



Fiduciary Duty and Environmental Responsibility: Crafting A Low Carbon Response

A Commonfund Whitepaper

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About Commonfund Institute

Commonfund Institute houses the education and research activities of Commonfund and provides the entire community of long-term investors with investment information and professional development programs. Commonfund Institute is dedicated to the advancement of investment knowledge and the promotion of best practices in financial management. It provides a wide variety of resources, including conferences, seminars and roundtables on topics such as endowments and treasury management; proprietary and third-party research such as the NACUBO–Commonfund Study of Endowments; publications including the Higher Education Price Index (HEPI); and events such as the annual Commonfund Forum and Commonfund Endowment Institute.

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Developments in world financial markets seem to occur more quickly every year, requiring ever-higher levels of expertise and experience on the part of investment committees. Climate change is a more slowly-evolving issue that will require a more strategic approach from trustees and investment committees.

Overview

Fiduciary duty is not a fixed concept. Its evolution from the trust law principles that prevailed through the middle of the last century to modern-day portfolio investment practices has been accomplished both by changes in the law, via court decisions and legislation, and by changes in social attitudes and perspectives. In recent decades, fiduciaries have been faced with new challenges from scientists, regulators, stakeholders and others arguing that their duty should be redefined to require consideration of the issues surrounding climate change, environmental degradation and more efficient use of resources. These considerations have introduced a new level of complexity to the fiduciary responsibilities of boards of trustees and investment committees, inviting them to examine responsible investing practices such as socially responsible investing (SRI), integration of environmental, social and governance (ESG) factors into the investment process, and impact investing.¹

The question of whether responsible investing practices expose the institution to the risk of impaired investment performance over the long term is not settled, but in many countries, notably within the European Union, legislation

requiring consideration of responsible investment practices has been in place for several years and assets invested using responsible investing practices are substantial and growing, mainly among European public pension funds and sovereign wealth funds. In the United States, such legal requirements have been absent from the investment picture, but incentive programs designed to promote conservation and the use of alternative energy sources, which have long been in place at the federal level and within or among individual states, have led to a patchwork of regulations and subsidies without — until now — an overarching national framework. Civil society has also played a role, as students and faculty on many U.S. college campuses have focused on the presence in endowments' investment portfolios of assets related to carbon-based or fossil fuels such as oil, coal and gas, demanding that trustees divest the portfolio of these assets.

The divestment campaign is well-organized and articulate, but possible proposed federal regulatory changes will be of more immediate concern to trustees. Two major initiatives — one domestic and one international in scope — have recently brought into sharper focus the steps that may be taken to reduce greenhouse gas emissions in coming years and decades, both in the U.S. and on a global scale. Implementation of the international Paris Agreement on greenhouse gas emissions and the proposed federal Clean Power Plan, both discussed more fully below, could lead to a reduction in the value of carbon-based assets currently

¹ Definitions of these practices can be found in Caplan, Griswold and Jarvis, *From SRI to ESG: The Changing World of Responsible Investing*, Commonfund Institute, 2013. https://www.commonfund.org/InvestorResources/Publications/White%20Papers/Whitepaper_SRI%20to%20ESG%202013%200901.pdf.

carried on the balance sheets of oil-, coal- and gas-related companies. If there is a reasonable possibility that these assets could be revalued downward, owning them at their current value today could be viewed in hindsight as imprudent or excessively risky from a fiduciary point of view.

For fiduciaries that accept this argument, the quandary is how to maintain a diversified portfolio that seeks to maximize long-term, risk-adjusted returns consistent with the institution's investment policy while at the same time responding to the possibility that carbon-based assets may become a material risk to future portfolio performance.

In this paper, we describe the present situation and its implications for the future of carbon-related assets; summarize the investment implications for various categories of energy-related assets; and outline a range of actions that trustees may want to consider in deciding which path to take.

The Regulatory Environment

On August 3, 2015, President Obama unveiled a federal initiative—the Clean Power Plan—which has as one of its main goals a significant reduction in greenhouse gas emissions from the nation's power plants to be achieved by, among other things, setting national limits on carbon pollution from power plants.

