source to produce electricity — which would benefit ALL NC businesses and ratepayers.

- c) A third issue with wind energy job claims, is that none of the numbers put forward are **guaranteed**. Anyone can make specious assertions when they are confident that no one will hold them accountable for exaggerations. The only economic numbers that should be considered are those that have a written guarantee, along with a stringent penalty for non-compliance.
- d) The fourth problem is that there is also no guarantee as to how many of the claimed jobs will go to North Carolina residents. Evidence from developments elsewhere indicate that a considerable amount of the work putting these projects together goes to specialists from other areas.
- e) The largest jobs issue is that the employment claims are never about NET jobs to the state. There may well be some jobs created in the small wind energy segment of the state's economy. However, studies by independent experts have concluded that **the state as a whole will lose jobs due to wind energy development**. There are several reasons for this, e.g.:
- 1) When properly *fully accounted for*, wind energy is considerably more expensive than any of our conventional sources of electricity. This higher cost results in an additional financial burden to businesses, which results in them laying off employees. See this sample study by experts, that concludes that wind energy is much more expensive than claimed.
 - 2) This higher electricity cost results in less discretionary spending money available to NC consumers. Their reduction in spending results in a drop in retail sales and manufacturing in NC. The consequences of that is that additional employees across the board will be laid off.

- 3) None of the employment models used by wind proponents take into account negative job consequences. (See this thorough [discussion](#) of the limitations of the popular JEDI model). For example, in NC all of the wind development will be along the coast (see point #12), and most of it will be in farmland. In other areas where this has happened some farmers have ceased farming due to the turbine lease payments they are getting. As a result farm employees are laid off, equipment, seed, fertilizer, and other farm support materials are no longer purchased, which results in layoffs at those points of sale. None of these job losses are attributed to wind energy — which is the actual cause.
- 4) Several detailed studies have been done to measure the effect on tourism from industrial wind machines being erected in naturally attractive areas. Again, since we are talking about the NC coast, it is known that this is a highly ranked tourist destination. See this list of over 100 studies, reports and articles about the negative impact industrial wind energy will have on tourism. The most sophisticated tourism study done to date (by the Scottish government — a wind promoter) [concluded](#) that tourism losses would be 4%± due to wind turbines. The economic and job consequences of a 4% loss to NC coastal counties would be **tens of millions** of dollars. That and the other job and economic losses scheduled to occur due to SB3, will be minimized by H681.

3 - Some advocates of wind energy claim that the high cost of wind energy is justified once all the externalities of our conventional sources of electricity are taken into account. That assertion also does not hold water:

- a) To begin with these proponents never acknowledge the actual grid costs of wind energy. (For example they do not assign the extra transmission expenditures required, as a wind energy cost. Another example is that they do not attribute the cost of special augmentation [typically gas], as a wind energy cost. See also the study referenced in 2-e-1.) If these claims are to be taken seriously we need to start with an **accurate base cost** of industrial wind *before* we proceed into discussing externalities.
- b) Wind advocates are prone to make specious claims about the supposed health costs of electricity sources like coal. However:
 - 1) The health costs cited are largely speculative, based on many self-serving assumptions.
 - 2) Coal is typically not replaced by wind, so such a comparison is false.
 - 3) Gas is more likely to be replaced by wind, but the health effects of using gas are not significant — so they are not cited.

- c) If fossil fuel health costs are part of the externality equation, then the health costs of the manufacture and operation of renewables must also be fully accounted for. There are a few hundred studies by independent experts (some peer reviewed) that conclude that there are genuine health consequences to renewable energy options.
- d) If the externalities of coal are to be considered, then it is only reasonable that the **benefits** also be put in the equation. A major reason that the US has become the world power it is, is due to the low cost reliable electricity produced by coal. Once the value of these benefits are objectively put on the scale, the **net** picture is very different from what is typically shown.

The bottom line is that if we want to consider externalities, then we MUST:

- 1) start with an accurate base cost of all electricity sources,
- 2) do a reasonably objective estimate of all the *benefits* of each electricity source, and
- 3) do a reasonably objective estimate of all the *liabilities* of each electricity source.

