

# BEYOND COMPLIANCE

Of the Greater Philadelphia Area

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## Funding for Technology Development

There are many sources of funding and financing for energy projects. Two important Federal US agencies that provide funding include the Department of Energy and the Environmental Protection Agency. Department of Energy funding opportunities include loans for manufacturers of advanced technology vehicles and components, project finance for original research, and financing for equipment upgrades.

The Environmental Protection Agency provides competitive grants and funding opportunities for projects and programs related to air quality, transportation, climate change, indoor air, and other related topics.

EPA also has a P3 (People, Prosperity, and the Planet) Program where teams of college students receive grants to benefit the community by designing environmental solutions to move us toward a sustainable future. This funding is available to public and private institutions of higher education.



## Necessity is the Mother of Invention

Did you know that less than 200 years ago most American homes were lit by whale-oil lamps? How did we, as a Nation, move from depleting our whale resource to utilizing a new fossil fuel resource? It was not a "Save the Whales" campaign, and it did not happen as a result of new laws and regulations. The move was simply market driven. Whales were over hunted and getting harder to find, and as a result the price of whale oil rose. Rising prices made room for competition from other fuel sources and entrepreneurs started selling cheap kits to convert lamps from whale oil to kerosene oil. Within 10 years, almost all demand for whale oil disappeared. The whaling industry sought federal subsidies, but soon the whaling industry was finished. The whale population had been saved by technological innovators and profit-maximizing capitalists. And then, in came the electric lightbulb, and the oil lamp industry met with the same fate (Lovins).

**That is what I like about humans**, we are problem solvers. We have developed technology from the dawn of time to address our needs. We made tools from metal in the ground, and we harnessed fire for heat, light, and nutrition; and now we utilize robotic equipment to keep our workforce and military safe from losing life and limb.

*Your partner for solving environmental, social and governance requirements ... and beyond!*

So, how do we solve today's problems of resource depletion and air pollution created by burning fossil fuels? I would submit that one way that we can solve the problem is in exactly the same way we did in the 1800s – by the think tank of technological innovators and profit-maximizing capitalists.

Here are some examples of new technologies presently being utilized to reduce our dependence on fossil fuels. These technologies focus on one of three simple principles: reducing use, modulating demand, and optimizing supply.

**Doing More with Less:** Who said, "A penny saved is a penny earned?" Well, the same can be true of energy use. By raising energy productivity, you get more work out of the same amount of energy, and thus have to purchase less energy. One method used by the building industry to raise energy productivity is passive design. Passive design is where a building is designed to benefit from natural light, ventilation, and thermal mass. This can be achieved through a combination of orientation (to maximize exposure to north sun), shading (to minimize summer exposure), floor planning, and window sizing and placement, without the use of pumps and fans. But energy can also be saved by doing simple things like turning off your lights, resetting the thermostat, and utilizing different lightbulbs and Energy Star rated equipment (such as washers and dryers).

*"The inattentive whalers were astounded to find they had run out of customers before they ran out of whales."*

– Amory B. Lovins

## About the Author

Donna Switzer is the founder of Beyond Compliance LLC Consulting of the Greater Philadelphia Area, a woman-owned sustainability and environmental, health and safety (EHS) consulting firm that partners with organizations to solve environmental, social and governance (ESG) requirements. Donna is passionate about reducing risks associated with air emissions, wastewater discharges, waste management, and workplace safety. She has worked with a broad range of organizations in chemical, pharmaceutical, manufacturing, construction, insurance, and power sectors in developing, implementing, and evaluating key sustainability and EHS programs.

Donna is an Adjunct Professor at Villanova University and holds the following certifications: Certified Sustainability Practitioner, Certified Professional Environmental Auditor, and Certified Hazardous Materials Manager.

**Adjusting our Demand:** One technology that is being utilized to adjust consumer demand for energy is “smart-grid” technology. This technology enables customers to decide when and how they demand power. For example, the city of New Orleans has developed “SmartView,” an advanced metering infrastructure project aimed at optimizing energy demand. The strategy includes information exchange between the power company and the customer related to power usage and notification during peak-time rebates, equipment upgrades (e.g., lightbulb exchanges), and adjusting customer behavior such as shutting off air conditioning compressors for certain periods of time (Murray).

**Expanding Supply Choices:** Technology exists today to optimize different supplies of energy. These technologies generate energy, during the operational phase of its life cycle, without burning anything. We are all familiar with solar-power and wind-power generation. And new technologies are still being discovered. One very interesting one that is being used and studied in several countries with coastlines, including Australia, Canada, the USA, the UK, and Ireland is harnessing ocean energy. Ocean energy is converted from the energy of waves by using floating structures that use the movement of the water column to act like a piston connected to a turbine or to drive electromechanical energy converters (Davor). By having access to multiple sources of energy supply, a community can have control over energy risk. Energy risk is depending on one supply of energy. There have been some examples of failures (e.g., losing the ability to generate power or losing access to foreign oil supplies) due to reliance on limited energy supplies. The most recent was in Texas where winter storm conditions ravaged alternative energy sources that were not winterized, thus reducing the community’s ability to generate power.

These technologies are not without their issues or shortcomings. They may be cost prohibitive for a majority of the population. Many of the current sources of alternative energies are inconsistently reliable. In some cases, “renewable energy” technologies utilize a prohibitive amount of resources such as precious metals and petroleum-based plastic. In other cases, the benefits of installing a new technology does not benefit the person making the decision to install it.

For example, a builder’s cost to construct a building increases when installing smart controls or passive design, and the cost saving is realized by the building occupant. In this scenario, there is no financial incentive for the builder to install the energy saving technology.

### In conclusion...

This is a call to all creative problem solvers and entrepreneurs to create a market-driven change! How can we take the technologies that have been introduced to the market and make them work better or more reliably? Or, what new way can we generate energy without depleting resources and creating pollution. This is a perfect opportunity to work on solutions without having to argue about political posturing or whether the science supports the claims. The funding is out there. There is profit to be made. Let’s get to it.

If you would like more information about how you can plan for and implement a successful sustainability program, please contact us. We can work with you to develop energy strategies, conduct energy audits, and identify and apply for DOE or EPA grants.

### Resources:

Lovins, Amory B., *Reinventing Fire*, Rocky Mountain Institute. 2011

Murray, Sarah. “How technology can reduce consumption in cities.” *World Economic Forum*. 04 February 2015, <https://www.weforum.org/agenda/2015/02/how-technology-can-reduce-consumption-in-cities/>.

DavorH. “Ocean Energy.” *Our-Energy*. 11 October 2015, [https://www.our-energy.com/ocean\\_energy.html](https://www.our-energy.com/ocean_energy.html).

<https://www.energy.gov/funding-financing-energy-projects>

<https://www.epa.gov/grants/specific-epa-grant-programs>

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Donna Switzer, CHMM, CPEA, CSR-P  
Beyond Compliance LLC Consulting  
P.O. Box 203  
Chester Springs, PA 19425  
610.574.1813 ph  
610.827.2727 fax  
[www.Beyondcompliance.consulting](http://www.Beyondcompliance.consulting)

