Clean Cut Quarterly

NJARNG Sustainability Newsletter

In collaboration with Rowan University

December 2016 Volume 2 - Issue 4

Clean Cut just won two awards! Read more on Page 4!

In this issue...

CW5 Tom Comyack

He's retired now, but he's done so much in his 19 years as the Chief of the NJARNG Plans and Programming Branch and he's had an impact on hundreds of college students, learn more about his career on **page 2**.

Who's the Biggest Loser?

The FY16 NJARNG Energy Reduction Competition results are in! Find out which facility came out on top on **page 5**!

How to stay warm this cold Winter!

For tips, head to **page 6**.

Thank you, Chief!

CW5 Thomas Comyack has been the Chief of the Planning and Programming Branch in the Construction and Facilities Management Office (CFMO) of the NJ Army National Guard (NJARNG) for the past 19 years. In this position, he has played a significant role in developing and shaping NJARNG's energy program. Under his leadership, the NJARNG has become a national leader in terms of renewable energy. Due to his ability to find funding, the NJARNG currently has over 2.4 Megawatts of installed solar photovoltaic generation capacity. These systems provide free and clean electricity for approximately 18% of NJARNG's electricity demand.

CW5 Comyack has helped many individuals inside and outside of the NJARNG to become successful and was always willing to share his successes and failures for all to learn from. Thinking outside of the box resulted in new ways to expand his ideas and fund projects. One of his unique strategies for increasing education and awareness around sustainability issues was to hold regional Energy Summits across the country. These summits helped educate Energy Managers from across the country about energy conservation and were instrumental in helping many of them develop long range energy projects for their own states.

One of CW5 Comyack's greatest impacts was the relationship he established with Rowan University. Due to increasing federal requirements and decreasing funds, he worked with Rowan University in 2009 to develop an internship program that uses students to complete tasks for the NJARNG. This allowed the NJARNG to meet its federal requirements within the available budget and provided the students with real-life project experience that employers look for.

Chief Comyack's GIS pilot program with Rowan began 7 years ago and has steadily grown in size and scope due its success and contributions to the CFMO and NGB. Rowan developed a Bachelors of Science GIS degree program in 2012 with support and justification from DMAVA and the GIS intern program. Since the initial GIS pilot program, DMAVA and Rowan have created 3 other intern partnerships to support engineering and environmental programs. Historically these contracts would have been awarded to traditional A&E firms, but Chief Comyack's vision for using a local public University to cut contracting costs for DMAVA, while creating a professional-educational experience for students, resulted in a remarkably rewarding experience for all involved.

During his career, CW5 Comyack has had an enormous impact on not only the NJARNG, but all the Army National Guard (ARNG) States and Territories. He is very humble when it comes to the success of the NJARNG energy program and his commitment to the ARNG can be seen by the dedication and constant drive to plan and program more projects and willingness to help other installations succeed.
Over the past decade, CW5 Comyack has helped the NJARNG achieve the following energy awards:

- 2016 – Federal Energy and Water Management Award (Program)
- 2016 -- Army Community Partnership Award
- 2013 – Secretary of the Army Energy and Water Management Award for Exceptional Performance (Renewable/Alternatives)
- 2011 – Secretary of the Army Energy and Water Management Award for Small Group (Renewable/Alternatives)
- 2011 – USACE Sustainability Awards Certificate of Participation
- 2010 – Federal Energy and Water Management Award (Project)
- 2009 – Secretary of the Army Energy and Water Management Award for Small Group (Renewable/Alternatives)
- 2006 – Secretary of the Army Energy and Water Management Award for Small Group (Renewable/Alternatives)

Heroes get remembered, but legends never die.

Receiving Recognition

It was an exciting week for the Clean Cut Campaign Team! We received two awards in recognition for our hard work. On Tuesday, December 6, 2016, the team, which included Chris Moore, MAJ Jeanne Falchek (standing in for COL Mike Lyons), CW5 Tom Comyack, Vernon Hicks, Joan McCloskey, Sam Valentine, and Dr. William Riddell, were invited on a tour of the Pentagon, followed by a recognition ceremony for the 2016 Army Community Partnership Program. This was the inaugural year for the award, which was creating to commend those partnerships which find creative solutions to challenges during times of constrained resources. The NJARNG-Rowan Partnership was one of only 5 partnerships awarded at the ceremony.The next day, Wednesday, December 7, 2016, the Clean Cut Campaign Team received a Federal Energy and Water Management Award, sponsored by the Federal Energy Management Program (FEMP) and the Interagency Energy Management Task Force. These awards recognize individuals and organizations for significant contributions to energy and water efficiency within the federal government.