There is no scientific evidence that wind energy is advantageous under such a scenario. As such, H681 is doing the right thing by eliminating a forced mandate to use wind energy (and other renewables).

4 - The economic claims for wind energy are highly exaggerated. Consider the proposed Elizabeth City “Desert Wind” project, where the NC Department of Commerce’s [report](#) made some startling observations. For example, it stated that “**Nearly all of the \$750 million in upfront investment will be with firms located outside NC**” and “**The employment impacts for a project with this much initial investment is small.**” Every indication is that these will be equally true of *any* NC onshore or offshore wind project. H681 is saving NC citizens from being seduced by the hope and hype of impressive sounding solicitations of the wind sales people.

5 - North Carolina has gone to great lengths to make the state very hospitable to military installations. This success has resulted in many tens of thousands of jobs, and enormous economic benefits to the state as a whole. Some of this is now jeopardized by the threat of industrial wind turbines.

- a) In 2012, Seymour Johnson Air Force Base put out a detailed [report](#) about why industrial wind turbines were a serious threat to its mission *and* the lives of some of its pilots. In their report they showed their low-level flight paths, and how they cover much of NC’s coast.

In a highly unusual move, the base commander met with Governor Perdue and specifically [told](#) her that coastal wind energy development might necessitate their moving their base from the state.

b) In 2012, Cherry Point Marine Corp Air Station representatives met with local legislators and explained that coastal industrial wind development could have a serious negative impact on them fulfilling their mission. In 2014 such a threat materialized with the proposed Mill Pond wind project. Only strong local legislation prevented a major military conflict.

Needless to say, if any NC military base is adversely affected by coastal wind development, the job and economic repercussion could be enormous. SB3 sets the stage for this financial catastrophe, but H681 tries to bring it to a halt.

6 - Like most of their other assertions, the wind industry's claims that NC wind development will bring wind manufacturing jobs does not hold up under close scrutiny. There is ample evidence that demonstrates that there is little, if any, correlation to NC manufacturing jobs and NC wind development.

Consider:

- a) There is no current industrial wind project in NC, yet according to AWEA there is supposedly 21,000 "clean energy" related jobs in NC. (Of course the RTI/La Capra "study" they referenced for this data, is essentially worthless. For the specifics, please read this detailed critique.)
- b) Read this conclusion of this California investigation:
"Even though a **record** of new wind capacity came online, **few jobs were created overall**, and wind manufacturing employment **fell**."
- c) Read this investigation conclusion in Great Britain which said:
"Britain is **leading the world** in building wind projects off its coastline... but this has provided 'negligible' work or services to British companies."
- d) The fact is that manufacturing jobs will come to NC if we have:
1) a skilled workforce, 2) inexpensive utility costs, 3) low property and income taxes, 4) good transportation, etc. Those are the considerations that state and local legislators should be focusing on.

7 - Another economic consequence of the SB3 renewables mandate is the adverse health effects to people living near these industrial developments. There are a few hundred reports by independent experts on the various issues involved. "Properly Interpreting the Epidemiologic Evidence About the Health Effects of Industrial Wind Turbines on Nearby Residents" by Dr. Carl Phillips, and "A Summary of New Evidence: Adverse Health Effects and Industrial Wind Turbines" are good overviews of the turbine human health situation. H681 avoids the cost, pain and suffering that SB3 would inflict on some NC residents unfortunate enough to live near an industrial wind development.

8 - Many people don't understand that industrial wind projects can have *significant* impact on a wide range of soils and wetlands — **due to their adverse effect on local meteorology**. This issue has been assessed by independent scientists who have concluded that such wind projects can reduce ground level humidity by approximately **30%**, *and* affect an area as much as **15 miles** downwind from the development site.

This means that vegetation *will* change, crops *will* yield less, wetlands *will* dry up, and wildlife *will* be adversely impacted due to the local meteorological effects caused by wind project. **The economic and environmental implications of such changes are far reaching**. None of these matters has been acknowledged or mitigated in any of the NC wind proposals received to date. By removing the SB3 renewables mandate, H681 reduces this economic and environmental loss.

