



What the Environmental World Needs is Universal Benchmarking in the Fight Against Global Warming

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BENCHMARKING IS FUNDAMENTAL TO ACHIEVING CHANGE

→ Benchmarking is the process of comparing your performance metrics to industry best practice and/or best practices of other industries. The primary goal is to make improvements that lead to doing things better, faster and cheaper.

Benchmarking involves identifying the best performers and comparing your results to theirs in order to learn how well the best in class perform and, more importantly, how they do it. Almost every commercial firm routinely uses benchmarking to guide its practice.

Most governments today agree that global warming is a huge challenge, with a potential for disastrous consequences if we don't act. They also agree that our use of water and energy needs to be more efficient and needs to have less of an environmental impact. Our homes and city buildings are a big part of the problem—they are responsible for over 70% of some cities' environmental footprints— and yet we don't know how they compare individually with one another. There are no benchmarks.

Do you know if you use a 'normal' or 'large' amount of electricity in your daily life? What is a normal amount? What is normal in the U.S.? What is normal in Europe? How big is the difference? Why is there a difference? Do you use more water than the average in person your city? Do you throw out much more garbage? Does your home or office require more energy than its neighbours to operate?

These are the first questions a business would ask if it were given the task of becoming more environmentally efficient. Yet, with all the discussion on global warming, we have no benchmarks to guide us to a more efficient lifestyle.

To take an example, Zerofootprint studied a university campus and found a student residence within a stone's throw of others— buildings all used for the same purpose of housing students— that was using five times more electricity per student. Guess what a manager in a Fortune 500 company would do with such information?

When we benchmarked schools, we found some with energy footprints per square metre that were 30 times worse than others in the same district. We have also seen new buildings that have a LEED Gold environmental building certification underperform buildings that are older and have no such rating.

If we are to deal effectively with energy and water and their environmental impact on global warming then we need universal benchmarking to give people the tools they need to guide their efforts.

THE POWER OF UNIVERSAL BENCHMARKING

→ Why universal? Because much of the footprint of our cities comes from the collective operation of all our schools, offices, shops and houses. And it is the sum total of the changes in each and every one of them that we will need.

We need the benchmark numbers to motivate change. Without them, how will we measure progress? How will we create the most effective policies and incentives?

We can draw an interesting parallel with what we have already done with cars and fuel consumption.

In the U.S. until 1970, gasoline was extremely cheap and abundant and so almost no attention was paid to the efficiency of cars. People simply didn't care. And then along came OPEC and the oil crisis and a rude awakening. Gas was suddenly more expensive and the security issues around energy dependence came to the fore. How did we deal with this? Guess what – we used benchmarking!

The Environmental Protection Agency (EPA) published a requirement for all cars to be benchmarked using a standard methodology. Yes, we all know that there are approximations in the standard way of measuring a car's performance. But we also know that the EPA benchmark stickers we see on all new cars are meant for comparative purposes. They are also useful for policy purposes because we can use them to define norms. By measuring the performance of all cars in this way, the U.S. Government could simply state a policy that required auto manufacturers to achieve an average fleet consumption of 25 miles per gallon by a certain date. And, when President Obama recently wanted to raise the bar for the energy efficiency of U.S cars all he had to do was change one number – the benchmark. As a result, by 2015 all manufacturers will be required to have a fleet average of 35 miles per gallon or more.

So benchmarking has become a valuable tool in combating fuel inefficiency. We need to apply this same kind of thinking to our buildings and the environment.

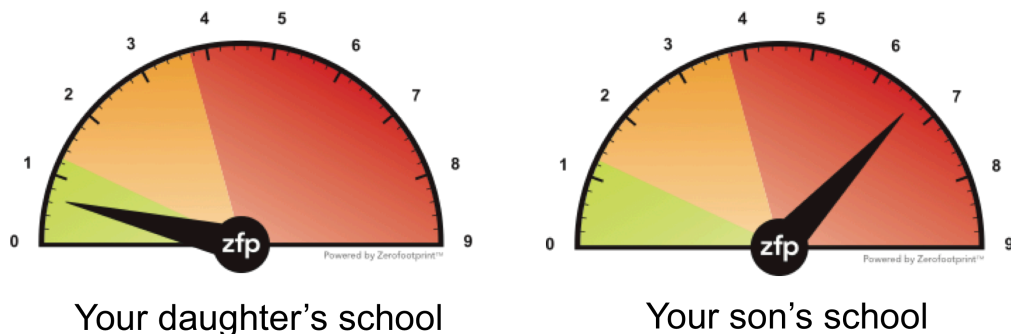
START WITH BUILDINGS

→ We propose starting with buildings for two reasons – the wealth of utility/energy data available and the fact that they are such a big part of the problem. And we propose taking an 80/20 approach. Let's get 80% of the way there on all buildings rather than 100% of the way on just a few buildings. This will enable us to achieve massive coverage quickly and cheaply and dive into greater detail (the last 20%) when and where it is warranted.

Calculating the footprint of a building is like going to the doctor for an examination. When we visit the doctor, they usually check our key health indicators— temperature, blood pressure, heart rate, etc. – before deciding if we need an MRI scan. The scan will give a lot more detail of our internal condition, but it would also cost a whole lot more. Meanwhile, the key health indicators can identify a large proportion of the cases where there is a medical condition that needs attention. Utility bills are like key health indicators. We get large amounts of useful information quickly and cheaply. By setting our sights on covering 100% of buildings (where we do a partial calculation of each building's individual footprint) rather than 10% of buildings (where we do a full calculation of their footprint) we give ourselves a far better chance of making a real impact on carbon emissions and water use.