Right: Lieutenant General Gwen Bingham, Assistant Chief of Staff for Installation Management, and The Honorable Patrick J. Murphy, Under Secretary of the Army, presented the team with the Army Community Partnership Award. *Photo Credit: Sean Kimmons*

Below: Dr. Timothy Unruh, Director of FEMP, and David Friedman, Assistant Secretary for Energy Efficiency and Renewable Energy (Acting), presented the team with 2016 Federal Energy and Water Management Awards.

Energy Reduction Competition: Results Are In!

In the past three issues of Clean Cut Quarterly, we ranked each facility by its percent reduction in energy use intensity, or ***EUI***. In the last issue, we used the first three quarters of results for each fiscal year, but in this issue, the results for the entire year, were used to determine percent reduction in EUI. 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.

Rank	Facility Name	FY15Q1+Q2+Q3+Q4 EUI	FY16Q1+Q2+Q3+Q4 EUI	% Reduction
1	Cape May Armory	114.2	38.6	66
2	Hammonton Armory	15.1	6.2	59
3	Atlantic City Armory	31.3	13.6	57
4	Westfield Armory + OMS	24.3	14.9	39
5	Cherry Hill Armory	27.4	16.9	38
6	Fort Dix - T3BL	44.4	30.2	32
7	Washington Armory	49.4	37.5	24
8	Tuckerton Armory	3.1	2.4	23
9	Lawrenceville DMAVA	100.3	83.8	16
10	Lakehurst CLTF	29.8	25.4	15
11	Morristown Armory	12.5	10.7	14
12	Toms River Armory	12.9	11.1	14
13	Bordentown WTC	35.6	31.4	12
14	Sea Girt Training Center	39.9	35.9	10
15	Riverdale Armory	16.9	15.6	8
16	Woodbridge Armory	11.9	11.3	5
17	Lawrenceville, USPF&O	22.4	21.3	5
18	Teaneck Armory	11.9	11.4	4
19	Trenton Mercer AASF	45.8	44.1	4
20	Vineland Armory	30.1	29.6	2
21	Flemington Armory	38.1	37.3	2
22	Dover Armory	12.1	11.9	2
23	Woodbury Armory	10.5	10.4	1
24	Fort Dix - Headquarters	29.0	29.8	-3
25	Freehold Armory	34.0	35.2	-4
26	Hackettstown Armory	30.1	33.5	-11
27	Newark Armory	7.4	8.6	-16
28	Mt. Holly Armory	14.8	17.3	-17
29	Jersey City Armory	9.4	12.7	-35
30	Somerset Armory + DTMB	17.4	24.5	-41
31	West Orange Armory + CSMS	8.6	12.7	-48
32	Woodstown Armory	28.3	46.0	-63
33	Picatinny - FMS #7	8.0	13.8	-73
34	Lawrenceville Armory	12.7	24.1	-90

The winner for the FY16 NJARNG Energy Reduction Competition is the…

CAPE MAY ARMORY!

