



Practice Greenhealth's Healthcare Energy Impact Calculator <http://www.practicegreenhealth.org/tools/eic>

The Healthcare Clean Energy Exchange's **Energy Impact Calculator** (EIC) was created to increase health care professionals' understanding of the health impacts and costs of their facility's energy use, and to enable health care energy purchasers to make business decisions on energy efficiency projects and renewable energy purchases based on a fuller understanding of energy's true costs. It's available at: <http://www.practicegreenhealth.org/tools/eic>

Based on EPA and other peer-reviewed data, the EIC estimates the health impact of energy use, such as premature deaths, chronic bronchitis, asthma attacks and hospital ER visits, on a per the kilowatt hour/year basis. Users enter their electric utility (NERC) region and the kWh a facility uses, and the EIC displays the number of incidents, the healthcare facilities' dollar costs for treating them, and their external societal costs. It is expected to include thermal loads later in 2009.

A typical 200 bed hospital in the coal-powered Midwest using a 7,000,000 kWh year, can see it is responsible for over \$1,010,000/year in negative societal public health impacts (\$0.14/kWh), and \$107,000 per year (\$0.01532/kWh) in direct health care costs. This can significantly change what constitutes the "best price" on their energy buy. As the pressure for institutional transparency increases, decision-makers can see conventional or "brown" energy may not be the best deal, especially if they include not only direct costs, but related health care costs, community benefits, reputation in the community, senior management and trustee fiduciary responsibility/liability, climate change risk, etc.

The accuracy of any projection of public health benefits to be derived from clean energy purchases and energy efficiency measures --whether those benefits are avoided health incidents, direct clinical savings or indirect health care benefits to a community-- depend on knowing how many kWh a facility, campus or system is using, and where it is located. The amount of emissions, particulate matter and contribution to greenhouse gases will depend on what type of fuel is used to run the electric power stations. Coal is considered the "dirtiest" and contributes the most, followed by fuel, oil, and natural gas. Electric power generated from renewable sources, such as wind and solar, are the cleanest. Some power grids may be up to 21 times dirtier, i.e. Ohio compared to California.

An institutional healthcare version, enabling benchmarking and multi-facility tracking will be available to Practice Greenhealth members in the second half of 2009.

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Here's an example:

EPA data on health impacts of electricity generation, adjusted for the Commonwealth of MA's electric utility grid fuel mix, indicate that the state's 14,891 acute care beds are responsible for an estimated:

	Annual Quantity	Right to Emit Pollutants ⁴	
SO2 (Tons):	707.4	\$387,600 per year	
NOx (Tons):	156.5	\$461,600 per year	
CO2 (Tons):	207,512.5	\$6,640,400 per year EU valuation ⁵	
Carbon (Metric Tonnes):	51,342.0	N/A	
Mercury (lbs):	4.9677	\$322,900 per Year	
	Number of Incidents/Year	Societal Value/EPA ^{1,7}	Direct Medical & Other Costs ^{2,8}
Premature Mortality	2.2	\$14,857,465	\$658,789 per year
Chronic Bronchitis	1.4	\$662,183	\$169,419 per year
Hospital + ER Visits	2.0	\$26,182	\$20,845 per year
Asthma Attacks	45.1	\$2,785	\$2,658 per year
Respiratory Symptoms	2,153	\$78,344	\$78,344 per year
Work Loss Days	397	\$72,375	\$67,292 per year
Mercury Related Health Impact ³	NA	\$695,023	\$695,023 per year
Total Value/Cost (in 2008) ⁶		\$16,394,357	\$1,692,370 per year
Value of Unintended Societal & Direct Health Impacts per kWh		\$ 0.03336	\$ 0.00344

(Source: Healthcare Clean Energy Exchange, *Energy Impact Calculator*)

If these facilities purchase certified clean energy, all these numbers fall to zero; clearly the best price on conventional "brown" power may not be the best deal for healthcare in the state, especially if the sector looks at full costs, and considers public health issues.

FREQUENTLY ASKED QUESTIONS

Question: Why was the EIC developed?

Response: To help healthcare professionals understand the implications of their energy use, and to make explicit the moral and economic basis for energy efficiency and clean energy projects/purchases.

Question: How was the EIC was developed?

Response: The US EPA and other government bodies such as Northeast States for Coordinated Air Use Management (NESCAUM) have been documenting electric power plant emissions for many years, breaking them out by their regions in the electricity grid and their fuel mix. The EPA especially has then been measuring and calculating the health impacts of these emissions, especially particulate matter related to respiratory ailments. For the EIC, we organized this peer-reviewed data by NERC region, correlating known emissions by region and incidents per emission with that regions' electricity output, to get a projected health impact per kilowatt hour for the identified health problems.

Question: What does a hospital learn from using the EIC?

Response: The hospital will learn the health impacts and various illness rates caused by their electric energy practices as well as estimate of the amount of certain major green house Gases emitted associated with their electric energy practices. With this information, they will be able to evaluate whether the fiduciary, financial and political risks warrant consideration relative to climate destabilization and energy issues into their strategic decisions. It is hoped it will increase senior management support for creating master energy plans that include strong initiatives around energy efficiency and clean energy purchases.

Question: Are there plans to enhance the EIC capabilities?

Response: Yes. The EIC has already been converted from a spreadsheet to a publically available web application, <http://www.practicegreenhealth.org/tools/eic>, and a new version slated for release in the summer of 2009 will enable members of Practice Greenhealth to:

- Aggregate, store and retrieve data across a health system or collection of facilities,
- View the potential positive impacts of reductions in energy use or clean energy purchases,
- Download a customized executive summary suitable for showing to key decision-makers,
- Include the health impacts of heating and cooling loads.
- Much more...