

**Testimony of the Green Legal and Education Fund Inc.
To the New York State Legislature Joint Budget Hearing on the
2016-17 Executive Budget Proposal on Environmental Conservation
Albany NY - January 28, 2016**

My name is Steve Breyman and I am Secretary of the Board of the Green Education and Legal Fund, which promotes the values of the green movement particularly in the area of ecology. I am an associate professor of Science and Technology studies at RPI; former executive director of Citizens Environmental Coalition; and a former staff member of the NYS Climate Change Office at DEC.

The state budget is where lawmakers lay out their priorities for the coming year. At the top of the list needs to investing in the rapid transition to 100% renewable clean energy with net zero carbon emissions. The Governor's proposed budget falls far short of that mark.

We agree with the Governor's statement in his State of the State address that "New York State has a business and an environmental opportunity. Let's become the international capital for clean and green energy products."

Unfortunately, the Governor's actual proposals do not reflect that bold vision. He "proposes installing solar in over 150,000 homes and businesses and converting SUNY facilities to renewable energy by the year 2020. We can do it and we should." Why shouldn't we convert all government buildings to renewable energy by 2020? And why not try to install solar (or other renewable energy) in all homes and businesses where it is feasible? After all, SolarCity's business model is based on installing solar with no upfront costs to the homeowner since the project will recover its costs in the first 7 years and then turn a profit for the rest of its 20 year lease. Why can't the NY Power Authority initiate such an effort, utilizing some form of public, shared renewable or cooperative ownership? And let the state provide upfront financing to develop community shared renewable projects statewide now that they are approved by the PSC (though the number of minimum subscribers should be reduced from 10 to 2, as California and Vermont does).

100% Clean Green Energy in NYS by 2030 – Fund a Plan to Make that Happen

We urge the state legislature to pass legislation (S5827/A7497) adopting the goal of 100% clean energy by 2030 .This goal is for all energy use – electricity, transportation, heating and coal.

As an initial step, we urge the state legislature to include funding in the state budget for a study on how to achieve such goals, with clear timelines and benchmarks. The state should begin to make the significant investment needed to accomplish such goals (e.g., building out the electric charging stations for electric vehicles).

Scientists say we have to begin now to rapidly reduce carbon emissions to zero over the next 14 years in order to avert catastrophic global warming.

A study¹ by Stanford (Jacobson) and Cornell professors several years ago as part of the effort to prevent fracking for natural gas in New York showed that it is technologically feasible (but challenging) for New York to transition to 100% clean renewable energy by 2030. (This does not include nuclear.) The study found that 4.5 million jobs would be created through the build out, and the resulting cost of electricity would be half that of a fossil fuel energy system.

The COP21 Climate Agreement set 1.5°C as the new global warming limit, as the developing countries were able to prevail upon the industrial carbon polluters that 2 degrees warming would be too catastrophic for much of the planet. The goals that New York have previously adopted first under Governor Paterson in 2009 and more recently by Governor Cuomo were based on the old 2 degrees target. This was a radical change by international leaders but its implications have not yet been grasped here in the US.

The 1.5°C marker pathway is defined as the most challenging mitigation pathway that can still be defended as being techno-economically achievable.² Climate researcher Glenn Peters³ has projected that meeting the 1.5°C target would require a global fossil fuel phase-out between 2025 and 2030, plus a large-scale effort to remove excess carbon dioxide from the atmosphere. Bill McKibben of 350.org says it means: 85-90% of remaining carbon must stay in the ground; Emissions must be reduced by 9-10% per year to reach a de-carbonized world by 2030-2040; and the developed world (us) has to reach net zero emissions in 5-10 years. (See also this [study](#).⁴)

Food and Water Watch recently released a paper⁵ saying that we have to achieve this goal by 2035. The United States could slash greenhouse gas emissions from power production by up to 78 percent below 1990 levels within 15 years while meeting increased demand, according to a new study by NOAA and University of Colorado Boulder researchers.⁶

Professor Jacobson estimates that it will cost \$480 billion to fund the transition to 100% clean energy. Fortunately most of this money would be from private investment that would normally be spent anyway to maintain and upgrade the energy system. We need to increase the investments in renewable energy and conservation.