On the same day, the Environmental Protection Agency (EPA) issued final Carbon Pollution Standards for new, modified and reconstructed power plants, and proposed a federal plan and model rule to assist states in implementing the Clean Power Plan. This action was the culmination of a series of prior EPA rulings and proposed actions concerning power plant carbon emission standards dating back to 2010.

In a statement, the EPA said that fossil-fueled power plants are "by far the largest source of U.S. CO₂ emissions, making up 31 percent of U.S. total greenhouse gas emissions." The EPA forecast that if the Clean Power Plan were to be fully implemented, by 2030 carbon pollution from power plants would be 32 percent below 2005 levels, emissions of sulfur dioxide from power plants would be 90 percent lower than

2005 and emissions of nitrogen oxides would be 72 percent lower.²

The EPA's authority to propose the Clean Power Plan comes from regulatory powers that were granted to it by Congress under the Clean Air Act. The Clean Power Plan requires states to devise their own programs to make reductions in emissions, with each being given a different goal and having at its disposal various options for hitting its target. Examples of these options, called "building blocks," would include increasing the percentage of a state's electricity that comes from renewable sources (for example, solar and wind); increasing power plant efficiency to generate more electricity at lower emission levels; and switching from coal-fired plants to natural gas-fired plants, which have a lower level of carbon emissions.

The New York Times described the rules as "the final, tougher versions of proposed regulations that the Environmental Protection Agency announced in 2012 and 2014. If they withstand the expected legal challenges, the regulations will set in motion sweeping policy changes that could shut down hundreds of coal-fired power plants, freeze construction of new coal plants and create a boom in the production of wind and solar power and other renewable energy sources."³

The Paris Climate Agreement

A further development with long-term implications for environmental policy is the Paris Agreement on climate change, a voluntary international agreement reached in December 2015. Although its aspirations are higher than those of any previous agreement, the Paris Agreement is not viewed as a complete solution to global warming. The agreement calls for 195 countries, all of which are parties to the UN Framework Convention on Climate Change, to commit to "lowering planet-warming greenhouse gas emissions to help stave off the most drastic effects of climate change."⁴ The aggregate goal is to hold "the increase in the global average temperature to

² U.S. Environmental Protection Agency, "Fact Sheet: Clean Power Plan by the Numbers." <http://www2.epa.gov/cleanpowerplan/fact-sheet-clean-power-plan-numbers>.

³ *The New York Times*, August 2, 2015.

⁴ *The New York Times*, December 13, 2015

well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.”⁵

A significant difference between this agreement and previous efforts is that it requires developing countries as well as developed nations to take some form of action to reduce greenhouse gas emissions, with developed countries providing funding to help developing nations shift to green energy sources. The agreement becomes effective in 2020, but countries are expected to start developing their action plans immediately, leading up to the first of a series of collective reviews in 2018.

The agreement has been deliberately constructed as a hybrid of binding and non-binding provisions, in deference to the fact that a legally binding agreement would almost certainly fail to win ratification by the U.S. Senate, where many question the science of climate change.⁶

While response from industry to the announcement of the Paris Agreement was mixed, some was cautiously favorable. British oil giant BP called the Paris agreement “a landmark climate change deal” and pledged to be “a part of the solution.” The New York Times reflected the view of some when it commented, “If nothing else, analysts and experts say, the accord is a signal to businesses and investors that the era of carbon reduction has arrived.”⁷

The Paris Agreement and the Clean Power Plan, while they address similar issues, have different time horizons. The processes contemplated by the Paris agreement will take decades, while the Clean Power Plan seeks to achieve more immediate results. If implemented, however, the Clean Power Plan will certainly be counted as a major part of any attempt by the U.S. to reach the Paris targets.

