



the campaign for  
environmentally responsible  
health care

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HEALTH CARE WITHOUT HARM-  
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**Health care is on the front lines of environmental, energy and climate issues due to:**

- Our mission; we are the only sector sworn to "First do no harm." Energy and climate have deep impacts on public and individual health, and...
- Because extreme weather events, air quality and other factors impact facility operations and clinical services at the same time we are reinventing ourselves to deliver care more effectively and efficiently, and with much greater emphasis on prevention, and...
- Our own facilities' and supply chain's energy intensity, and...
- Energy is our biggest cost after labor and pharmaceuticals.

Health care is also the Commonwealth and Boston's largest employers (454,000 / 100,000 respectively), and Boston's largest real estate holder with over 23 million owned square feet. While statewide figures are not available, Boston health care consumes about 700 million kWh, 8.6 million therms of natural gas, 82 million ton/hours of chilled water, and 2.7 MBtu of steam annually, and that doesn't include significant leased space.

**With this energy profile, you might expect the health care sector to be strongly supportive of bringing more gas to the region, but health care has many reasons to assert the primacy of public health concerns, energy/GHG reductions, and to oppose pipelines sized to over-supply our region.** These interconnected, overlapping reasons include:

1. Public health impacts from individuals, to communities, the state, region, nation and world,
2. Its contribution to dangerous, rapid climate destabilization and significant GWSA compliance costs compared to energy efficiency and other wedge strategies,
3. Its poor value in light of integrated, longer term regional strategies, especially more cost-effective non-pipe alternatives,
4. Unnecessarily high costs for health care, businesses, communities and citizens, particularly as the result of exposure to global market prices, lack of price hedging, and the already-increasing reverse flows of Marcellus gas from east to west,
5. The direct environmental impacts of construction and operations,
6. Natural gas is grossly over-valued as a low greenhouse gas "bridge fuel" when methane and other decay rates are properly accounted for: <https://mitei.mit.edu/news/assessing-climate-impacts-energy-technologies> and <http://onlinelibrary.wiley.com/doi/10.1002/ese3.81/abstract>
7. Highly questionable industry and federal assessments of Marcellus shale (and other) natural gas production.

**Health Care Sector Reasons to Oppose Excessive Pipeline Development**

**Natural Gas' Public Health Impacts** can be estimated using the Healthcare Energy Impact Calculator (EIC) [www.eichealth.org](http://www.eichealth.org), which is widely used and respected in health care, and based on data from US Environmental Protection Agency, the US Department of Energy and peer-reviewed environmental health science.

Every year, just 1 billion cubic feet (bcf) natural gas consumption will cost the Commonwealth and other places it is burned at least 71 cents per MMBTU in societal costs, and 8 cents per MMbtu in direct medical treatment costs, or around \$265 million and \$30 million respectively.

**FIGURE 1**

From EIC v2.0: Some (but not all) annual health impacts of burning 1 (one) Bcf/day.

Emissions		Health Impacts			
Pollutant	Pounds*	Impact	Incidents per Year	Societal Value	Direct Medical and Other Costs
CO2 carbon dioxide	44,697,007,719	Premature Mortality	35.325	\$238,712,394	\$10,585,534
CO carbon	6,216,657	Chronic Bronchitis	22.312	\$10,554,311	\$2,700,070
CH4 methane	3,531,061	Hospital + ER Visits	32.837	\$432,250	\$344,574
Nox nitrogen oxide	40,947,051	Asthma Attacks	724.47	\$43,583	\$41,550
N2O nitrous oxide	1,243,331	Respiratory Symptom	32720	\$1,190,129	\$1,190,129
SOx sulfur oxide	230,738	Work Loss Days	6374	\$1,159,990	\$1,079,049
TNMOC total non-methane org	870,332	Mercury Related	N/A	\$13,276,510	\$13,276,510
Pb Lead	183				
Hg Mercury	95				
PM10 particulate matter ≤10 mi	2,727,040	<b>Total</b>	<b>N/A</b>	<b>\$265,369,167</b>	<b>\$29,217,416</b>
VOC volatile organic compour	870,332	<b>Unintended Societal &amp; Direct Health Impact Costs per MMBtu</b>		<b>\$0.71</b>	<b>\$0.08</b>
GWPP Global warming potentie	45,146,248,256				

These sobering numbers omit the health, environment, water quality and climate destabilization impacts and costs of fracking itself, system leaks, compressor stations and related pipeline infrastructure during both construction and operation.

