

Clean Cut Quarterly

NJARNG Sustainability Newsletter

In collaboration with Rowan University



June 2017 Volume 3 - Issue 2

Support from everyone is vital to successfully reducing our carbon footprint. Read more on page 3.



In this issue....

Recognize this green label?



Learn more about it on page 4.

Some Interesting Projects are Happening...



Check out some inspiring energy projects paving the way in the DoD on page 7.

Reduce, Reuse, Recycle!



Find out how the NJARNG is doing its part to recycle and doing BETTER on page 8.

Energy Reduction Competition

In the last issue of Clean Cut Quarterly, we ranked each facility by its percent reduction in energy use intensity, or **EUI** for the first quarter of FY17 compared to FY16. In this issue we ranked the percent reduction for the first half of the year. The NJARNG goal for annual energy reduction is 2.5%, and every facility is needed to help reach that goal. Look below to see where your facility stacks up and to see which facility is leading the way in percent reduction.

	Facility	FY16 First Half EUI	FY17 First Half EUI	% Reduction EUI
1	Lakehurst CLTF	18	6	67
2	Bordentown WTC	37	28	24
3	Mt. Holly Armory	55	45	18
4	Lawrenceville Armory	26	22	16
5	Trenton Mercer AASF	57	49	14
6	Vineland Armory	47	41	12
7	Freehold Armory	26	25	5
8	Flemington Armory	34	33	4
9	Fort Dix - T3BL	44	43	1
10	Morristown Armory	40	41	-2
11	Hackettstown Armory	28	29	-4
12	Picatinny - FMS #7	6	6	-5
13	Atlantic City Armory	43	46	-7
14	West Orange Armory + CSMS	49	53	-8
15	Lawrenceville, USPF&O	40	43	-9
16	Lawrenceville DMAVA	50	56	-14
17	Cape May Armory	40	46	-15
18	Dover Armory	42	49	-16
19	Jersey City Armory	47	55	-17
20	Teaneck Armory	41	50	-22
21	Woodbridge Armory	34	43	-27
22	Westfield Armory + OMS	28	36	-32
23	Newark Armory	12	16	-38
24	Woodstown Armory	38	53	-41
25	Sea Girt Training Center	55	79	-44
26	Woodbury Armory	12	17	-46
27	Rivendale Armory	28	42	-47
28	Cherry Hill Armory	81	122	-52
29	Somerset Armory + DTMB	33	51	-55
30	Toms River Armory	15	25	-66
31	Tuckerton Armory	24	43	-81
32	Washington Armory	27	49	-86
33	Fort Dix - Headquarters	90	178	-99
34	Hammonton Armory	21	49	-140

Representing Climate Change through Public Art

By: Vincent Ferriola

Venice, the city constructed atop of marshy islands using wooden pillars, mud and marble foundations, was sure to reach an alarming state. Instead of building bridges to connect every island, the early urban planners utilized the canals as the main method of transportation intra-city. As the global temperatures of Earth increase, one can see a proportional rise in sea level. Lorenzo Quinn, Italian artist, decided to address this concern through artwork. The two resin covered polyurethane hands emerging from the Grand Canal intend on raising awareness of the power of humans. Human hands have the ability to ruin and protect, but it's up to the people to decide the action that those hands will take. Although these hands do not have the ability to directly reduce greenhouse gas emissions, public art has the potential to open an eye to the community. One method to address climate change is at the local level. Each person's habits accumulate and have an impact on their surroundings. This is where all aspects of sustainability come in. Solutions must be economically feasible, friendly to the environment, as well as socially responsible. That last component of social engagement is often left out of the spectrum as it is not necessary within the design and construction process. Although this can be seen as the most critical step to gain community acceptance and commitment towards future infrastructure projects. Public art is just one of many ways to allow community members to express their feelings, beautify an area, and raise awareness towards the concerning fate that the world must face if not otherwise addressed.

Quinn has been notified by multiple organizations to temporarily install the 5,000 pound hands at other UNESCO properties, such as Pisa, to demonstrate the power of art and the awareness that must be raised to make a difference.



Green Labels: ENERGY STAR

Green labels, Eco-labels, and green stickers are all names of the labeling system, used voluntarily, to give more information to distinguish the environmentally preferred products. Provided below is just one of many green labels that are used and seen everyday.



ENERGY STAR is the symbol for energy efficiency that helps save money and protect the environment through the use of energy-efficient products.

According to the official ENERGY STAR website, “ the ENERGY STAR label was established to reduce greenhouse gas emissions and other pollutants caused by the inefficient use of energy and to make it easy for consumers to identify and purchase energy-efficient products that offer savings on energy bills without sacrificing performance, features, and comfort.”