Global Carbon Emissions Regulations

Both the Clean Power Plan and the Paris Agreement can be viewed in the context of legislative and regulatory steps taken in other countries. Among the measures currently

5 United Nations Framework Convention on Climate Change, “Adoption of the Paris Agreement”, 2015, p. 22. <https://assets.documentcloud.org/documents/2646274/Updated-I09r01.pdf>.

6 *The New York Times*, December 13, 2015.

7 *The New York Times*, December 14, 2015.

being implemented outside the U.S. are direct fees and taxes, tradable emission permits (also known as cap-and-trade), controls on greenhouse gas emissions, reductions in environmentally harmful subsidies and other voluntary programs.

Among the most widely used measures is a tax on carbon emissions. While the level and structure of such a tax varies considerably from country to country, a number of nations now have one in place. In 1990, Finland became the first country to enact a carbon tax, followed by Sweden the next year. Great Britain introduced a “climate change levy” in 2001 to encourage energy efficiency; Ireland enacted a carbon tax in 2010. In the western hemisphere, the Canadian province of British Columbia implemented an aggressive carbon tax in 2008 while Chile in 2014 enacted the first climate pollution tax in South America. Australia instituted a carbon tax in 2012, but it failed to obtain broad political support and was repealed two years later. The U.S., China and Russia, which are among the largest emitters of CO₂, do not currently have a carbon tax although a few U.S. states and localities have introduced a carbon tax in some form.

Emission standards and regulations similar to the proposed Clean Power Plan can be found in other countries. The Large Combustion Plant Directive (LCPD) is a European Union initiative requiring member states to limit emissions from power plants having a capacity of 50 MW or greater.⁸ In 2014, European leaders agreed to new targets for 2030 that would reduce greenhouse gas emissions by at least 40 percent from 1990 levels and increase renewable energy to account for at least 27 percent of energy consumption. Germany has mandated CO₂ goals that are 40 percent below 1990 levels by 2020 and 80 percent below by 2050. Canada enacted tougher performance standards for coal-fired generating plants in mid-2015.⁹ In 2012, China enacted regulations for both newly-constructed power

8 The LCPD will be superseded by the Industrial Emissions Directive on January 1, 2016. The new regulation replaces several existing measures and strengthens the LCPD.

9 European Environment Agency, “Trends and Projections in Europe 2015: Tracking Progress Towards Europe’s Climate and Energy Targets” (<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>) and Environment Canada, “Reduction of Carbon Dioxide Emissions from Coal-Fired Generation of Electricity Regulations” (<http://ec.gc.ca/default.asp?lang=En&n=976258C6-1&news=D375183E-0016-4145-A20B-272BDB94580A>).

plants and existing power plants, with the strictest standards targeting coal-fired plants.¹⁰

Prior to the Paris Agreement, the U.S. pledged, as part of United Nations climate negotiations, to reduce power plant emissions by 26–28 percent below 2005 levels by 2025. In combination with other measures — including curbs on emissions from light duty vehicles, trucks, the agricultural sector and other measures — the Clean Power Plan has been seen as a key way to fulfill those pledges.¹¹

Timeline, Lawsuits and the Likelihood of Implementation

The Clean Power Plan seeks a 32 percent reduction in power plant emissions from 2005 levels by 2030, but there is also a set of interim goals assigned to each state to promote a gradual reduction in emissions from 2022 to 2030. States can choose from a menu of options for cutting emissions, including making investments in energy efficiency, renewable energy, natural gas and nuclear power, and shifting away from coal-fired power (while, at the same time, discouraging a too-rapid shift to natural gas which could distort markets). Each state has been assigned its own target, in keeping with differences in the states' mix of electricity generation resources. States may combine any of the options in a flexible manner in order to meet their targets, and they may also join together in multi-state or regional compacts to find the lowest-cost options for reducing their carbon emissions, including emissions trading programs. States are required to submit a final plan, or an initial plan with a request for an extension, by September 6, 2016. Extensions of up to two years may be granted by the EPA; the proposal also provides for federal action in the event that a state does not submit a plan.