9 - It is well established (through quite a few studies) that many bats are killed by wind turbines. These deaths can be from direct impact with the blades, or through pressure differentials that explode their lungs. The federal government (USGS) in fact says the wind turbine bat situation is an **“unanticipated and unprecedented problem.”** What's worse is that at this point there is no known practical and meaningful remediation of this issue (other than shutting down the turbines).

Some studies have been done to assess the economic consequences of such killings. Bats are not only voracious eaters of insects that are harmful to humans (a health cost), but bats are very effective crop pollinators. A well-known study (by four independent world-class bat experts) concluded that there would be substantial **annual agricultural losses** due to reduced crop yields, the extra cost of using more pesticides, etc. To NC communities this would mean tens of millions of dollars of **annual agriculture losses** — which would far exceed any payoffs received by the wind developer. H681 avoids these substantial economic losses to NC coastal communities.

10- Numerous studies by independent experts (e.g. appraisers) have concluded that property values near wind developments will decline, often substantially. See this and this as examples. (Here is a whole page of references.) This will not only be a personal **financial loss** to some local citizens, but it will also reduce the host county's tax base — which will result on other financial burdens to the whole community. H681 saves NC taxpayers from this inappropriate involuntary financial taking.

11- A very worthwhile report to read on wind energy economics is *“The True Cost of Electricity from Wind is always Underestimated and its Value is always Overestimated”* written by an independent energy expert with thirty years in the business.

One of the many excellent points it makes is a critically important fact to consider when attempting to compare either *cost* or *value* of electricity from wind turbines, with electricity from reliable, dispatchable generating units:

“The fact is that electricity from wind turbines has a lower *value* per kWh because that electricity is not only intermittent, volatile, largely unpredictable and unreliable, but it is also most likely to be produced at night and in colder months when wind speeds are adequate to spin the blades, not at times of high or peak electricity demand. **This is yet another economic consideration.**” (*My emphasis.*)

This MIT [study](#) about intermittent electricity sources comes to the same conclusion. *It also verifies that levelized wind costs quoted are inaccurate.*

12- If we look at NC wind maps, the only acceptable inland wind is a few spots on the coast, and a few locations in the mountains. (The NREL/Truewind’s [NC wind map](#) shows wind speed at an 80 meter height. NREL [states](#) “Areas with annual average wind speeds around 6.5 m/s and greater at 80-m height are generally considered to have suitable wind resource for wind development.”) The mountains are out due to the [NC Ridge Act](#). That leaves about **.1%** of NC land — all concentrated on the coast — to be “wind-suitable.”

There are many environmentally sensitive (and tourist popular) locations within these areas, like Mattamuskeet National Wildlife Refuge, Pocosin Lakes National Wildlife Refuge, Emily & Richard Preyer Buckridge Coastal Reserve, Swanquarter National Wildlife Refuge, Roanoke River National Wildlife Refuge, Alligator River National Wildlife Refuge, Cedar Island National Wildlife Refuge, Great Dismal Swamp National Wildlife Refuge. Any of these could be severely impacted by a nearby industrial wind project. SB3 is effectively forcing wind development to be near these pristine protected areas — *which each NC wind proposal put forward to date has been*. H681 is correcting that economic and environmental error and should be supported.

Yes offshore is the other option, but offshore wind is about twice the cost of the already expensive onshore wind – so that means even further losses to NC businesses at large. Here is a 2012 [study](#) done by independent financial experts, paid for by the state of New Jersey, which is a wind energy promoter.

It concluded that when they looked at the WHOLE jobs picture for the state (not just the small wind segment), that just one offshore project would result in a **net jobs loss** of some **30,000 job-years!** It also concluded that when they looked at the WHOLE economics picture for the state (not just the wind segment), there would be a **net economics loss** to the state of **\$900+ million!** H681 is saving NC from those losses so it should be supported.

13- SB3 made no provisions for the rules and regulations necessary for approving industrial wind projects. Subsequent to that legislation passing, a 2009 study was done by the *Environmental Management Commission* (EMC), which proposed such a permit process for wind developments. Due to political disagreements among the legislators, this was not approved.