Zerofootprint has embarked on an effort of universal benchmarking of buildings based on utility information that is mostly readily available and audited. It is a simple idea – first we measure, which enables us to compare, which ultimately leads to change.

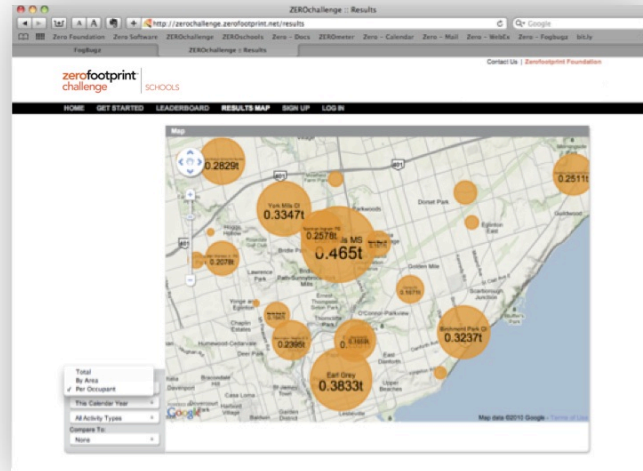
WHAT WE'RE DOING FOR SCHOOLS → Here is how we do it for schools:



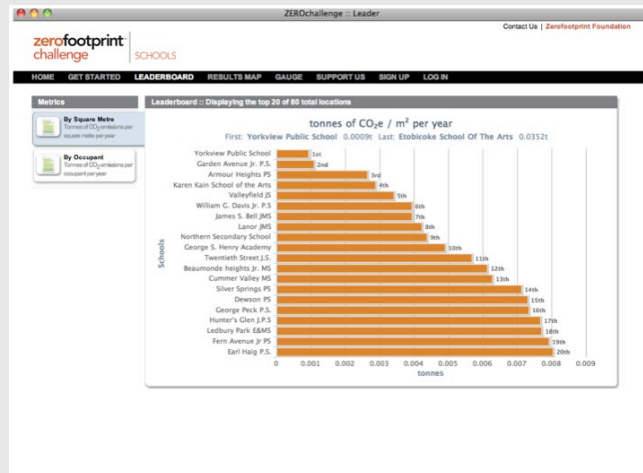
We use simple graphics to create norms. A gauge is divided into three zones. The green zone is where the top third of schools lie, the yellow zone is the middle third, and the red zone is the schools with the worst performance. Clearly, children, teachers and administrators at your child's school will feel pressure to move out of the red zone. To see an instance of this for schools in Toronto look at:

<http://zerochallenge.zerofootprint.net>

We also use other simple graphics to show how schools compare. Larger bubbles correspond to higher footprints.



Or, we show the top 20 schools in a leader board.

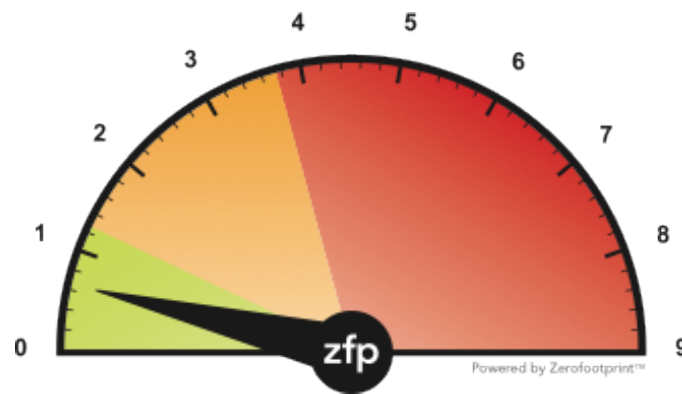


We also allow for a few different metrics– such as footprint per student or footprint per unit area - that expose different information. When used in conjunction, they paint an accurate picture of how close to or far from the norm a school might be.

It becomes immediately and patently clear which schools are underperforming and which are outperforming the norm. (The norm, or median, is also easy to calculate.)

Armed with these tools, schools can make changes and measure their effect. This gives added motivation for change. The easy-to-calculate and highly visible measures also allow for competitions between schools to improve their performance. We also recognise the fact that a school that is a poor performer might not have had much say in how it got there. In that case, we can measure success on the percentage change achieved and not on the absolute rank.

UNIVERSAL APPEAL → These exact same tools and ideas may be used for other types of buildings – homes, hospitals, universities and commercial buildings of different grades. Imagine a simple gauge, such as the one below, indicating the energy efficiency ranking of a house or a commercial building.



Something as simple as universal benchmarking could have a major effect on behaviour. And since reducing energy consumption is synonymous with reducing cost, it could have a major effect on cost as well.

ABOUT ZEROFOOTPRINT → Zerofootprint is a socially responsible enterprise with a mission is to apply technology, design and risk management to the massive reduction of our environmental footprint. We operate both in the for-profit and charitable domains through two entities, Zerofootprint Software and Zerofootprint Foundation using shared technology. Visit us at www.zerofootprint.net.