The Clean Power Plan has many opponents, some from the carbon fuel industry and others whose objections may be founded on economic or philosophical grounds. Many states have formally requested that the EPA delay the rule, introduced bills or resolutions related to the Clean

Power Plan and power plant CO₂ emissions regulations, or vowed to take the administration to court over the new rules. After publication of the final Clean Power Plan in the Federal Register on October 23, a coalition of 24 states filed suit against it. Other critics argue that the Clean Power Plan goes beyond the EPA's authority and some say that, contrary to Obama administration predictions, energy costs for the average household would rise.

Further efforts are currently underway in both the U.S. House of Representatives and Senate to either delay implementation of the EPA's final rule or allow states to forgo submitting an implementation plan entirely. In November 2015 the House voted in favor of two resolutions passed by the Senate disapproving of EPA greenhouse gas rules for power plants, and the House Energy and Commerce Committee approved a non-binding disapproval resolution. President Obama is widely expected to veto any bill that would roll back key provisions of the Clean Power Plan. The proposal is likely to be litigated for years, and its fate may ultimately be decided by the Supreme Court.

Investment Implications

The investment implications of the Clean Power Plan — pending its eventual shape — will take more definitive form once those states that decide to comply with the program begin to announce their implementation plans at mid-year 2016. It is nevertheless possible, even at this date, to contemplate investment consequences for various sectors of the domestic energy industry.

The mix of energy sources used in the U.S. has been changing and will likely continue to evolve. According to the U.S. Energy Information Administration (EIA), in 2013, 39 percent of U.S. electricity was generated from coal, 27 percent from natural gas, 20 percent from nuclear power, 4 percent from wind, and the remaining 10 percent from other renewables that include hydropower, biomass, geothermal and solar.¹² But as an example of the pace

¹⁰ Air Pollution and Climate Secretariat, "China: New Emission Standards for Power Plants," October 2012. <http://www.airclim.org/acidnews/china-new-emission-standards-power-plants>.

¹¹ *The Washington Post*, December 14, 2014.

¹² U.S. Energy Information Agency, "How Is the Fuel Mix for U.S. Electricity Generation Changing?": http://www.eia.gov/energy_in_brief/article/fuel_mix_for_elect_generation.cfm.

at which change is occurring, according to the EPA the U.S. uses three times more wind and 20 times more solar energy today than it did as recently as 2009, though these two combined still account for less than 2.2 percent of total energy consumed in 2014.¹³ Indeed, some sources contend that the 2030 emission reduction goals could have been more stringent given the reduction in greenhouse gases that has been accomplished over the past half dozen years.¹⁴

The Potential for Stranding of Carbon-related Reserves

Because a large proportion of the reduction in emissions contemplated by the Clean Power Plan is expected to come from the closure of coal- and oil-fired power plants, the potential for a devaluation of these assets on the balance sheets of carbon-related companies becomes part of fiduciaries' investment calculation. Proven reserves of coal, oil and natural gas are estimated by the United Nations at 2,795 million tons, but the U.N.'s carbon budget for 2000-2050 contemplates an atmospheric capacity of only 565 million tons before an irreversible level of greenhouse gases is reached, leaving the difference — 2,230 million tons, or 80 percent of current reserves — as unburnable and potentially "stranded". Moreover, fossil fuel companies are constantly engaged in the search for new reserves, which could also become stranded in the future.¹⁵

Coal

Coal is the energy source that is most vulnerable to the changes contemplated by the Clean Power Plan. According to the EIA, coal has the highest carbon content of all the fossil fuels, with carbon dioxide emissions from

13 U.S. Environmental Protection Agency, "Obama Administration Takes Historic Action on Climate Change/Clean Power Plan," August 3, 2015. <http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceec8525735900400c27/c5df9981993c6df785257e96004d4f14!OpenDocument>.

14 Union of Concerned Scientists, "Most States Well on the Path to Comply with Final Clean Power Plan," August 13, 2015. http://blog.ucsusa.org/most-states-well-on-the-path-to-comply-with-final-clean-power-plan-844?_ga=1.117892490.2002111899.1441032133.