We need to immediately halt any investments in fossil fuel related infrastructure, starting with the elaborate network of natural gas and oil pipelines, storage facilities, compressor stations, etc., being built in the state. Nor is natural gas a clean alternative to burning fossil fuels. Methane is 87 times more potent short term as a greenhouse gas than carbon dioxide over the relevant 20 year timeframe.

¹ <https://web.stanford.edu/group/efmh/jacobson/Articles/I/NewYorkWWSEnPolicy.pdf>

² <http://www.sei-international.org/publications?pid=2424>

³ <http://www.climatechangenews.com/2015/12/07/scientists-1-5c-warming-limit-means-fossil-fuel-phase-out-by-2030/>

⁴ <http://www.thehindu.com/sci-tech/energy-and-environment/15-degree-climate-ambition-needs-inversion-of-carbon-budget-massive-funding/article7966144.ece>

⁵ <https://www.foodandwaterwatch.org/news/food-water-watch-calls-replacing-burning-fossil-fuels-clean-energy-and-efficiency-2035>

⁶ <http://www.noaanews.noaa.gov/stories2016/012516-rapid-affordable-energy-transformation-possible.html>

Additional capital investments are needed to help improve the ability of the state's infrastructure (subway lines, housing, sewer and water treatment plants, power plants, etc.) to survive the impact of increasing severe weather, starting with storm surges. State funding is meeting a fraction of our climate change needs.

While NYS has shown some important leadership on climate change, progress has been way too slow. Despite a goal under the state's Renewable Portfolio Standard to supply 30% of the state's electricity by renewables by 2015, only 3 to 4% of renewables (wind and solar) has been added over the last decade. 22% of the state's electric energy is renewable, with 19% from long time hydro facilities.

The Governor recently announced that he wants the state to get 50% of its electricity from renewable energy by 2030. As inadequate as this goal is, the \$5 billion in funding over 10 years in the PSC's Clean Energy Fund combined with the Large Scale Renewables program is far short of what is needed to accomplish this. The Clean Energy Fund approved last week by the PSC contains a significant decrease in funding collected from ratepayers of about \$1.5 billion over the next decade. The State legislature should consider how to make up the difference (and increase overall funding). In light of the minimal progress so far in increasing solar as a source of electricity in NYS, it is also a serious mistake for the state to establish a goal to eliminate subsidies for solar.

We recommend that the state's goals for reducing its greenhouse gas emissions be put into law, with clear timelines and benchmarks set through a detailed climate action plan. All state agencies and authorities should be required to ensure that their actions are in compliance with the climate action plan. Local governments should be directed to adopt their own climate action plans as well. Community residents need to be able to impact on the development of such plans.

Evaluating the climate impact (as well as environmental justice) of proposed projects should be made part of SEQRA.

We oppose the Governor's efforts to provide subsidies to coal and nuclear plants. Nuclear power is not a bridge to a clean energy future. Nuclear power plants are not "carbon free." They do not emit carbon or other greenhouse gases as they split atoms during the fission process, but their carbon footprint must be assessed on the basis of their complete nuclear fuel life cycle. Significant amounts of fossil fuel are used indirectly in mining, milling, uranium fuel enrichment, plant and waste storage construction, decommissioning, and ultimately transportation and millennia-long storage of waste. This is apart from the serious financial, environmental and health risks associated with nuclear power, including the problem of long term storage of the radioactive waste.

NYS Should Commit to a Power Purchase Agreement of 5,000 MW of Offshore Wind by 2025, 10,000 MW by 2030

The state has been especially negligent with respect to the development of offshore wind (OSW). Climate scientists agree that we cannot avoid catastrophic climate change without a major OSW program on the east coast. We urge the state legislature to direct the PSC and Governor to make a major commitment to a Power Purchase Agreement of 5,000 MW of OSW by 2025 and 10,000 by 2030.

