

# Solar Farm Fact Sheet

The SAS solar farm sits on almost 12 acres adjacent to the new Executive Briefing Center. There are 10,276 solar panels producing more than 3.6 million kilowatt hours annually. That's enough power for more than 325 average sized U.S. homes.

*"The solar farm is a smart decision for SAS and for the community," said Jerry Williams, Environmental Sustainability Program Manager for SAS. "Projects like our solar farm demonstrate a fundamental shift in the value placed on energy efficiency, intelligent power sourcing and end-user consumption. The development and implementation of alternative sources of energy is important for our environment, a stimulus for our economy and a step in the right direction to achieving energy independence."*

## Solar Farm 1

- Commercial Operation Date: December 10, 2008
- System size: 1 Megawatt (MW) capacity photovoltaic solar array on 4.8 acres
  - The capacity of the system is 1MW which means power output at peak performance will be 1MW.
  - "Name plate capacity" is simply the combined spec peak capacity of all individual modules.
  - The AC power rating of the array is 80% of the DC power rating, based on SunPower estimates. Therefore, the maximum power capacity of the PV system is 800 kW (AC).
  - Estimated annual electricity production: 1.7 million kilowatt hours (kWh)
  - Our system consists of 4 sub-arrays feeding power to 2 inverters and routed through Progress Energy transformer onto the grid.
- The system was designed by SunPower and installed by local contractors. Primary subcontractor was Southern Energy Management (SEM).
- Our system has SunPower® Tracker directional arrays which track the path of the sun (East to West) via a straight-line single axis to achieve greater efficiencies.
  - To effectively track the sun, we use a global positioning system that mechanically tracks the sun throughout the day and rotates the assembly for maximum sun exposure.
  - Directional arrays are capable of generating near peak capacity for a longer period of time, say 5-6 hours/day in our location compared to 4 hours for fixed arrays.
  - The Tracker tilts toward the sun as it moves across the sky, increasing energy capture by up to 25 percent over fixed systems and greatly reducing land-use / acreage requirements.
- The solar farm has 5,040 ground-mounted Sanyo solar panels:
  - Image - <http://static.huddler.com/imgrepo/c/ce/Sanyo HIT.jpg>
  - They are the HIP xxxBA model series HIT cell types
  - Panel size: 52" x 35" x 1.8"
  - We installed a combination of 195W & 200W capacity types.
  - HIT stands for Heterojunction with Intrinsic Thin layer. That mean these are hybrid solar panels with both crystalline silicon and ultra-thin amorphous silicon layers.
  - Sanyo (Japan) panels were manufactured in Mexico

- Panels have a standard PV degradation rate for crystalline of <.05% per year and carry a warranty of 25 years.
- Module efficiency = 15.3% – 17.4% - Cell efficiency = 17.8% - 20.2%. It is essentially how much power they can produce from exposure to sun.
- Max Power Voltage – 55.8(V) per panel
- Max Power Current – 3.59 Amps per panel
- Panel Weight (lbs) – 30.9

## Solar Farm 2

- Commercial Operation Date (initial activation): July 23, 2010
- System size: 1.2 Megawatt (MW) capacity photovoltaic solar array on 6.41 acres
  - The capacity of the system is 1.2 MW which means power output at peak performance will be 1.2 MW.
  - The AC power rating of the array is approximately 80% of the DC power rating. Therefore, the maximum power capacity of the PV system is 1 MW (AC).
  - Estimated annual electricity production: 1.9 million kilowatt hours (kWh)
- The system has a total of 5,236 modules with a total of 374 strings of modules.
- The system was designed by [groSolar](#) and installed by local contractors.
- Our system has [RayTracker](#) directional arrays which track the path of the sun (East to West) via a straight-line single axis to achieve greater efficiencies.
  - To effectively track the sun, we use a global positioning system that mechanically tracks the sun throughout the day and rotates the assembly for maximum sun exposure.
  - Directional arrays are capable of generating near peak capacity for a longer period of time, say 5-6 hours/day in our location compared to 4 hours for fixed arrays.
  - The tracker tilts toward the sun as it moves across the sky, increasing energy capture by up to 25 percent over fixed systems and greatly reducing land-use / acreage requirements.
- The solar farm has 5,236 ground-mounted Canadian Solar CS6P-230P Panels:
  - Image - [Canadian CS6P-230 Panels](#)
  - Each Panel has 60 polycrystalline solar cells
  - Panel size: 66" x 39" x 1.7"
  - 230W capacity types.
  - Panels utilize 60 high efficiency, multicrystalline 6.14 inch (156mm) square cells manufactured in China.
  - Panels have a standard PV degradation rate for crystalline of <.05% per year and carry a warranty of 25 years.
  - Module efficiency = 14.3%. It is essentially how much power they can produce from exposure to sun.
  - Max Power Voltage – 29.8(V) per panel
  - Max Power Current – 7.71 Amps per panel
  - Panel Weight (lbs) – 40.8

## **Business Drivers**

- North Carolina's renewable law (Senate Bill 3) requires NC's three investor-owned utilities – Duke Energy Carolinas, Progress Energy Carolinas, and Dominion North Carolina Power – to meet at least 12.5% of their annual electricity output with renewable energy by year 2021.
- Feasibility studies indicated it just made good business sense to go forward with these projects. We hope other businesses in the community will look at our endeavors and understand the practicality of incorporating similar projects into their own business models.
- Progress Energy will purchase the electricity generated by the solar farm for use on the public energy grid
- Tax incentives include:
  - 30% Federal tax credit
  - 35% State tax credit
  - Accelerated depreciation schedules
- It's a sustainable business practice that just makes good sense.