15 Sedlacek, "The Crossroads Where Mission and Endowment Meet", Insight Magazine, Commonfund, Fall 2014, p. 5 (https://www.commonfund.org/InvestorResources/Publications/INSIGHT/InsightFall14_FullIssue.pdf), citing data from the Carbon Tracker Initiative (<http://www.carbontracker.org/>), a London-based nonprofit organization).

coal combustion representing 24.5 percent of total U.S. greenhouse gas emissions in 2012. The agency notes that "The combustion of coal . . . adds a significant amount of carbon dioxide to the atmosphere per unit of heat energy, more than does the combustion of other fossil fuels."¹⁶ In addition, coal deposits have a longer average reserve life than other types of fossil fuels, leaving them more exposed to the risk that regulations or legislation could make their extraction unprofitable and effectively deem thermal coal a stranded asset.

Petroleum

The outlook for the stranding of oil assets is more difficult to assess, since the price of oil is notoriously cyclical and the commercial viability of many individual fields is vulnerable to price fluctuations. Indeed, world petroleum markets have confounded investors in the recent past, as the price of West Texas Intermediate (WTI) crude began a steady descent from a peak of \$106 per barrel in June of 2014 to an average of \$59 per barrel in December and continued to slide in 2015 to a level below \$40 per barrel. At that time, oil futures contracts for delivery in 2016 and 2017 were trading below their lows earlier in the year, indicating that investors, traders and oil companies estimate that the glut will continue. On the other hand, the International Energy Agency estimates that a combination of under-investment and demand from both developed and developing nations may drive crude oil to \$200 a barrel in nominal terms by 2030, the target year for the Clean Power Plan.¹⁷

Natural Gas

According to the EPA, compared to the average air emissions from coal-fired generation, natural gas produces half as much carbon dioxide, less than a third as much nitrogen oxides and one percent as much sulfur oxides at the power plant.¹⁸ For this reason, it is viewed as a potential

16 U.S. Energy Information Administration, "Carbon Dioxide Emissions for Coal". http://www.eia.gov/coal/production/quarterly/co2_article/co2.html.

17 World Watch Institute, "Energy Agency Predicts High Prices in Future," September 3, 2015. <http://www.worldwatch.org/node/5936>.

18 U.S. Environmental Protection Agency, "Air Emissions, Natural Gas, Coal". <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html>.

transitional fossil fuel. The U.S. was the leading producer of natural gas in 2013, accounting for 19.8 percent of world production.¹⁹ American consumption of natural gas has risen at a 2.4 percent annual rate over the past decade, according to the EIA, while demand for coal has fallen by 2.7 percent annually over the same period.²⁰ Modern drilling techniques and the sheer volume of natural gas in the ground mean that natural gas will likely be economical under a number of pricing regimes.

Solar and Wind

Solar- and wind-powered generators could benefit from implementation of the Clean Power Plan not only because of their low carbon content but also because, over time, they could potentially reduce the cost of power production due to improved technology, manufacturing advances and larger economies of scale. Until states begin to unveil their compliance plans in 2016, however, the degree to which these technologies will ultimately benefit is difficult to quantify. According to the Solar Energy Industries Association, the U.S. solar industry had a record year in 2014, growing 34 percent over 2013 to reach an installed base of nearly 7,000 MW. The association expects another 20,000 MW of capacity to come online in 2015 and 2016.²¹ Future expansion, however, is highly dependent upon renewal of the federal investment tax credit for solar installations, which is set to expire at the end of 2016 unless Congress acts to extend or modify it.

The U.S. ranks second in the world for installed wind capacity but first in wind energy production²², according to the U.S. Department of Energy (DoE). Total capacity in 2014 stood at 66 GW, including utility-scale wind energy

¹⁹ International Energy Agency, "Key World Energy Statistics 2014". <http://www.iea.org/publications/freepublications/publication/KeyWorld2014.pdf>.

²⁰ U.S. Energy Information Administration, "Analysis of the Impacts of the Clean Power Plan," May 22, 2015. <http://www.eia.gov/analysis/requests/powerplants/cleanplan/>.