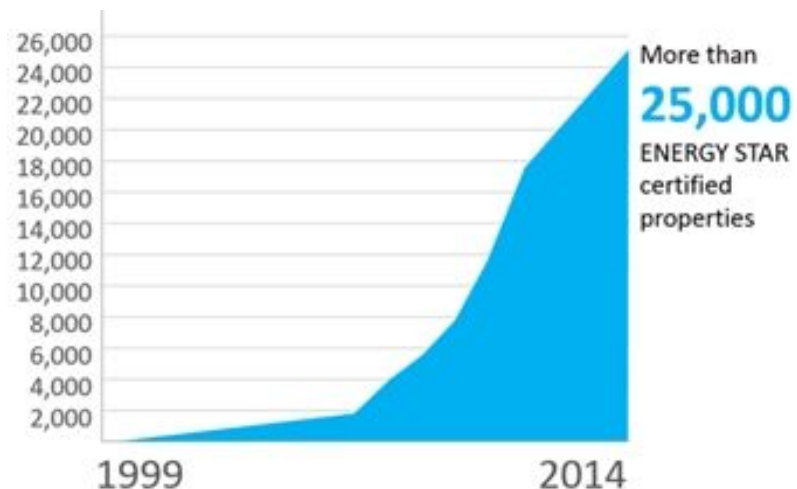
Requirements in order to use the ENERGY STAR label:

- Product categories must contribute significant energy savings nationwide.
- Certified products must deliver the features and performance demanded by consumers.
- If the certified product costs more than a conventional, less-efficient counterpart, purchasers will recover their investment in increased energy efficiency through utility bill savings.



Some examples of energy star products:

- Qualified refrigerators are at least 15% more efficient than the minimum federal efficiency standard.
- Qualified TVs consume 3 watts or less when switched off, compared to a standard TV, which consumes almost 6 watts on average.
- Office equipment that qualifies automatically enters a low-power "sleep" mode after a period of inactivity.
- Qualified light bulbs (CFLs) use two-thirds less energy than a standard incandescent bulb and must meet additional operating and reliability guidelines.
- Qualified furnaces offer a rating of 90% AFUE or greater, which is about 15% more efficient than the minimum federal efficiency standard.



To find out more about the green label listed above and others go to:

<http://earth911.com/home-garden/top-10-green-labels-guide/>

Or read the next issue of the Clean Cut Quarterly in September

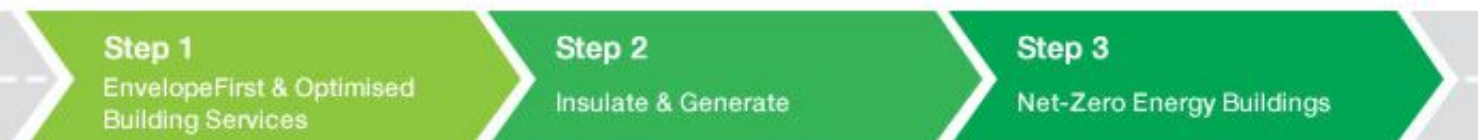
Net Zero Homes and Building

By: Jacqueline Aimino

Would you believe me if I told you there was a 4300-square-foot home located in a residential development in Salt Lake City suburb of Herriman that used zero net energy consumption? This meaning the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site. Well it's real and its not the only one in the world. This house and many others are part of a zero energy project.



The zero energy buildings benefits you in in numerous ways. This upgrade increase your energy efficiency by 60-90% over baseline, you gain knowledge about limiting your energy usage, it reduces carbon emission and the dependence on fossil fuels. During the past 20 years more than 200 reputable projects have started to claim net zero energy balances and are still increasing by the day. Some buildings actually produce a surplus of energy over the year and therefore have gained the title of "Energy Surplus Buildings". On the following page you can learn more about how to save money and energy. In the picture below you can see the basic steps on how to become a net zero building.



Step 1

EnvelopeFirst & Optimised Building Services

The first step to Net-Zero Energy Buildings. Insulation is the most improvement for the least cost.

Step 2

Insulate & Generate

EnvelopeFirst & Optimised Building Services plus integrated LZC technologies.

Step 3

Net-Zero Energy Buildings

Highly energy efficient buildings that are energy neutral over the course of a year.

Some Cost Saving Ideas:

- Dual pane windows fill the house with light to reduce artificial energy-consuming lighting and insure a tight seal so no air can escape or enter.
- The use of larger timbers such as 2x6 timbers will provide more space for insulation
- The use of drywall clips will allow for fewer studs to be used and therefore save cost
- The use of sealants can be places anywhere air of moisture could penetrate to insure for nop air loss
- The ERV (energy recovery ventilator) combines a heat exchanger with a ventilator to warm and cool house using little to no energy. This can be seen in Figure 1 to the right.
- Solar panels can be used as a renewable resources for all types of energy. Figure 2 to the right shows an example of a current house using two solar panels above the deck to circulate water and heat it to 86 degrees as a way to naturally heat any water necessary.
- A tankless water heater is another great option to reduce cost. Pictured in Figure 3 to the right, the water heater provides hot water on demand

There are many other ways to save costs even if the idea of a net zero home sounds expensive!