The University of Delaware, which authored NYSERDA's report on OSW, recently said that the United States has moved backwards in the last decade with respect to wind due to overreliance on market forces. We agree with their assessment.

The NYSERDA report found that the best way to lower costs for offshore wind was to commit to OSW development at scale, rather than on a project by project basis.⁷ It concluded that costs could be lowered as much as 30%. Taking advantage of wind turbine innovations and other technology and industry advances could lower costs by about an additional 20 percent. The NYSERDA report's author added "well-designed policies and actions taken by New York, as well as by other states, can play an essential role in helping New York City and other U.S. East Coast population centers benefit from gigawatts of clean energy that could be generated by deploying wind turbines off the Atlantic coast."

Whatever state builds the first major offshore wind project is likely to attract the infrastructure investment in manufacturing, shipping, ports, and supply chain that will position it to be the center of the offshore wind build out along the east coast. NYPA funded studies show that a single OSW project could generate total economic activity of \$1 billion in sales, 8,700 job-years and \$610 million in wages for New York State.⁸ A 2014 study by Stony Brook University found that if 2,500 MWs of projects were developed, Long Island would get 58,457 construction and operations phase jobs, as well as approximately \$12.9 billion in local economic output.⁹

Further, with the need to avoid future catastrophic events like Hurricane Sandy, there is evidence that an array of windmills off the coast of Long Island can mitigate the incoming force of future hurricanes.¹⁰ Additionally, because of the extended shallow shelf off the Long Island coast, the windmills could actually be sited beyond the view shed avoiding the kinds of controversies such offshore wind placement has caused in the past.¹¹

The federal government says its top priority for the development for OSW is off of Long Island. The Governor's veto of the Port Ambrose liquefied natural gas facility now opens this area up to development. The state did get a grant from the Department of Energy to work with other northeastern states to spur the development of OSW. But NYS continues to lag behind other neighboring states such as NJ and Massachusetts, which recently had a 1,000 MW OSW project proposed by DONG (Danish Oil and Natural Gas), the largest OSW company in the world.¹² New York needs to catch up.

If the PSC and NYSERDA fail to agree to a PPA for OSW (and unfortunately state energy czar Richard Kauffman has stated his opposition), the legislature should enact and fund a Feed in Tariff

⁷ <http://www.nyserda.ny.gov/About/Newsroom/2015-Announcements/2015-03-10-Report-on-Offshore-Wind-Power-for-New-York-Provides-Roadmap-for-Reducing-Costs>

⁸ Economic Impact Assessment: Long Island – New York City Offshore Wind Project. Prepared for NYPA by AWS Truepower and Camion Associates. Contract No. 4500191884. at 10 (November 1, 2010.)

⁹ New York Energy and Policy Institute- Stony Brook University, "Offshore Wind Energy and Potential Economic Impacts in Long Island", 12-13 (Nov. 24, 2014).

¹⁰ <http://news.stanford.edu/news/2014/february/hurricane-winds-turbine-022614.html>

¹¹ http://e360.yale.edu/feature/will_offshore_wind_finally_take_off_on_us_east_coast/2693/

¹² <http://www.utilitydive.com/news/dong-energy-proposes-worlds-largest-offshore-wind-farm-off-massachusetts-c/409139/>

(FIT) program to further promote the development of renewable energy. This approach has proven critical in Germany and other countries that have been world leaders in this area.¹³ China is also using FIT to support OSW development.¹⁴

Increase State Funding for Mass Transit

One area where the state is lagging in reducing its carbon footprint is transportation. Transportation remains a major contributor to climate change. A simple but critical step to take in the 2016 budget would be to significantly increase investment in the recharging infrastructure to support the rapid transition to electric vehicles. The state should immediately begin to electrify its own fleet and provide financial incentives to individuals to purchase similar to California's.