²¹ Solar Energy Industries Association, "U.S. Solar Energy Industry Achieves Record-Shattering Year," March 10, 2015. <http://www.seia.org/blog/us-solar-energy-industry-achieves-record-shattering-year>.

²² The U.S. is second to China in installed capacity but leads in kilowatt-hours produced and delivered by wind energy. Global Wind Energy Council, "Global Wind Statistics 2014". http://www.gwec.net/wp-content/uploads/2015/02/GWEC_GlobalWindStats2014_FINAL_10.2.2015.pdf.

production and distributed wind capacity.²³ There are some 74,000 wind turbines in use across all 50 states.

Nuclear

There are currently 99 licensed nuclear power plants in the U.S., according to the U.S. Nuclear Regulatory Commission (NRC), with applications under review for 21 new reactors at 13 different sites.²⁴ The nuclear services industry could benefit from the Clean Power Plan if states with existing nuclear plants choose to maintain them instead of terminating operations and if the new plants are brought on line.

Considerations for Fiduciaries

The Paris Agreement and the Clean Power Plan clearly raise important investment considerations for institutional investors. In addition, beyond portfolio considerations, practical issues suggest themselves.

For colleges and universities:

- Will the Paris Agreement and the Plan mean higher or lower energy costs for institutions that maintain extensive campus facilities?
- What will the impact be on tuition and fees?

For private and community foundations:

- How will the proposed regulations affect the various sustainability initiatives that many of these institutions have supported?
- How will private and community foundation grantees be affected?

These questions, and the implications for portfolio risk and return, are difficult to answer definitively in the current highly fluid decision-making environment. While there will

²³ Distributed wind systems are typically owned by a local entity, for example a school district or farm, that uses most of the electricity on site.

²⁴ U.S. Nuclear Regulatory Commission, "Location of Projected New Nuclear Power Reactors". <http://www.nrc.gov/reactors/new-reactors/col/new-reactor-map.html>.

doubtless be a wide range of ways in which states do or do not implement the proposed regulations, the announcement of the Clean Power Plan has set in motion a process to which fiduciaries should be attentive, particularly with respect to the effect of the regulations — whatever their final form — on the state or states in which they operate.

Outlook for Your State

As we have noted, state goals — both the interim 2022-2029 goals and the final 2030 goal — vary and are all unique. By 2030, however, all of the state targets fall in a range between 771 lbs./MWh (pounds of carbon dioxide per megawatt-hour of electricity generated) and 1,305 lbs./MWh, according to the EPA. There are two exceptions: Vermont and Washington, D.C., will not be subject to the rules, as they do not have any large fossil-fuel powered plants. In addition, the EPA has chosen not to make Alaska and Hawaii subject to Clean Power Plan requirements at this time because of their unique grid situations, but specific goals for these states are expected in the future. States can also work together, using mechanisms like emissions trading, to lower the overall carbon intensity of electricity generation.

The EPA has modeled various ways in which a state can comply with the Clean Air Act, such as using more natural gas, which as noted produces half as much carbon per unit as coal; keeping existing nuclear plants operational; expanding its commitment to renewables; and promoting energy-efficient retrofitting and rehabilitation of existing commercial, residential and industrial facilities.

Review of Investment Policy

From the point of view of a nonprofit fiduciary, the place to begin an analysis of the implications of the Clean Power Plan is by reviewing the institution's investment policy statement (IPS). Here, assuming that the board is open to or actively considering the possibility of a low carbon portfolio, a number of questions arise:

- How will introduction of a low carbon strategy affect the asset allocation targets and ranges in the policy portfolio?

- How might the portfolio's current expected returns and sustainable spending rates be affected?
- How will implementation of a low carbon strategy affect risk targets?
- What other portfolio changes might be needed to meet the institution's required rate of return?
- Are there implications for the institution's mission?