**Clinically speaking, it is impossible to have healthy populations on a sick planet.** The World Health Organization estimates climate change is already causing 150,000 deaths/year worldwide. That says nothing of the non-mortal health impacts, such as many injuries, and those listed above. NED gas' estimated Global Warming Potential of over 99 billion pounds cannot be ignored. And, from a health care mission/public health point of view, the location of the harmed people is irrelevant.

The Hippocratic Oath says, "First do no harm." There is no geographical limit in that oath, no exemption because those harmed might be beyond immediate sight. We find it morally unacceptable to disregard health impacts and costs that might be incurred elsewhere, i.e. from gas fracked or burned out of state. There are also moral, spiritual, mission and legal dimensions to our stewardship, just as there are to the responsibilities of all public servants.

**We can only ignore the health issues at our serious peril.** The Lancet Commission, perhaps the world's most authoritative medical organization and publication, wrote in June, 2015:

*"A siloed approach to protecting human health from climate change will not work...the time when fuel switching could decarbonise the global economy sufficiently quickly to avoid dangerous climate change has almost certainly passed. It is increasingly difficult to justify large-scale investment in unabated gas-fired infrastructure."* --"Health and climate change: policy responses to protect public health" -- <http://www.thelancet.com/commissions/climate-change-2015>

*Such impacts (and their interactions) are unlikely to be trivial and could be sufficient to trigger a discontinuity in the long-term progression of humanity. Whilst the poorest and most vulnerable communities might suffer first, the interconnected nature of climate systems, ecosystems, and global society means that none will be*

*immune. Indeed, on the basis of current emission trajectories, temperature rises in the next 85 years may be incompatible with an organised global community. --Ibid*

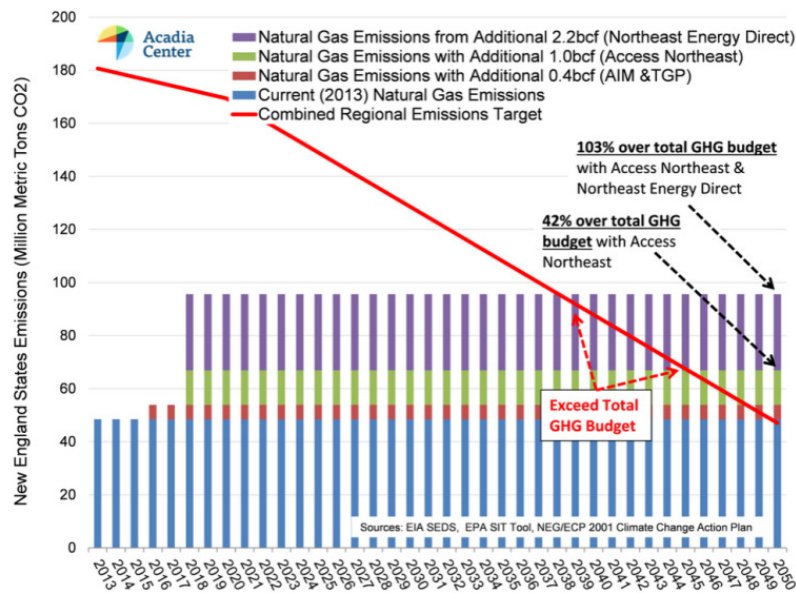
And Vivek Murthy, US Surgeon General, said in June, 2015 at the Whitehouse Summit on Climate and Health, "Climate change is a current and pressing threat to human health."

Just last week, April 19, 2016, the American College of Physicians' issued an urgent call for deep action on climate change, including reducing fossil fuel use: <https://www.acponline.org/acp-newsroom/climate-change-threat>

FIGURE 2 below shows the share of New England’s combined annual greenhouse gas ‘budgets’ that emissions from various proposed additional natural gas pipelines would consume. Acadia Center wrote of their graph