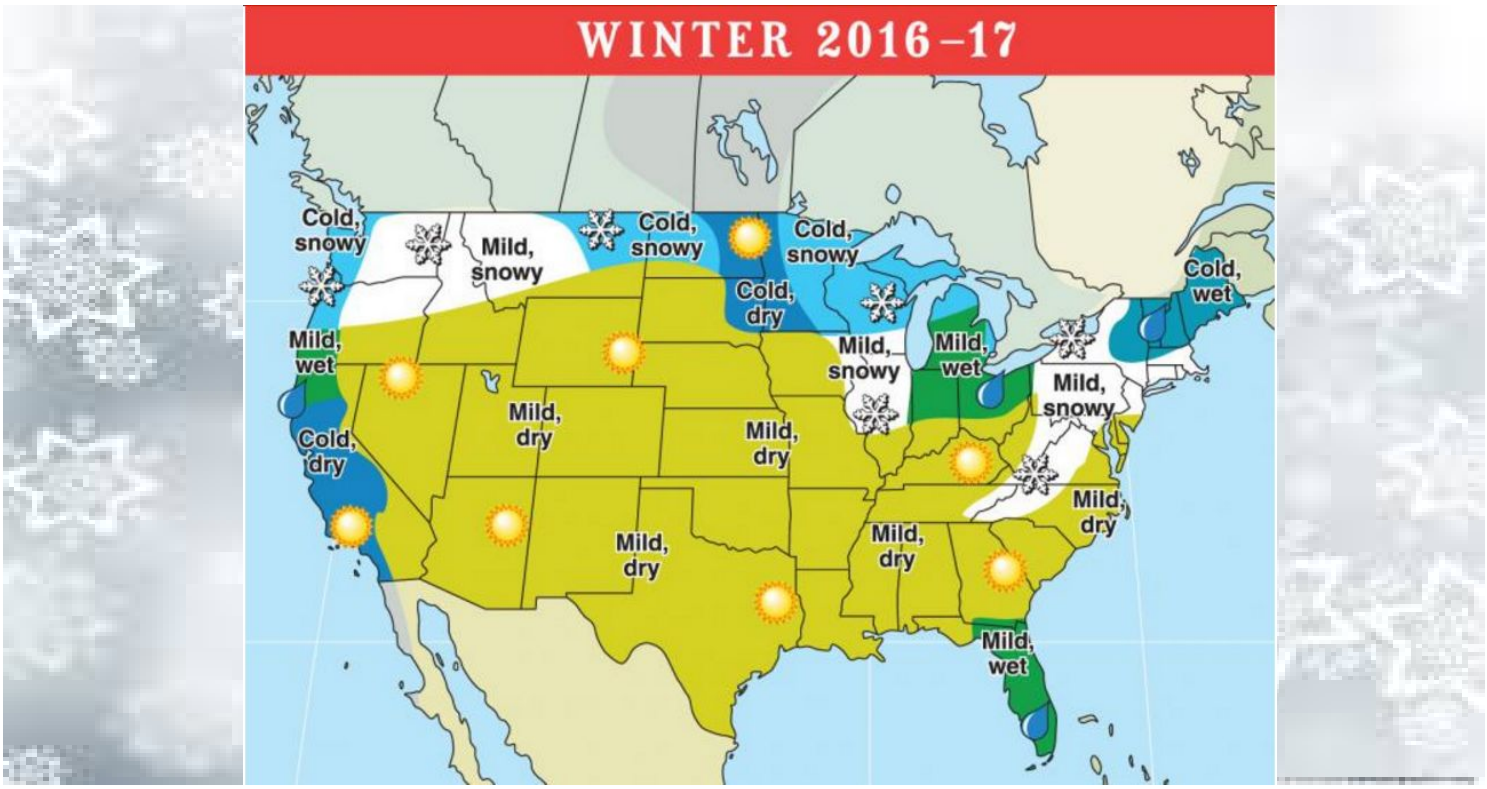
Keep up the great work everyone! Check out the next issue to see the beginning of next year's competition. Will your facility be the leading the way in energy reduction?

For tips on how to reduce your energy use and carbon footprint, please take a look at the Green Building Handbook:

www.nj.gov/military/installations/docs/CLEAN-CUT-Green-Management-Handbook.pdf

Winter Energy Saving Tips

Winter is coming! The Farmer's Almanac predicts that this winter we can expect temperatures much colder than last winter though still higher than average. The US will see less snowfall than average with the northernmost part being the "snowy exception" and can expect a lot of snow this winter!



One way to stay warm this winter is to drink plenty of hot cocoa and wear warm, comfy clothing! You can save even more money on your heating bill by following these simple tips:

- Use thermostat setbacks. You can do this manually when you leave the house. Or, if you have a programmable thermostat, set the temperature lower while you are away from the house, and set it to warm the house back up right before you get back. Every degree will increase the savings you see! Avoid setting your thermostat lower than 50 degrees, to prevent your pipes from freezing.
- Get your heating unit a tune-up! Make sure that your heating system is updated and functioning properly! The last thing you want is to be stuck in winter with a heater that either costs more than it should or is not working at all.