In 2013 H484 was passed to try make some effort to address this gaping deficiency. However, despite good intentions, H484 is only a lukewarm law that is not yet a meaningful solution. (See this explanation of the deficiencies of H484.) The current situation is that it is left up to unprepared local NC coastal communities to properly regulate industrial wind energy.

Another benefit of H681 is that by reducing the renewables mandate, the regulation problems faced by NC communities will likewise be reduced.

14- Senate Bill 3 allows for NC utilities to “recover the incremental cost of renewable resources, plus up to \$1 million in alternative energy research expenditures annually from customers.” There is no scientific proof that either of these additional costs will be beneficial to NC businesses and consumers. H681 reduces this unnecessary financial burden on NC ratepayers.

15- RECs will also be reduced by H681 (and have been calculated by some to supposedly provide 25%± of SB3’s benefits), so we should have some understanding as to what they are all about. A “REC” is a “Renewable Energy Certificate” [also may be known as a “Renewable Energy Credit”].

In brief, SB3 allowed NC utilities to satisfy some of the renewable energy mandate by buying RECs. These are artificial “credits” supposedly generated by some other utility’s portfolio. The basics, using wind as an example:

- a) [The sample situation below is from a utility company perspective, as that is what H681 is about. Note that essentially the same realities exist for RECs sold directly to citizens and businesses. Note also that the example below could use an in-state facility as well, but the out-of-state situation is easier to understand.]
- b) A wind energy facility elsewhere (e.g. Idaho) generates 1MWH of electricity, and sells that to a local utility (e.g. Idaho Power Co.).
- c) There may or may not have been fossil fuel displaced by this wind energy. (For example, the wind energy may replace hydro power in some circumstances.) *No one actually keeps track of what energy source (if anything) is displaced!*

- d) Despite having no actual proof that they replaced **any** fossil fuel, the wind developer is given a REC (piece of paper) saying that they **did** replace a full 1MWH worth of fossil fuel.
- e) That fossil fuel is replaced 1:1 is an additional speculative assumption, which does **not** take into account the fact that wind energy requires essentially full time augmentation by a conventional source of power, which is usually gas (i.e. a fossil fuel). To be even remotely accurate, the amount of fuel used in that augmentation should be subtracted when calculating the REC, *but it is not*.
- f) In the case where hydroelectric is replaced by wind, there is actually a net **increase** of fossil fuel to the system (see prior item). However, a REC is still issued, falsely claiming that fossil fuel use has been offset.
- g) Once the local (e.g. Idaho) wind energy sale is made, the wind developer is already (assuming best case) saving fossil fuel for production of electricity that is consumed in Idaho.
- h) When a NC utility pays for a (wind) REC, the money goes to the wind developer, as additional profit. This is likely to be a foreign owned company, already making an estimated 25%± per year.
- i) When a NC utility buys the REC, they get to claim that this is a “penance” for some fossil fuel source they are currently using. In other words, it supposedly is a type of CO2 *compensation* that offsets the CO2 “pollution” caused by the NC utility using a conventional fossil fuel source.
- j) It is clearly double-dipping (and false), to say that the wind developer saved 1 MHW of fossil fuel in Idaho *and* also saved 1 MHW of fossil fuel in NC. As such, to claim NC “Clean Energy” savings from buying RECs is inaccurate — but this type of misleading claim is often made.
- k) The REC cost is passed onto NC business and residential ratepayers, who pay for the 1 MWH of electricity generated by a conventional NC source *plus* the REC. In other words, this is an additional cost to NC businesses and consumers with zero proven real benefits.
- l) Tracking and dealing with REC issues is another regulatory burden on NC agencies — that are paid for by taxpayers and ratepayers. ([Here](#) is an example where NC RECs were disallowed due to non-compliance.)
- m) Suggested reading: “[RECs are a Feel-good Scam](#)”. This was written by Dr. Daniel Press, chair of the Environmental Studies Department at the University of California, Santa Cruz.
- n) When considering the whole situation, H681’s elimination of the contrived RECs is an **economic benefit to NC businesses, ratepayers and taxpayers**, and should be applauded.