Fiduciaries may want to consider, as one potential solution, a well-diversified, multi-asset low carbon investment portfolio that reduces risk by systematically limiting allocations to carbon-based assets while maintaining the diversification benefit that comes from a lower level of controlled exposure.²⁵

Cost of Electricity

There is already debate about whether the Clean Power Plan will lead to an increase or decrease in the price of electric power. The cost of this ubiquitous resource will obviously have an effect on the cost profile — and, perhaps, the viability — of every type of organization, including nonprofits. While electricity costs will clearly vary from state to state, as they do now, there is no debate that wind and solar energy currently cost more per kilowatt hour than coal or natural gas, and that additional long-range high-voltage transmission lines will likely be needed to carry electrical power from the wind and solar belts where it is generated to the large urban and industrial centers where it is consumed. In addition, power production from wind and solar is variable and unpredictable, so new technology to provide storage capacity will be needed to ensure reliable delivery to the grid. Certain regions — like the Midwest, which relies heavily on coal for electrical power generation — will be affected more than others.

Depending on their geographic location and on how the Clean Power Plan is ultimately implemented, nonprofit institutions of all types could see higher or lower electricity costs for their existing facilities. There is no consensus

²⁵ For a more detailed description and analysis of such a portfolio, see Gaspar and Gurvich, *Low Carbon Solutions for Long-Term Portfolios*, Commonfund White Paper, 2015.

on the eventual outcome of this process. Some analysts see electricity rates rising in the near term, but ultimately falling once the final 2030 deadline is reached.²⁶ On the other hand, proponents argue that costs will be lower than anticipated and more than offset once benefits to public health from lower CO₂ and other emissions are factored in. They also contend that states have a wide range of tools, such as tax policy, to encourage generators and users of electricity to pursue greater efficiencies.

Sustainable Energy Projects

Educational institutions and other nonprofits with energy-consuming campuses or facilities may elect to extend a low carbon policy beyond the investment portfolio to their own physical plant. Many educational institutions have already taken steps to reduce the carbon footprint of their campuses by reducing dependency on fossil fuels and taking actions to improve air and water quality and reduce solid waste.

Here are some steps that educational institutions have taken:

Renewables

According to data from the Association for the Advancement of Sustainability in Higher Education (AASHE), U.S. colleges and universities increased their installed solar photovoltaic capacity by 450 percent from 2009 to 2012. Over the same period, the median size of the average solar installation project at U.S. schools increased six-fold. The EPA's 2015 list of the top 30 college and university users of renewable energy accounts for 1.9 billion kilowatt hours of renewable energy use, the equivalent of 185,000 average American homes annually.²⁷

The cost of on-site renewable energy sources, such as roof-top solar energy facilities, has decreased substantially

26 Union of Concerned Scientists, "How Much Will the Clean Power Plan Cost?," August 5, 2015. <http://www.uconsa.org/global-warming/reduce-emissions/how-much-will-clean-power-plan-cost#.Ve72xRFViko>.

27 U.S. Environmental Protection Agency, "Top 30 College and University List," July 27, 2015. <http://www.epa.gov/greenpower/toplists/top30ed.htm>.

in recent years. Many states, municipalities and utility companies offer incentives and rebates for renewable energy projects. Renewable energy certificates (RECs) are, in some states, tradable credits created from renewable energy production.

Wind turbines pose siting issues, as they require open space and can be unsightly. But some institutions have been able to address these problems. For example, in 2004 Carleton College in Northfield, Minnesota became the first college in the U.S. to install a utility-scale wind turbine, rated at 1.65 MW, siting it about two miles from campus. In 2011, the college installed its second wind turbine and situated it about a mile from campus.²⁸

Rehab and Retrofit

Older buildings represent significant opportunities for energy cost reduction, not to mention improved space utilization. The ENERGY STAR program estimates that the average commercial building wastes 30 percent of the energy it consumes.²⁹ High efficiency HVAC systems, high R-value insulation, LED lighting systems and daylight harvesting, and computer-controlled thermostat adjustments are among the wide range of ways to reduce energy costs in older buildings.