Energy Audits

An **Energy Audit** is an inspection, survey, and analysis of energy use in a building. Energy audits can identify strategies to make a facility more efficient, healthy, and comfortable. As part of the Clean Cut Campaign, Rowan University established the “NJARNG-RU Energy Audit Center” with the purpose of providing resources and training to students so that they can conduct energy audits at NJARNG facilities. This program funds a graduate student who oversees and trains undergraduate students each semester and leads them during the audit. In addition, four professors oversee the program and ensure that NJARNG is receiving high quality data and results from the audits. Each year, 25% of NJARNG facilities must be audited.

Mount Holly Armory

The Mount Holly Armory, built in 1935, is a 16,000 square foot facility made up of mostly office and classroom space. The Rowan audit team conducted a traditional energy audit at the facility and collected information such as number of computers, type of HVAC equipment, types and quantities of lights, etc. The team also assessed the building’s sustainability by using the ISR-Energy and Guiding Principles for Sustainable Buildings requirements. The building’s overall energy rating is AMBER. Some of the recommendations to improve the efficiency of the building include:

- Replacing interior and exterior lights with LEDs
- Installing occupancy sensors
- Implementing thermostat setbacks

These energy efficiency measures could save the armory 9200 kWh of electricity, over $1200, annually.

Freehold Armory

The Freehold Armory, constructed in 1940, is a 39,000 square foot building with a drill floor, motor pool, administration space, and classroom areas. Recently, all of the lighting fixtures were replaced with LEDs, which has already helped reduce the utility consumption at the site. The team also assessed the building’s sustainability by using the ISR-Energy and Guiding Principles for Sustainable Buildings requirements. The building’s overall energy rating is AMBER.Some of the recommendations to further improve the efficiency of the building include:

- Installing programmable thermostats to allow temperature setbacks
- Installing occupancy sensors
- Installing rooftop solar photovoltaics
- Installing solar water heating system

If all of these energy conservation and renewable measures were implemented, the facility's utility bill would be reduced by nearly $10000 and offset approximately 66 metric tons of GHG emissions every year..

Green Product Showdown: Traffic vs Transit

By: David Berlinsky

The long time debate over whether to travel by car or bus has never truly been resolved. While generally agreed that commuting by bus is more efficient in money and environment than personal cars are, there are some certain scenarios where the opposite is preferred. Despite understanding the differences between them,using the wrong mode of transportation can cost a significant price, so knowing when to choose one from another can be crucial to avoid a horrible mistake. So, rather than listing statistics already known for years, a checklist will be posted to see whether a car or a bus would be better suited for the situation at hand based off preference rather than efficiency. At times logistics can be more important than efficiency and one choice becomes better than the other.

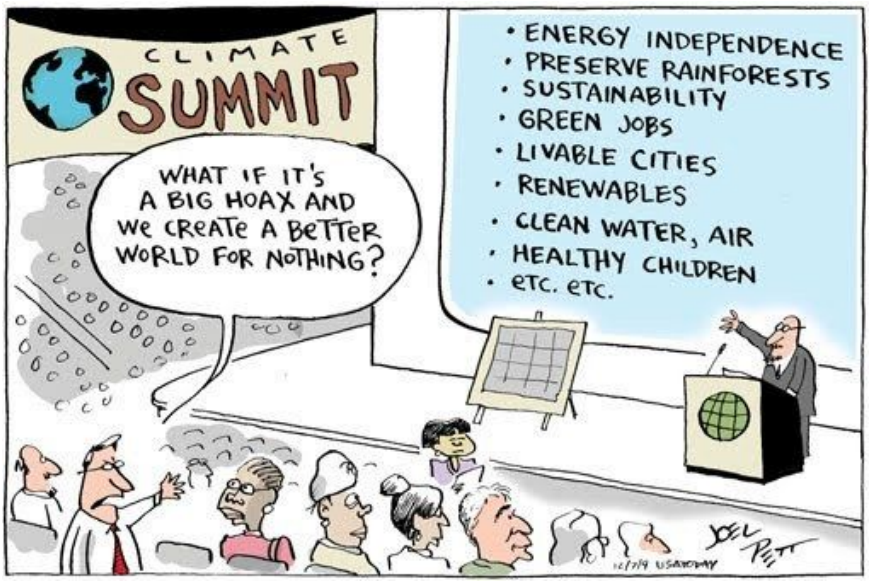
BUS	CAR
Saves $10,000 per year **Up to 82% less emissions per passenger mile (for a full bus)**	**More preferred than buses** **Faster and less restrictive travel**
❑ You travel to specific places in a timely manner ❑ You don't mind a little extra walking to reach your locations ❑ You don't want to spend so much money at once or worry about repairs ❑ Your desired locations happen to have a nearby bus stop ❑ High traffic makes driving inefficient ❑ Better on-road safety ❑ Maps and alternate routes are readily available ❑ Mainly used for personal travel ❑ Environmental impact and cost takes priority	❑ You prefer the freedom to travel wherever you want ❑ You are confident in driving by yourself and abiding by traffic laws ❑ You want the ability to drive with and/or drop off others at any location ❑ There are no practical bus or transit routes available ❑ Faster and more direct travel ❑ Money and responsibility are not issues for you ❑ Better personal safety ❑ Better suited for those who are raising a family ❑ Speed and flexibility takes priority