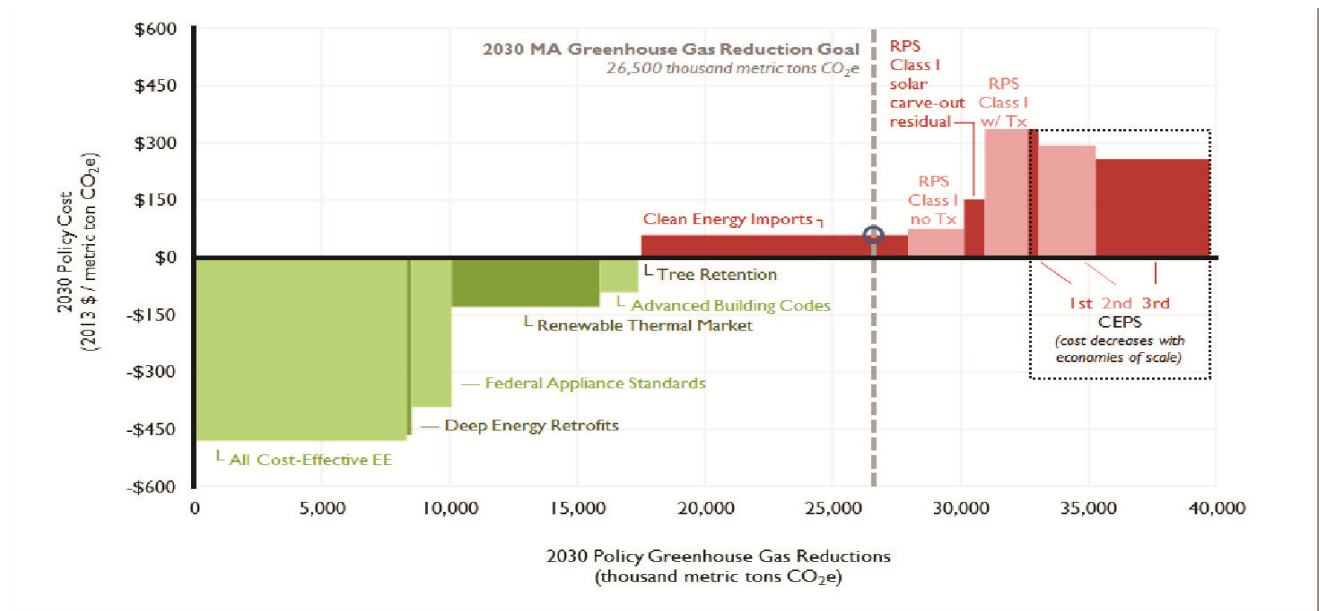
*"These ‘budgets’ represent the greenhouse gas emissions that states can produce and still achieve statutory targets. Current (2013) levels of natural gas combustion for heating, power generation, and industry would produce emissions in excess of the region’s entire greenhouse gas budget in the year 2050. This means that without any increase in pipeline capacity, natural gas alone would eat up the region’s entire greenhouse gas budget, leaving no allowable emissions for transportation, industry, heating oil, or propane. Assuming similar utilization rates for new pipeline capacity, the already-approved Algonquin Incremental Market and Tennessee Gas Pipeline expansions due to come online in 2016 would consume a greater portion of this budget. Access Northeast would cause the region to exceed the emissions budget in 2045, and be 42 percent over budget in 2050. If Northeast Energy Direct is also constructed, the total regional greenhouse gas budget would be exhausted in 2039, and emissions from natural gas alone would be 103 percent over the binding targets that states have established."*

**FIGURE 2**



And, even if compliance can somehow, miraculously, still be achieved without leaving this gas in the ground, Dr. Stanton’s testimony DPU docket #14-86 shows in FIGURE 3 below, it cannot be cost effective compared to many alternatives. Massachusetts marginal abatement cost curve for GWSA compliance in 2030 is:

**FIGURE 3**



○ The marginal policy for 2030 is Clean Energy Imports at \$59 per metric ton CO<sub>2</sub>e, in 2013 dollars.

Source: Exhibit EAS-16

Stanton's graph demonstrates not only energy efficiencies' and renewable energy cost-effectiveness, but as demonstrated above, they are essential to the health and economic well-being of the Commonwealth, 3) Because there is much evidence that the 'need' for more gas is being overstated by those with undue financial and/or political interests in natural gas infrastructure and sales, the EFSB and other decision-makers need to con of its citizens, and to health care cost containment.

**Never forget that it is scientifically and medically impossible to have healthy people and communities if we continue to destroy the foundations of human health --our land, air, water and other natural resources-- however unintentionally or regrettably for short term gains. Please consider the health impacts and costs.**

The Baker Administration and the legislature can help all of us make choices that advance the public health, create more local, good paying jobs, help our economy, diversify our energy supply and decrease our energy costs and dependence on fossil fuels. **Please make decisions that set the Commonwealth on a better path. Please oppose gas pipelines as a first step to a better future: a more energy efficient, renewable energy future with robust demand response, a modernized grid, and true market reform.**

We assert, regrettably, that anything less constitutes dereliction of duty and a violation of the public trust.