

# Clemson at a Cross-Roads – Our Energy Future Free Speech

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Good evening – This free speech addresses our energy future at Clemson University. We urge re-evaluation of the current plans to construct a natural gas combined heat and power or CHP facility for the following reasons:

Humans emit a catastrophic level of greenhouse gases disrupting the earth's energy balance. The cost to mitigate climate change amounts to trillions of dollars passed on to taxpayers, and our children and grandchildren. Recently, an estimated \$300B resulted from hurricane damage to Puerto Rico, Florida and Houston worsened by rising ocean temperatures [1]. In addition, ultrafine particle pollution from natural gas power plants causes significant health concerns [2].

Though we are the cause of this problem, we have a solution. Most new power generation comes from solar and wind energy. For instance, Duke Energy invests billions of dollars into solar/battery technology in FL and NC. Why not in SC? Duke Energy will work with us, but we must demand this from them. Our peer institutions have similar concerns by taking action.

- University of Virginia signed a 25-year agreement to install 32 MW solar power [3].
- Duke University rejected a similarly proposed CHP plant in favor of renewable energy options [4].

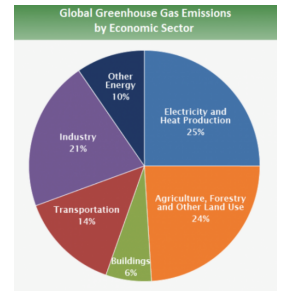
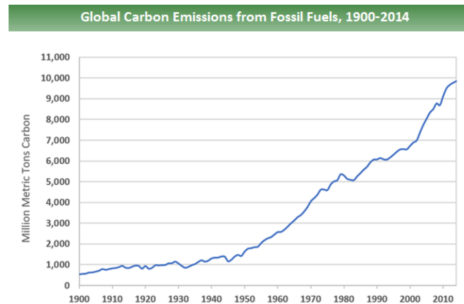
I need your help by considering the following two actions:

## Action item 1:

Clemson University uses about half of its energy in electricity. Heating and cooling with natural gas currently accounts for the other half.

The solution should be implemented in 3 phases:

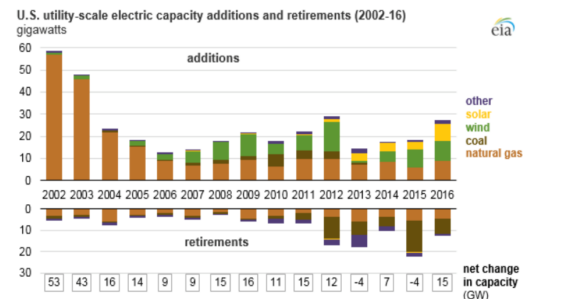
**1<sup>st</sup> phase – Complete by 2020.** Work with Duke Energy to install solar/battery systems to displace all electricity on campus – requiring several hundred acres of land. Clemson's 18,000 acres contain some land ideal for solar installation including building tops, parking lots and marginal forest land. We can work with the local towns for more land if needed.



<https://www.epa.gov/ghgemissions/global->

FEBRUARY 27, 2017

U.S. electric generating capacity increase in 2016 was largest net change since 2011



Source: U.S. Energy Information Administration, *Electric Power Annual* and *Preliminary Monthly Electric Generator Inventory*.

<https://www.eia.gov/todayinenergy/detail>.

## SCIENCE — Power company kills nuclear plant, plans \$6 billion in solar, battery investment

Duke Energy Florida is just the latest utility to walk away from nuclear.

MEGAN GEULS - 8/31/2017, 7:30 AM



Enlarge / A solar farm under construction in Punta Gorda, Florida, in 2016.

<https://arstechnica.com/science/2017/08/florida-power-company-exchanging-nuclear->

**2<sup>nd</sup> phase** – Starting with Lee III and all new construction projects, require all buildings to be powered by solar. Convert our bus system to electric power and install more EV stations for new electric cars predicted to overtake the internal combustion car sales by 2038.

**3<sup>rd</sup> phase** – Begin renovations of older buildings away from old steam systems over the next decade. Start with converting Douthit Hills to geothermal heat pump systems. Dr. Raj Singh suggests financial benefits to Clemson University (CU) stating that the “CU energy bill is of the order of \$10,000,000 per year [5] paying about 5 cents per kWh to Duke Energy. Photovoltaics and batteries can provide all the energy needs. Tucson Electric Power has signed a power purchasing agreement for solar/battery storage for 20 years for less than 4.5 cents per kWh [6]. CU can save \$2 million per year.”

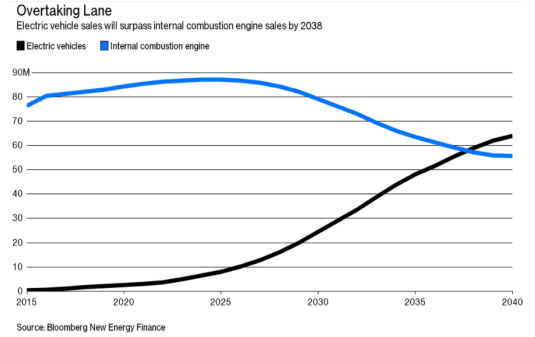
**Action item 2:**

Develop new collaboration between the FS Finance and Facilities committee and the CU Sustainability Commission. This action presents opportunities for engagement through direct collaboration with facility decisions that addresses this most critical of our grand challenges.

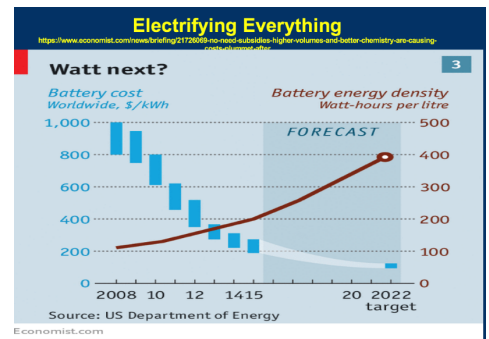
Clemson at a cross-roads must act now. Our students and next generation depend on our leadership! Thanks for taking your time to consider these actions.

**References:**

- [1] <http://fortune.com/2017/09/22/hurricane-maria-irma-harvey-damage-cost/>
- [2] [http://www.cewep.eu/media/www.cewep.eu/org/med\\_464/905\\_emissioni\\_di\\_polveri\\_fini\\_e\\_ultrafini\\_english\\_2012-04-16.pdf](http://www.cewep.eu/media/www.cewep.eu/org/med_464/905_emissioni_di_polveri_fini_e_ultrafini_english_2012-04-16.pdf)
- [3] <http://www.elp.com/articles/2017/07/university-of-virginia-dominion-coronal-energy-to-build-solar-project.html>
- [4] <https://duke.app.box.com/s/b4g84xjw7zv11giw324m93bzi3qlkrf0>
- [5] <https://www.electricchoice.com/blog/alabama-vs-clemson-electricity-usage-costs-and-efficiency/>
- [6] <https://www.utilitydive.com/news/updated-tucson-electric-signs-solar-storage-ppa-for-less-than-45kwh/443293/>



<https://www.bloomberg.com/news/articles/2017-07-06/the-electric-car-revolution-is-accelerating>



Provided by Dr. Rajendra Singh