Source: http://www.mypersonalfinancejourney.com/2013/05/taking-bus-vs-driving.html and https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/PublicTransportationsRoleInRespondingToClimateChange2010.pdf

The Real Myths of Climate Change

By: David Berlinsky

In this current day and age, it is impossible to go on with your week without hearing at least one story regarding the condition of climate change. Whether you are a firm believer of it or not, climate change is a continuing phenomenon that is slowly but surely affecting the world we live in. Of course, there are indeed skeptics of this idea and those who believe in false data and common rumors are par for the course.

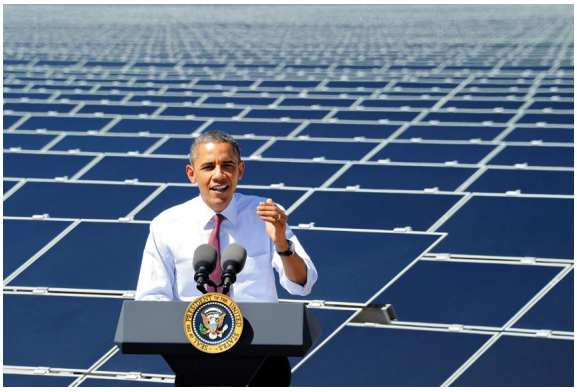


As a student interested in environmental engineering, I would like to take a moment to address common misconceptions with the argument of climate change and clarify arguments that I personally find unjustified. Climate change is a complex issue that cannot be explained or solved easily and should be taken very seriously as an ongoing dilemma, which is why I wish to make clear just how seriously it should be taken and why some arguments fail to justify not taking any action whatsoever.

Common Arguments Against Climate Change	Response
"So what if the temperature is changing? How does it affect me?"	More than you know. Climate change can lead into more damage than one would realize. Not only can it destroy environments by itself, but a climate shift can also affect connected water currents and temperatures. How does this affect anything? The ocean is a very strange network that can cause dangerous chain reactions if tampered with. If one current were to be changed, it could affect another one and so on. Ocean currents are pivotal in helping with other natural processes such as evaporation, radiation and heat storage, and migration of wildlife. Having any of these altered could lead to serious environmental hazards such as increased storm frequency, change in water temperature, wildlife eradication, abnormal weather patterns, and even continue the cycle of climate change.So yeah. This can lead to serious issues in the future deserves all of the attention it gets.
"Places are actually getting colder, so global warming is not a thing!"	There are two problems with this. One, climate change does not necessarily mean that the entire world is in fact becoming warmer; the term "global warming" is a blanket term that is used to ease the understanding of climate change by using greenhouse gases as the main culprit.Two, if a place is becoming colder rather that warmer, it is still a change in climate which, in most cases, can prove just as dangerous as becoming warmer. Regardless, the average temperature throughout the planet has in fact been increasing since the beginning of the millennium.
"Plants and animals should be able to adapt to this change no problem!"	Again, you would be correct under normal circumstances. The problem is this is not a normal circumstance. Remember the analogy that you can't put a frog in boiling water? This is exactly that analogy. Living creatures can adapt to different conditions, but only after an acceptable rate and amount of time. Suddenly putting something in an environment different than normal is actually very unhealthy for it and could lead to death.