New buildings or those going through a major renovation may be designed, constructed and operated in accord with guidelines from the U.S. Green Building Council. Many institutions have achieved Gold or Silver LEED (Leadership in Energy and Environmental Design) certification for their buildings from the council.

Geothermal

A 2011 report from the National Wildlife Federation said that more than 160 colleges and universities in 36 states had tapped geothermal energy to cut energy use by 0 to 70 percent and reduce CO₂ emissions.³⁰ The report

28 Association for the Advancement of Sustainability in Higher Education, "Carleton to Dedicate Second Wind Turbine," October 19, 2011. https://apps.carleton.edu/community/news/?story_id=774671.

29 ENERGY STAR, U.S. Environmental Protection Agency, "Save Energy". <https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/save-energy>.

30 The National Wildlife Federation, "Going Underground on Campus," February 2011. <https://www.nwf.org/Campus-Ecology/Resources/Reports/Going-Underground-On-Campus.aspx>.

noted that “the nation’s 4,100 two and four-year colleges and universities spend more than \$20 billion each year on energy (\$5 million per campus on average) . . . buildings are the largest energy users on most campuses.” The most commonly used geothermal option, according to the report, is ground-source heat pumps; others are direct geothermal, aquifer thermal energy storage, lake-source cooling and geothermal electricity.

Cogeneration

A number of public and private institutions have invested in cogeneration facilities, which generate electricity for heating and cooling using waste heat that otherwise would have been discarded, to enable them to meet much or all of their energy needs while reducing emissions. Cogeneration can also create RECs, mentioned above.

Implications for Tuition and Fees

Tuition and fees are already a source of debate on a national level. The average published tuition and fee price for public, four-year institutions is more than 3.2 times its level of 30 years ago, after adjusting for inflation,³¹ and it has been well publicized that total student debt has surpassed \$1.3 trillion. As with other possible future trends associated with the Clean Power Plan, the ultimate effects are unclear. While some authorities believe that electrical rates — already a major campus expense — could rise further over the next few years as the Clean Power Plan is phased in by the states, leading to further pressure to increase tuition, the adoption of renewable sources of energy continues to gain momentum on campus and the prices of crude oil and natural gas have fallen sharply from their 2014 levels.

Implications for Gifts and Donations

Gifts and donations are essential for many nonprofits. Fiduciaries that choose to implement a low carbon investment policy will need to consider how this step may be perceived, both positively and negatively, by potential donors. Donors’ views may be shaped in large part by where they are located; for example, the views of donors in leading

oil-, coal- or gas-producing states may be influenced by their association with these industries.

The Clean Power Plan also has the potential to affect foundation grantees and program beneficiaries. Foundations may find themselves receiving grant applications seeking funds to meet clean energy costs over and above those subsidized by their state or the federal government. For example, a grantee may seek to convert to solar power or renovate its facilities to become more energy efficient. On the other side of the balance sheet, community foundations and other public charities may receive donations from individuals or institutions motivated to fulfill the promise of a cleaner environment.

Summary

The debate over climate change will not be settled soon. Nevertheless, even in the absence of consensus three factors are likely to make the issue a permanently higher priority for the governing bodies of nonprofit institutions:

- The thesis that human activity causes climate change is accepted by many thought leaders and members of the general population;
- Key constituencies, including faculty, staff, students and stakeholders, donors, government and the media, have become increasingly vocal in demanding that action be taken to reduce greenhouse gas emissions; and
- Initiatives such as the Paris Agreement and the Clean Power Plan pose challenges to current industry and investment practices.

Developments in world financial markets seem to occur more quickly every year, requiring ever-higher levels of expertise and experience on the part of investment committees. Climate change is a more slowly-evolving issue that will require a more strategic approach from trustees and investment committees. Importantly, however, it is also an issue for which nonprofit institutions’ long-term perspective fits them well for leadership in the coming decades.

³¹ The College Board, Trends in College Pricing 2015, New York. <http://trends.collegeboard.org/sites/default/files/trends-college-pricing-web-final-508-2.pdf>.

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