16- The Virginia Attorney General put out a [study](#) that discussed Virginia's RES in detail. NC legislators should consider his conclusions:

“The Renewable Portfolio Standard (RPS) adder has not served to advance the environmental concerns that led to its inclusion in the Act ... The RPS adder has contributed to increases in customer bills and will likely have a significant impact in the future... Any benefits of the RPS adder are outstripped by its cost... Five years of data and experience strongly suggest that the RPS be eliminated or significantly changed, as it is not meaningfully advancing the goals of protecting customers from price volatility and unnecessary rate increases, promoting reliable electricity, promoting fuel diversity, providing environmental benefits, nor stimulating economic development.”

We couldn't have made the warning more explicit than the Virginia attorney General has. What he says makes perfect sense because:

There are **zero jobs** and **zero economic benefits guaranteed**. Additionally there are no jobs or economic developments *guaranteed to be going to NC citizens*. The net picture is that there will almost certainly be a **net jobs and economic development loss** to the local community, as well as to the state. There are significant other **liabilities** from such projects (e.g. human health impacts, bird and bat kills, property value losses, etc.). And after all that, there are no scientifically proven NET benefits of the SB3 favored renewables, to the public, or to NC businesses at large (see Appendix A). See also this separate Environmental [Assessment](#) of H298 (a H681 precursor).

SUMMARY —

Rather than speculative job creation and economic growth guesstimates, there are tried-and-true proven criteria to assess the desirability of electric sources.

The most important selection factors by far are: **1)** the real cost of the electricity to ratepayers, and **2)** the reliability of the electricity source. In both of these areas, renewables are seriously deficient compared to conventional sources of electricity.

It is in North Carolina's interest to support **low cost, reliable** electricity sources, as that will positively result in **more net jobs being created**, and more **net economic development**, throughout the entire state.

That is the objective of H681: to spur such job and economic growth, by removing the drag on NC's economy that SB3 burdening it with, by mandating expensive and unreliable electricity sources. **Please support H681!**

John Droz, jr.

Appendix A: Are Any SB3 Justifications Proven?

Are any of the reasons cited in [Senate Bill 3](#) to justify its passage proven? Will H681 undermine anything there of value? Quoting directly from SB3:

62-2. (a) (10): To promote the development of renewable energy and energy efficiency through the implementation of a Renewable Energy and Energy Efficiency Portfolio Standard (REPS) that will do all of the following:

- a. Diversify the resources used to reliably meet the energy needs of consumers in the State.
- b. Provide greater energy security through the use of indigenous energy resources available within the State.
- c. Encourage private investment in renewable energy and energy efficiency.
- d. Provide improved air quality and other benefits to energy consumers and citizens of the State.

Now let's look at the merits of each of these justifications:

a - "Diversifying resources" sounds good on the surface, but how about these questions:

- 1) Exactly what objective evidence is there to say that NC does not already have enough diversity available in their current energy sources? **None.**
- 2) Specifically what objective evidence is there to say exactly what additional diversity of energy sources is needed by NC? **None.**
- 3) What objective evidence is there to quantify the net benefits to NC businesses and citizens for additional resource diversity? **None.**
- 4) Is it in NC's interest to increase diversity at any cost? **No.** [*There is no real protection in SB3 for NC ratepayers for excessive diversity costs.*]
- 5) Is it in NC's interest to increase diversity at the expense of reduced reliability to the grid? **No.** [*Nowhere in SB3 is reliability considered.*]

b - "Energy security..." also sounds good, but how about these questions:

- 1) Exactly what objective evidence says that NC does not already have enough energy security available in their existing energy sources? **None.**
- 2) Specifically what objective evidence is there to say exactly what additional energy source energy security is needed by NC? **None.**
- 3) What objective evidence is there to quantify the net benefits to NC businesses and consumers for additional energy security? **None.**
- 4) Is it in NC's interest to increase energy security at any cost? **No.** [*SB3 has no real NC ratepayer protection for excessive energy security costs.*]
- 5) Is it in NC's interest to increase energy security at the expense of reduced reliability to the grid? **No.** [*Nowhere in SB3 is reliability addressed.*]
- 6) Why is there a statement that energy security necessitates "indigenous NC energy resources"? **Unknown.** [*For example, is buying energy from Virginia a threat to North Carolina's energy security? No.*]

c - “Encourage private investment in renewable energy...” again sounds good on the surface, but how about these questions:

