



As advocates of responsible zoning and land use policies in the context of electric power generation, we offer a new metric we call the "IPR" or Intrusion:Production Ratio.

The IP Ratio cuts to the heart of a major issue many environmentalists have raised with unregulated wind energy deployment. The idea is that generating “some amount” of electricity from any source will damage the scenic value nearby to “some degree.”

This metric works to quantify that degree of visual nuisance on a level playing field. In other words, for every “WATT” of electricity produced, how much landscape value is damaged?

So in particular, annualized average power production in megawatts of any electrical generation device is divided by the number of square miles that device or its byproducts can be potentially seen from. The IP ratio is the inverse, or the visual intrusion per megawatt produced.

The lower this ratio, the less of an eyesore the device creates for each unit of power it produces over time. The metric does not account for maintenance costs, nor planned or emergency maintenance down time. Research is ongoing for these statistics. The metric does not account for the awkward mechanical flailing of turbine blades vs. stationary coal stacks and cloud-like steam plumes, nor the noise the wind turbines create in certain terrain and weather conditions. The metric addresses only whether the device(s) can be seen or not.

**For a typical coal or nuclear facility:**

Visual impact of device and steam/smoke plume is usually between 64 and 100 square miles. Let's use 82 as an average.

The average power production from same device could be between 500 and 1000 MW (megawatts). Let's say 750 MW

The IP Ratio then equals =  $82 \text{ square miles} / 750 \text{ MW} = 0.11$

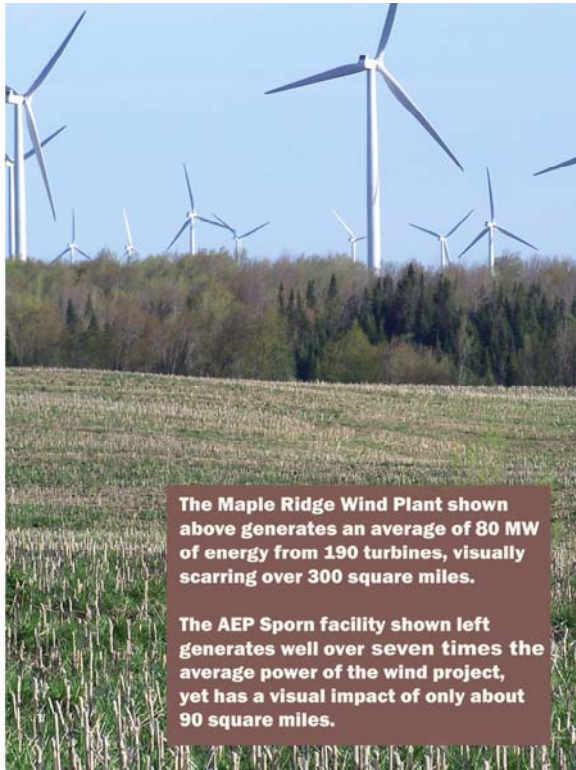
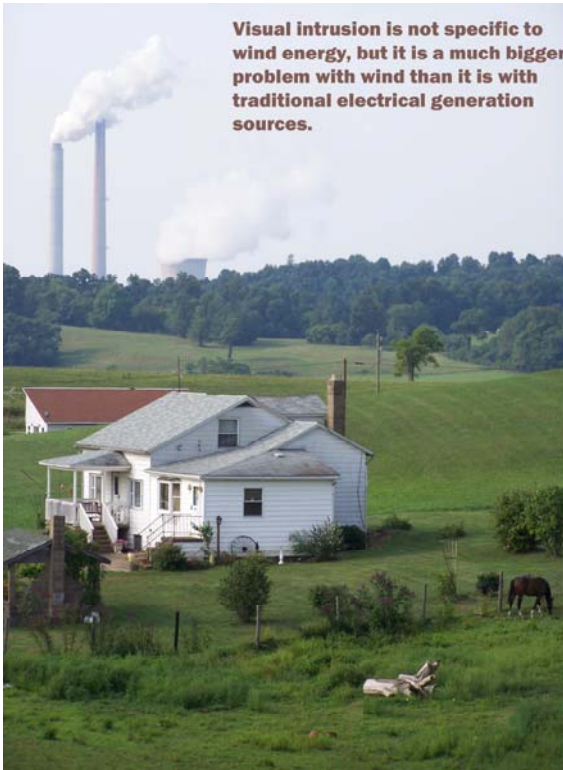
**For a typical grid-scale wind turbine:**

Visual impact of an individual device is between 36 and 64 square miles. Let's say 50. Average power production from same device in Ohio will be between 0.37 and 0.78 MW. Let's say 0.58.

The IP Ratio for the wind turbine equals  $50 \text{ square miles} / 0.58 \text{ MW} = 86.2$

Comparison: A solitary wind turbine is  $(86.2 / .11)$  783 times more visually intrusive than common coal or nuclear facilities.

This number shrinks considerably as a wind power factory is deployed in a line or matrix array. We estimate a typical array of 200, 2MW rated capacity turbines to have an IP Ratio of approximately 3. That's about 30 times as visually intrusive per MW as a coal or nuclear facility.



The US Department of Energy's Energy Information Administration predicts that the U.S. can grow its wind energy infrastructure fast enough to produce 0.86% of our electrical demand by 2030. The same agency reports an annual growth rate in American electricity consumption of about 2%.

We ask all Ohioans why our state and national governments would help to invest nearly a trillion dollars over 22 years to create an unprecedentedly intrusive energy infrastructure that offsets just six months of our annual growth rate in consumption. The stock answer appears to be job creation, but do we not have the leadership and prioritizing skills to find meaningful, efficient jobs for people? Even if the jobs are funded by the state, they could at least be jobs that add meaningful value to our economy and standard of living.

<u>POWER SOURCE</u>	<u>IPR</u>	<u>INTRUSION COMPARISON FACTOR</u>
Coal, nuclear	0.11	(base line)
One, 2 MW wind turbine	86.2	783 times as intrusive as coal, nuclear
200 2MW wind turbines	3	27 times as intrusive as coal, nuclear

SOURCES:

Wind Power Today, US DOE, Office of Energy Efficiency and Renewable Energy, May 2006, page 2.

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