Obama's Impact on Renewable Energy

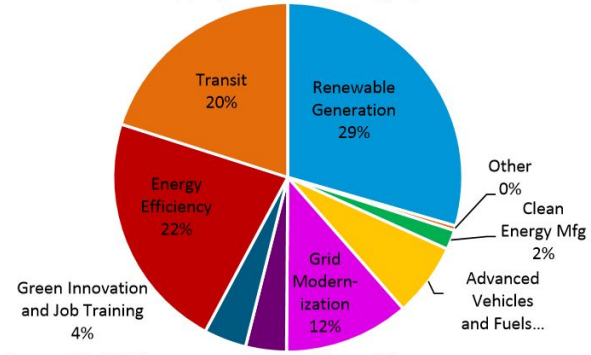
By: Jeff Dib



America has changed drastically in the past eight years, and that is definitely true for how our country views and utilizes renewable energy. Let's take a look back at some of the policies and legislations passed over the past eight years and see what impact President Barack Obama has had on renewable energy.

Obama's first, and arguably most important, piece of energy legislation came in the American Recovery and Reinvestment Act of 2009 (ARRA). This roughly $800 billion stimulus package, signed into law less than a month into Obama's presidency, allocated close to $90 billion for financing various clean energy programs. Of this amount, $29 billion was put toward improving energy efficiency (which would include retrofitting homes) and $21 billion was used for incentives for renewable generation in the form of loans and tax breaks. In doing so, the federal government agreed to bear more financial risk for renewable energy projects than it had in the past. This allowed companies that could not have received similar loans in the past, such as ones that did not have an established credit history or were working with new, alternative energy projects, to receive loans for their projects. The impact this act had was remarkable.

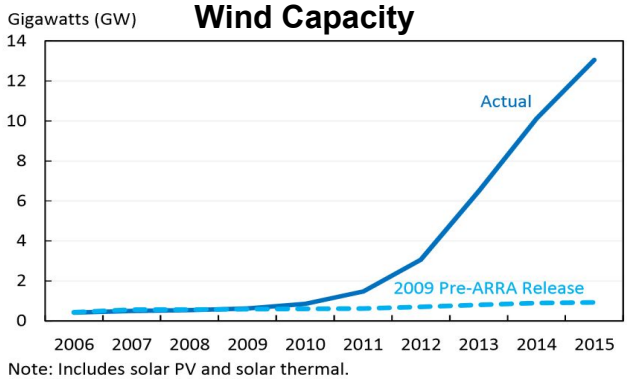
Distribution of Initial Clean Energy Appropriations by Category



Source: CEA (2010).

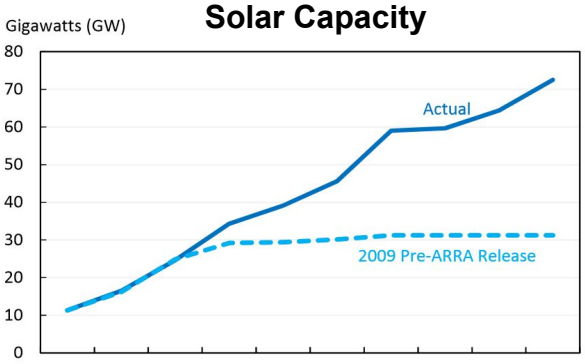
The figures below show the growth in renewable energy capacity for both wind and solar. The dashed line on both represents the projection for wind and solar capacity prior to the passing of ARRA. The solid line represents the actual wind and solar capacity that the funds of the ARRA contributed significantly to.

Electric Power Sector Installed Wind Capacity



Note: Includes solar PV and solar thermal.
Source: Energy Information Administration.