The environmental jewel of the state is of course the NYC mass transit system. There is an estimated \$32 billion in NYC capital needs over the next five years, with nearly a \$100 billion needed over the next 20 years. The recent "deal" announced by the Governor and Mayor falls far short of meeting the MTAs need, let alone the need for more funding for mass transit upstate. Funding needs to be substantially increased.

Fund \$300 Million for Environmental Protection Fund – Without raiding RGGI

We support Governor Cuomo's proposal to provide \$300 million to the critical Environmental Protection Funds. However, we oppose the diversion of RGGI funds to EPF as was done this year and hope it will be discontinued in 2016-17. We also support the \$100 million in proposed funding to help communities deal with their drinking and waste water infrastructure needs, though this falls considerably short of the estimated \$600 million needed annually.

The proposed budget does include \$32.5 million in new funding in the Environmental Protection Fund for climate change mitigation and adaptation, to provide funding for adaptive infrastructure, greenhouse gas management, and resiliency planning programs. We hope that this fund will include a build out of electric recharging stations. It is also important that adaptation efforts address how climate change will continue to progress rather than wasting money in just responding to the "last storm" which will continually be exceeded in size and intensity in the future. Adaptation and resiliency should also focus on restoring natural barriers such as rebuilding wetlands and marshes in flood prone areas.

The Governor has proposed significant investment in infrastructure. The provisions of the 2006 Diesel Emissions Reduction Act passed by the legislature need to be implemented immediately.

Enact a State Carbon Tax; Include Funding in State Budget for a Study

New York needs to adequately price carbon to reflect the true economic, health and environmental costs associated with its use. New York should enact a carbon (greenhouse gas) tax or fee to accomplish this purpose (this needs to include methane).

¹³ <http://www.offshorewind.biz/2015/01/19/offshore-wind-support-schemes-current-status-of-european-support-schemes/>

¹⁴ <http://www.gwec.net/china-introduces-offshore-wind-feed-in-tariffs/>

The NY Times recently editorialized in favor of carbon pricing.¹⁵ This follows up on their prior editorial calls for a carbon tax. After COP21 in Paris, they wrote “Much was said about how the agreement sent a strong “signal” to investors... But the strength of that signal will depend heavily on whether governments are willing to promote such investments while removing the tax subsidies that favor dirtier fossil fuels perhaps to the point of embracing carbon taxes.”¹⁶ See also their Case for a Carbon Tax (June 2015).¹⁷

Many of the world’s leading fossil fuel companies and financiers now support a carbon tax internationally.¹⁸

The biggest obstacle to clean energy is that the market prices of coal, oil and gas don’t include the true costs of carbon pollution. A robust and briskly rising U.S. carbon tax will transform energy investment, re-shape consumption, and sharply reduce the carbon emissions that are driving global warming.

A carbon tax is an “upstream” tax on the carbon content of fossil fuels (coal, oil and natural gas) and biofuels. A carbon tax is the most efficient means to instill crucial price signals that spur carbon-reducing investment. A carbon tax can also be used to recapture some of the costs pushed on to taxpayers and consumers from burning fossil fuels,

The International Monetary Fund estimates that worldwide we provide \$5.3 trillion in annual subsidies to the fossil fuel industry. We need to stop paying to make the world inhabitable for humans. In New York, it is estimated that allowing the burning of fossil fuels increases health care costs by \$30 billion or more while leading to at least 3,000 annual deaths from air pollution.

It would be better to enact a robust national carbon tax. However, since the present Congressional gridlock on climate change makes this unlikely, New York should take the lead and enact a state carbon tax. In Canada, British Columbia has successfully implemented a provincial carbon tax. The tax has helped BC reduce its carbon emissions 3.5 times more than the rest of Canada while their economy performed slightly better than the rest of the country.¹⁹

There are presently two carbon tax bills pending before the state legislature. We actively support A8372 (Cahill) / S6076 (Parker). We selected the various options included in the bill after surveying several hundred climate change activists – we adopted the positions with the most support.