- 1) Exactly what objective evidence is there to say that NC actually **needs** such renewable energy? **None.**
- 2) Specifically what objective evidence is there to say exactly **how much** renewable energy is needed by NC? **None.**
- 3) What evidence is there to objectively quantify the net benefits to NC businesses and consumers for additional renewable energy? **None.**
- 4) Is it in NC’s interest to increase renewable energy at any cost? **No.** [*Nowhere in SB3 is there any real protection for NC ratepayers for excessive costs resulting from this additional renewable energy.*]
- 5) Is it in NC’s interest to increase renewable energy and incur reduced reliability to the grid? **No.** [*Nowhere in SB3 is reliability considered.*]
- 6) If renewable energy was an economically viable source of electricity, why is a mandate needed to force it on utility companies?
- 7) Why does the state feel it has the right to mandate a particular commercial product on its citizens?
- 8) Where is the scientific assessment that proves that the state’s mandate of renewable energy on its businesses and citizens is a net technical, economic and environmental benefit? **There is none.**

d - “Provide improved air quality and other benefits to energy consumers and citizens of the State” continues to sound good on the surface, but how about these questions:

- 1) Exactly what objective evidence concludes that throughout NC there is a pressing **need** for such improved air quality? **None.**
- 2) Specifically what objective evidence is there to say exactly **how much** improved air quality is needed across NC? **None.**
- 3) What SB3 provisions are there to quantify the improved air quality to NC (e.g. what before-and-after measurements are required)? **None.**
- 4) Is it in NC’s interest to improve NC air quality at any cost? **No.** [*Nowhere in SB3 is there any legitimate protection for NC ratepayers for excessive costs resulting from this additional improved air quality.*]
- 5) Is it in NC’s interest to improve air quality at the expense of reduced reliability to the grid? **No.** [*Nowhere in SB3 is reliability considered.*]
- 6) Is there a scientific assessment that proves that NC’s mandate of renewable energy on its citizens will improve air quality? **No.**
- 7) What are the “other benefits” vaguely alluded to in item “d”? **Unknown.** [*If they are important, why are they not specifically itemized in SB3?*]

I’ve provided answers based on what I can find. If I’ve missed anything, please let me know. The conclusion is that H681 will not undermine anything of value regarding SB3’s four justifications for its passage – as there were no proven benefits to begin with. Instead, H681 saves NC businesses and citizens from the financial and environmental downsides of SB3 (as explained above).

Appendix B: Sample Studies About the Merits of State RES's

- 1., 2. & 3. [North Carolina \(2009\)](#) & [North Carolina \(2013\)](#) & [North Carolina \(2015\)](#)
4. [Pennsylvania \(2012\)](#)
5. [Wisconsin \(2013\)](#)
6. [Maryland \(2011\)](#)
- 7., 8. & 9. [Maine \(2012\)](#) & [Governor's Letter \(2013\)](#) & [2014](#)
10. [Michigan \(2012\)](#)
11. [Delaware \(2011\)](#)
12. & 13. [Kansas \(2012\)](#) & [Kansas \(2015\)](#)
14. [Montana \(2011\)](#)
15. & 16 [Illinois \(2012\)](#) & [Illinois \(2014\)](#)
17. & 17. [Oregon \(2011\)](#) [also a [video \(2013\)](#)]
19. [New York \(2012\)](#)
20. [Missouri \(2012\)](#)
21. [New Mexico \(2011\)](#)
22. [Colorado \(2011\)](#)
23. [Ohio \(2011\)](#)
24. [California \(2013\)](#)
25. [Arizona \(2013\)](#)
26. [New Hampshire \(2015\)](#)
27. & 28. [Minnesota \(2007\)](#) & [Minnesota \(2011\)](#)
29. [RES Consequences in Washington state \(2012\)](#)
30. [RES Trouble in Texas \(2012\)](#)
31. [West Virginia Votes to Repeal its RES \(2015\)](#)
32. [The High Cost of RES Mandates \(2012\)](#)
33. [The Status of RES's in the States \(2011\)](#)
34. [Energy Regulation in the States: A Wake-up Call \(2011\)](#)
35. [Do Renewable Energy Targets Make Sense? \(2011\)](#)
36. [The Green Energy Fantasy \(2009\)](#)
36. [Rethink Renewable Energy Mandates \(2011\)](#)
37. [The Great Renewable Energy Rort \(2012\)](#)
38. [Renewable Energies Not A Solution – They Increase Foreign Dependency\(2010\)](#)
40. [A Sensible Strategy for Renewable Electrical Energy in North America \(2012\)](#)
41. [Impact of Tax Policy on the Commercial Application of Renewable Energy\(2012\)](#)