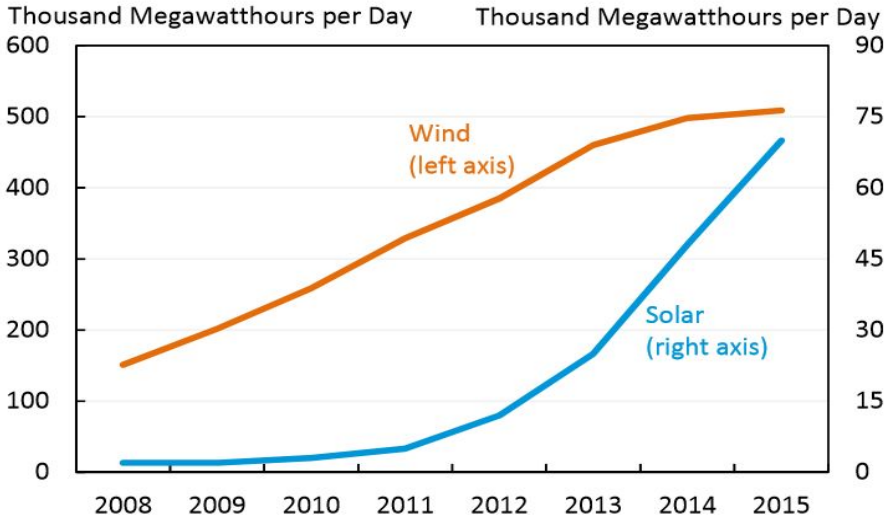
Electric Power Sector Installed Solar Capacity



Source: Energy Information Administration.

The figure on the right shows the increase in wind and solar electricity generation from 2008 to 2015 electricity generation from wind and solar from 2008 to 2015. As of 2016, the United States generates 30 times more solar electricity and three times as much from wind than we did in 2008. In addition, the cost of clean energy technologies, including solar PVs and battery costs, have dropped across the board. Solar panels in particular have dropped 75% since 2008.

Electricity Generation from Wind and Solar



Source: Energy Information Administration.

All in all, the Recovery Act has contributed to more than 100,000 projects across the United States to help expand renewable energy generation. It was designed to stimulate the economy and it invested $90 billion in government investments and tax incentives to lay the foundation for the clean energy economy of the future.

Obama has overseen a number of other legislations and executive actions in an effort to promote clean energy and make renewable energy the better alternative over traditional oil and coal. These include providing additional funds to be used for loans and tax incentives (especially for residential households), approving the first-ever large-scale renewable energy project on federal public land (located in the Southwest US), increasing access to solar energy for all Americans (especially low-income households), and expanding renewable energy generation at military installations. Thanks to these programs, the United States now boasts some of the world's largest wind and solar farms, including the Agua Caliente Solar Power Project, which is a a 5.2 million solar panel field in Arizona that hosts roughly 300 Megawatts of solar PVs (seen below).

In terms of jobs, the investment in renewable energy has helped in that respect as well. It's tough to say how many jobs have been created because of these measures, but as of March 2016, there were 2.5 million jobs in clean energy, with close to 80,000 in the wind industry and 250,000 in the solar industry. In 2011, the number of jobs in the solar industry were roughly 100,000, which shows a 250% increase in solar jobs over 5 years.

For more information, please visit https://www.whitehouse.gov/energy/securing-american-energy and https://www.whitehouse.gov/the-record/climate

NJARNG Energy Team

Want to know more?

❖ Contact the Energy Team!

Christopher Moore

Chris received his Bachelor's Degree in Civil Engineering from Rowan University and his Master's Degree in Sustainable Design from the Boston Architectural College. He has over 5 years of energy management and sustainability consulting experience with non-profit, private, and government organizations. Chris enjoys biking, drawing, and gardening.

Samantha Valentine

Sam received her Bachelor's Degree ('12) and Master's Degree ('14) in Civil Engineering from Rowan University. Her academic interests include sustainable design, low impact development, and climate science. Sam enjoys cooking, boating, and adventuring in the great outdoors.

For more information, please contact:

Christopher Moore
DMAVA Energy Manager
Please contact Chris if you would like to learn more about the *Clean Cut Campaign* at:
christopher.moore@dmava.nj.gov

Samantha Valentine
NJARNG Energy Intern Manager
If you would like to learn more about how Rowan University is helping NJARNG's sustainability efforts or to make suggestions for future issues of *Clean Cut Quarterly*, please contact Sam at:
valent80@rowan.edu