The proposed carbon tax would start at \$35 a ton and then increase in annual increments of \$15 a ton. 60% of the revenues would be rebated to low and moderate income consumers. The remaining forty percent will support the transition to one hundred percent clean energy in the state, to support mass transit to reduce carbon emissions, and to improve climate change adaptation. Such

¹⁵ <http://www.nytimes.com/2016/01/19/opinion/proof-that-a-price-on-carbon-works.html>

¹⁶ http://www.nytimes.com/2015/12/15/opinion/the-paris-climate-pact-will-need-strong-follow-up.html?_r=1

¹⁷ <http://www.nytimes.com/2015/06/07/opinion/the-case-for-a-carbon-tax.html>

¹⁸ <http://www.worldbank.org/en/news/press-release/2015/10/19/leaders-unite-in-calling-for-a-price-on-carbon-ahead-of-paris-climate-talks>

¹⁹ <http://www.carbontax.org/blogarchives/2015/12/17/british-columbias-carbon-tax-by-the-numbers/>

funds shall include payments and subsidies for renewable energy, energy conservation and efficiency measures, improvements in infrastructure, improvements in mass transit capacity, agricultural adaptation measures, protection of low-lying areas including coastlines, and emergency responses to extreme weather events.

At the base rate of \$35, according to Prof. Sara Hsu²⁰ of SUNY New Paltz, the revenues would amount to over \$3.5 billion. In Year Two of implementation, with an increase of \$15 per ton, the revenue would be \$6.2 billion, in Year Three, \$7.9 billion, in Year Four, \$9.5 billion, and in Year Five, \$11 billion. At the last point, revenue would amount to \$14.3 billion. It is estimated that the initial carbon price of \$35 a ton would increase the cost of gasoline by 35 cents a gallon. At \$180 a ton, the cost would rise by \$1.58 per gallon.

We recognize there are differences of opinions as to how to best invest the revenues: offset the regressive nature of any energy tax; do a 100% rebate of the tax to consumers (e.g., 100% fee and dividend); invest in the transition to renewable energy; and to meet other social needs such as job creation. The issue of what revenue options the legislature agrees to is less important than adopting a carbon price high enough to effectively reduce the amount of greenhouse gases emitted.

As an interim step, we urge the legislature to include funding in the state budget for a study of the impact and potential of the various levels and variables for a state carbon tax. Oregon and Massachusetts have conducted such studies.

Oregon's 2013 Carbon Tax and Shift: How to Make it Work for Oregon's Economy²¹ by economists at Portland State University's Northwest Economic Research Center examines a carbon tax based on British Columbia's model. Like BC's, the carbon tax examined for Oregon would be (largely) revenue-neutral: one scenario applies 70% of the tax revenues to cut corporate taxes, 20% to cut personal income taxes, and 10% for reinvestment in industrial energy efficiency programs; the other apportions 50% of the revenues to cut corporate taxes, 25% to cut personal income taxes, and 25% for industrial and residential energy efficiency and transportation infrastructure.

The study concluded that a tax of \$10 per ton would not help Oregon reduce greenhouse gas emissions below 1990 levels. At \$60 per ton, a carbon tax would begin reducing emissions below 1990 levels almost immediately by cut emissions by 26 percent and would raise \$2.35 billion in new taxes. The study's authors dismiss the drag factor at even the highest level — \$150 per ton — as "small." A \$60 per ton carbon tax would raise the price of gas by about 6 cents. Natural gas prices would rise 18 percent and electric prices would rise 9 percent to 30 percent, depending on regional variability.

Governor Cuomo has indicated that he intends to take action in the near term to increase carbon pricing.