To find out more on how to become a net zero home or business log on to: <http://www.thezerohome.com/#theaccordion> or <http://www.techhive.com/article/2045771/a-floor-to-ceiling-tour-of-americas-most-energy-efficient-home.html>



Figure 1. Energy Recovery Ventilator



Figure 2. Solar Panels



Figure 3. Tankless Water Heater

Inspiring Energy Projects Across the DOD

Navy's First Solar-Powered Car Charger

In order to achieve energy conservation goals set through various policies and federal legislation, Naval Support Activity (NSA) Mid-South developed a project for the Navy's first solar-powered electric car charging station. The ribbon cutting took place in May 2013. Success of the project was due to a collaborative effort from NAVFAC and CNIC teams. The carport is capable of charging NSA Mid-South's fleet of 17 EVs with solar energy in about four hours, and send excess energy to the Grid. Interesting features include sun tracking and a web-based monitoring system. The carport was part of a \$10 million program to install E85 alternative-fuel stations, solar carports and stand-alone electric vehicle charging stations at Navy installations across the US.



Projects like this charging station help lead the way and lay the groundwork for future energy projects across the DoD. These projects also help the DoD become a more sustainable force, and evolve and modernize operations.

Source: http://www.navy.mil/submit/display.asp?story_id=74465

Battleship NJ Retrofit Can Save \$200k a Year

Three energy efficiency projects to upgrade the historic Battleship USS New Jersey were recently approved by New Jersey Board of Public Utilities, the Home Port Alliance for the USS New Jersey, and the Camden County Improvement Authority. The retrofits are expected

to reduce the ship's energy costs by about \$200,000 annually, that's about 32%! The retrofit involves replacing all lighting with LEDs and replacing the inefficient electric heating system with natural gas-fueled condensing boilers .

Source: <https://www.energymanagertoday.com/sea-change-energy-retrofits-battleship-uss-new-jersey-expected-save-200k-annually-0168730/>



Remember to Recycle!

During the summer of 2016, an environmental intern from Rowan University was assigned the task of reviewing and revising the current recycling programs at 35 NJARNG facilities. The main goal of the assignment was to evaluate the effectiveness of our recycling efforts. Over the course of 3 months, interns travelled to each of the 35 survey facilities to inventory the number of recycling bins versus trash cans and gain a better understanding of how each facility was currently recycling. After all site visits were complete, interns researched different programs and resources which could improve the National Guards already functioning recycling programs. It was determined that even though the National Guard is on the right track with recycling, we could always do BETTER! Remember to do your part and recycle all recyclable goods!



Recycling is very important as waste has a huge negative impact on the natural environment. Harmful chemicals and greenhouse gasses are released from rubbish in landfill sites. Recycling helps to reduce the pollution caused by waste. Recycling saves energy because the manufacturer doesn't have to produce something new from raw natural resources. By using recycled materials we save on energy consumption, which keeps production costs down. Recycling reduces the amount of waste entering current landfills. Recycling also reduces the need for more landfills.

- **It conserves raw materials** – making new products out of recycled materials reduces the need to consume precious resources. So recycling helps reduce the need for raw materials and protect natural habitats for future generations.
- **It saves energy** – using recycled materials in the manufacturing process consumes considerably less energy than that required for producing new products from raw materials.
- **It helps protect the environment** – recycling reduces the need for extracting (mining, quarrying and logging), refining and processing raw materials all of which create substantial air and water pollution. As recycling saves energy, it also reduces *greenhouse gas* emissions, which helps to tackle climate change.
- **It reduces landfill** – Existing landfill sites are filling up fast and there is very limited space for new ones.

The New Jersey National Guard, Bureau of Environmental Management is committed to environmental excellence in supporting the missions of the Department of Military and Veterans Affairs as well as the New Jersey National Guard. The bureau manages a large variety of programs ranging from endangered species to cultural resources to hazardous waste. For more information on Recycling please contact Sarah Helble at Sarah.Helble@dmava.nj.gov 609-530-7134



Meet The Energy Interns!



Jacqueline Aimino

Civil & Environmental Engineer, Senior

Artist at heart, hiker, and sports player. Interested in learning sign language, hiking the Appalachian Mountains, and running a marathon.

Vincent Ferriola

Civil & Environmental Engineer, Junior

Urban adventurer, human rights activist, and electronic music enthusiast. Hoping to find the cure to ignorance and disrespect.



Jiayun Shen

Civil & Environmental Engineer, Senior

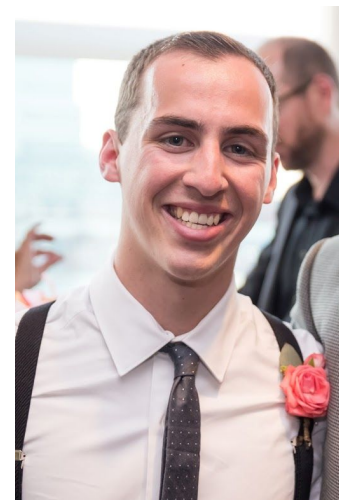
World traveler, cook, and self proclaimed movie critic. Hope to go back to Thailand and go on an African safari in the near future.



Jeff Dib

Civil & Environmental Engineer, B'17

"I gained a lot from being an intern. From learning new technologies and gaining skills in programs we are not taught in the classroom, to more practical benefits, like presenting at DMAVA HQ for military members, I benefitted much from my experience. I now work at Langan Engineering but I wanted to thank you for this opportunity!"



NJARNG Sustainability Team

Want to know more?

❖ Contact Us!



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