Appendix C: The Legitimacy of Green Jobs Claims

1. [Green Jobs Myths](#)
2. [Unseen Consequences of Green Jobs](#)
3. [How AWEA's Job Claims are Bogus.](#)
4. [Green Jobs Are a Cost, Not a Benefit](#)
5. [The Truth About All Those Green Jobs](#)
6. [The Green Economy Mirage](#)
7. [We Need Wind Subsidies Like We Need VHS Subsidies](#)
8. [The BlackSmith Tax Credit](#)
9. ['Green' Jobs: Shrewd PR, Bad Economics](#)
10. [The Green Subsidy Job Loss Nexus](#)
11. [The Dirty Secret Behind Clean Jobs](#)
12. [When Wind Power Blows, Jobs Will Fall](#)
13. [Dr. Michaels Jobs Testimony 1 and Testimony 2](#)
14. [Wind Energy Jobs: Mysterious Numbers from AWEA \(75,000 claim bogus\)](#)
15. [Wind Energy Job Growth Isn't Blowing Anyone Away](#)
16. [The Myth of Green Jobs](#)
17. [Green Jobs and Economic Blues](#)
18. [Promise from Green Jobs Overstated, Harms Ignored](#)
19. [Losing Jobs with Green Technology](#)
20. [The Green Jobs Fantasy](#)
21. [Growing Green Jobs](#)
22. [Millions of Green Jobs? Beyond the Fantasy](#)
23. [Green Jobs a Cost, Not Benefit, to the National Economy](#)
24. [Green Jobs Aren't Renewable Energy's Value Proposition](#)
25. [Beware Green Jobs, the New Sub-prime](#)

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26. Renewable Energy and the Fallacy of 'Green' Jobs
27. For Every New 'Green' Job, Nearly Four Are Lost
28. Subsidizing Green Jobs is Dumb Economic Policy
29. Feeding The Masses On Unicorn Ribs
30. Green Jobs: Making Society Poorer
31. Don't Count on 'Countless' Green Jobs
32. Green is the New Red: The High Cost of Green jobs
33. The Myth of Green Energy Jobs: The European Experience
34. Murray/Calzada/Stagnaro: Lessons from Europe
35. Spain Tilts At Windmills And Pays The Price
36. Running of the Bull: U.S. 'Green Jobs' Rhetoric Runs Into Hard Lessons From Spain
37. Economic Impacts from Promoting Renewable Energies: The German Experience
38. The Mafia like 'green jobs,' but Italians shouldn't
39. Wind Energy: The Case of Denmark
40. Better Green Jobs: The One-Word Solution
41. The Jobs Are Always Greener...
42. Obama's Green Job Fantasy
43. White House Takes Credit for Bush Wind Jobs
44. The List of Green Energy Failures.
45. Renewable Energy: The Vision and a Dose of Reality.

Consider this very pertinent situation:

Despite having the highest wind development in the western hemisphere,

Texas has had a net loss in green jobs since 2010!

Note: At their request, I gave a talk to NC legislators regarding wind energy (Part 1) and Senate Bill 3 (Part 2), on 11/28/11. Many of the SB3 section slides were about the artificialness of the job claims, which mirrors the findings of the above 45 studies, reports and articles. This is online [here](#).