New York already has a limited carbon pricing scheme through the Regional Greenhouse Gas Initiative for electrical production. However, the Congressional Research Service²² recently

²⁰ <http://gelfny.org/wp-content/uploads/2015/12/NYSCarbonTaxWhitePaper.pdf>

²¹ <https://www.pdx.edu/nerc/sites/www.pdx.edu/nerc/files/carbontax2013.pdf>

²² <http://www.carbontax.org/blogarchives/2015/10/14/crs-underwhelmed-by-rggi/>

concluded that the pricing was set too low to have any significant impact on reducing carbon emissions. The emission reductions resulted from invested the proceeds from auctioning the carbon permits into renewable energy.

In November, the Governor said he would help create a national "market" for carbon, based on the state's existing RGGI program. The Pope has rejected such markets as subject to Wall St. speculation and schemes. "The strategy of buying and selling "carbon credits" can lead to a new form of speculation which would not help reduce the emission of polluting gases worldwide. ... In no way does it allow for the radical change which present circumstances require. Rather, it may simply become a ploy which permits maintaining the excessive consumption of some countries and sectors," wrote the Pope in *Laudato Si'*, *On Care For Our Common Home*.

In December, the Governor announced²³ that New York and four other states are **exploring** ways to put a price on the air pollution spewing from cars, trucks, trains and other vehicles -- the source of more than a third of greenhouse-gas emissions in the northeastern U.S. The result may eventually be new taxes, tolls or a pollution-trading system that could raise \$3 billion a year or more for mass transit, electric-vehicle rebates and other projects.

Need to Fund a Just Transition for climate

The transition to 100% clean energy will be a tremendous job creator for New York State, as we noted above with respect to the Jacobson study and the potential for OSW. We need to ensure however that the workers and communities most impacted by climate change and the transition to renewables have their economic needs met. For instance, workers laid off due to the closing of fossil fuel plants should have their salaries guaranteed during the transition and be given top priority for job training and new jobs.

A good start is the Governor's proposal for \$15 million in funding for the Clean Energy Workforce Opportunity Program. In order to educate the next generation of clean energy workers, this fund will expand clean technology and renewable energy programs offered by SUNY. In partnership with clean energy businesses located on or near SUNY campuses. We support additional funding for job training programs related to renewable energy.

Labor and environmental justice advocates are developing a set of climate change jobs, just transition and environmental justice proposals that we hope will be released shortly. Below are some points that they are developing that are critical.

- A. New York State should dedicate 30% or more of climate investment into environmental justice and low-income communities.
- B. The state needs to create good local jobs in clean energy and protections for workers impacted by the current transition. Set in law:
 - A "Build the Future" working group that brings together labor, community, business, and other leaders to propose and implement large-scale projects.

²³ <http://www.bloomberg.com/news/articles/2016-01-12/drivers-may-pay-for-next-step-in-fight-against-air-pollution>

- Good job standards (prevailing wage and/or project labor agreements and/or labor peace agreements) and targeted local hiring commitments on climate investments at or above \$1,000,000.
- A “Just Transition” fund to support worker training in new clean energy industries, retirement support for workers in transitioning industries, and short-term local tax revenue losses where energy industry is in transition.

C. New York needs to create an ambitious program to transition the state to a 100% clean energy economy backed by significant funding. Set in law:

- A community-planned Just Transition fund to support workers displaced from transitioning industries, as well as a planned transition from the current reliance on dirty energy to a new clean energy economy that is supportive of localized economies, ecologically grounded, produces community wellbeing, democratizes decision-making, and promotes local control of resources (including land, water, and food systems).
- Programs to ensure the state meets its climate and clean energy goals and does so by prioritizing disadvantaged and impacted communities.

The State Legislature should also step in and correct the problems that have resulted in the underperformance of the Greens Jobs Green NY program. This legislative initiative seeks to create good jobs while energy retrofitting hundreds of thousands of homes. We need stronger legislation to finance these projects out of utility bills and the issue of credit for residents should not be allowed to be a barrier to financing. Utility bills is one of those bills that residents strive to ensure gets paid. (See recommendations by the low and moderate income working group²⁴.)

We support providing funding to enable low and moderate income community groups to intervene in the Reforming Energy Vision proceedings. It is critical that such individuals are able to fully participate in and benefit from the renewable energy future,

Divest Public Funds from Fossil Fuels (A8011 / S5873)

New York State’s pension funds should cease making any new investments in fossil fuel companies and completely divest from them within 5 years. It should immediately divest from coal and from Exxon, which is being investigated by the State Attorney General for allegedly deceiving the public and investors about the reality of climate change. Both Mayor De Blasio and Vermont Governor Shumlin has recently called to divest public pension funds from coal; the latter also proposed divestment from Exxon. The California State legislature voted earlier this year to divest from coal after it was disclosed that the state pension program had lost \$5 billion ²⁵ last year from its investment in fossil fuels.

Hurricane Sandy decimated the New York City and Long Island areas, causing \$65 billion in damage. Sandy was fueled in part by Atlantic waters that were 5 degrees warmer than average, a result of human-induced climate change. And yet, New York City's and State's pension funds for public employees are all invested in coal, oil and gas companies that dump carbon into the

²⁴ <http://www.nyserda.ny.gov/About/Green-Jobs-Green-New-York/GJGNY-Advisory-Council-Reports>

²⁵ <http://thinkprogress.org/climate/2015/08/17/3692190/california-pension-plans-fossil-fuel-losses/>

atmosphere for free, and rig the political system so that they can continue to do so.

As Bill McKibben of 350.org has noted, if it is wrong to wreck the climate, then it is wrong to profit from that wreckage. After Hurricane Sandy, New York City should be a shining light in the fight to combat climate change -- to do that, it's pension funds must freeze and divest from fossil fuels. As of March 2013, almost \$5 billion of New York State pension funds are invested in coal, oil, and gas out of a total of \$160.7 billion.

Divesting all fossil fuels from the New York State pension fund is an act of long-term fiduciary responsibility that will protect the well-being of New York State's pensioners and citizens. We should require SUNY and CUNY to divest from the top 200 fossil fuel companies in the university's college portfolios.

Financial analysts and experts are increasingly worried about the risk of a carbon bubble that will arise if coal, oil and gas reserves become stranded assets. If governments meet their commitment to keep global warming below 1.5°C, they will need to pass regulations that force fossil fuel companies to keep 80% of their fossil fuel reserves underground. The accessibility of those reserves are a major factor in determining these companies' share price. Once the reserves are marked as unburnable, the value of the fossil fuel industry could plummet, to the tune of trillions of dollars.

The State has a fiduciary responsibility to protect the retirement funds of public workers from risky investments. Investing in fossil fuels poses increasing financial risk and loss to the CRF, thus its beneficiaries. The price of fossil fuels dropped after the world leaders at the COP 21 meeting in Paris agreed that the era of fossil fuels had to end.

Falling coal and oil prices, along with renewables now becoming cheaper than burning greenhouse gases, highlights the financial case for rapid divestment. Investors are increasingly voicing their concerns about the fossil fuel industry's long term financial viability, and opposing new capital expenditures aimed at discovering new coal, oil and gas reserves. Investors are concerned about the increasing action by governments' worldwide to restrict and tax the use of fossil fuels.

The State Comptroller has resisted divestment, arguing for shareholder advocacy instead. Certainly it is helpful to use the voting rights of pension to move companies to adopt more environmentally responsible practices. The comptroller should continue to lead shareholder advocacy campaigns to set greenhouse gas emission goals, improve energy efficiency across operations and source more renewable energy. But, it is extremely unlikely that a board of fossil fuel company is going to agree to stop the production of fossil fuels given that it is their core business. Shareholder advocacy is not an effective tool for changing the overall orientation of industries whose business models depend on producing fossil fuels.