

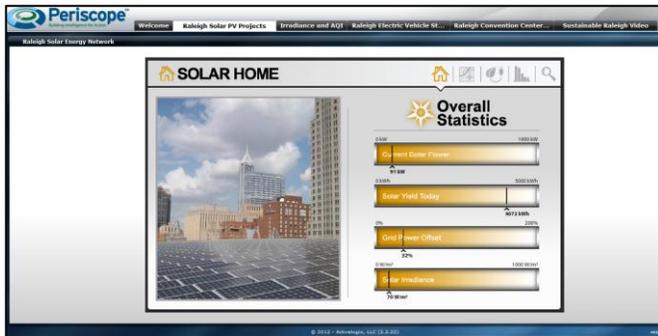
PTI 2012-2013 SOLUTIONS AWARDS

City of Raleigh

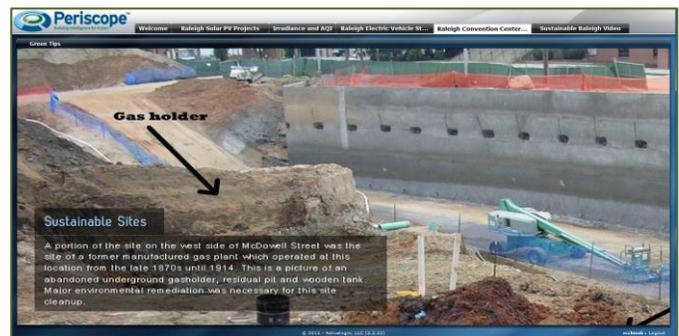
Population C: 350,000-749,999

Category: Sustainability

Title: Solar PV and Sustainability Kiosk for the City of Raleigh Convention Center



Solar Summary Page



One of over a dozen Green Tips

Abstract:

Raleigh has developed five solar photovoltaic projects on City owned property including rooftops and land based applications. Two are owned by the City and three have been developed through third party investments. The third party agreements allow a solar developer to lease space for a solar photovoltaic array development at little to no cost to the City with a future opportunity for the City to purchase the solar systems at reduced cost.



Screen shots of the new RCC Kiosk

The most publicly recognized solar development was constructed through a third party lease of the rooftop of the Raleigh Convention Center (RCC). The RCC promotes itself as being one of the "Greenest" convention centers in the country having been recognized as a LEED Silver building, constructed in 2008. The solar array, installed in 2012, is made up of over 2000 individual panels covering approximately 60% of the rooftop. The system generates an equivalent output of energy needed to supply 100 average homes with electricity. Multiple departments are involved in solar technology including the Office of Sustainability, Recreation and Parks, Public Utilities, Public Works, and supporting legal and administrative staffs. The solar developments are not in highly visible locations. With the RCC having thousands of visitors through the facility each year, the application of technology within an integrated, interactive kiosk was seen as the vehicle to inform and educate citizens and visitors on the generation of solar power and to the fact that to date the City generates over 2.3 megawatts of electricity from solar arrays across the City.

Statement of the Problem:

Raleigh has multiple solar arrays on different sites; two owned by the City, three by private investor-owned third parties on leased property of the city. Each has separate and different monitoring software that generates data related to the solar production. The City wished to show the individual sites as well as aggregate the data to show total renewable power generation. The City wished to have an internet based kiosk with an interactive touch screen monitor at the Raleigh Convention Center and that the same information be shared through the City web page or distributed via links to interested parties. It was determined that the system should be designed to address the following;

- Each solar array, regardless of size and location must be able to be monitored individually and all sites collectively from a web browser.
- Each solar array will be defined by location, size (kW) and annual kWh production
- System should be able to monitor current energy production from each site and current energy production from all sites combined, daily energy production from each site and from all sites combined, cumulative historical energy production from each site, cumulative historical energy production from all sites.
- System shall be able to monitor and display environmental data, including temperature and cloud cover.
- System will be able to show environmental savings including greenhouse gas offset, representative savings in oil, coal or natural gas as well as educational information related to comparative amount of power generated that would typically serve "X" number of typical households for each specific system and collectively for all systems on a daily and cumulative historical basis.
- System will be able to compare the electrical use of each facility to the solar energy generated, (percent of electrical use and/or value of power generated) as well as cumulative amount of solar generated power of all sites to the total electrical power use by the City, (percentage and/or value of power).
- The system should be adaptable for expansion to include additional sites and potentially different environmental or system information.
- System shall be secure in a public environment from both a physical and technological context.

In the planning process staff from the Convention Center and the Office of Sustainability increased the scope to also include the demonstration of sustainable practices in the Convention Center, the inclusion of a recently developed City of Raleigh Sustainability video and the inclusion of information related to the installation of Electric Vehicle charging stations throughout the City.

Response:

To deliver the functionality required, the City hired Activelogix LLC, a Charlotte technology firm specializing in development and delivery of products and services for identification and optimization of energy and sustainability programs. The firm's flagship application, Periscope™ was chosen as the framework to deliver the kiosk functionality. The City was already a user of Periscope, which provides user customized visualization of current energy utilization across the City's facilities, including multiple structures, solar sites, EVSE stations and more.

Adding the custom kiosk functionality was simply a matter of defining the data needed for visualization, selecting a compatible touch screen platform and developing a couple of custom views to show air quality and solar irradiance.

Periscope is a browser based application and presents its information in a dashboard format. The dashboard contains multiple tabs, each containing a focus on a specific area. For the Convention Center, six tabs were created to show the following information:

1. General Overview of the kiosk functionality
2. An Overview of the City's Solar Array Sites including total current production; current and historical production by site; GIS coordinates of all sites plotted on user searchable map; Energy equivalencies in units of kW, \$\$, CO2 and BBLs of oil; ranking of sites based on production (kWh); and individual site analytics, for current period or any user selectable timeframe. This viewable applet (Viewlet) is also capable
3. Real-Time View of the Solar Irradiance, its Generating impact on the Solar Arrays and the resultant avoided CO2 . Also shown on this tab is the current City Air Quality
4. Overview of the City's Electric Vehicle Network of 23 EV stations, including summary statistics for energy distributed and offset CO2; GIS coordinates of all EV stations and their status/availability plotted on user searchable map; realtime ranking of all EV stations w.r.t. power delivered, connection time and system uptime, and individual site analytics, for current period or any user selectable timeframe.
5. An Educational "Green Tips" slide show illustrating in a rotating "Ken Burns" style method, photos and descriptions of the "Green" techniques used in the construction of the Convention Center.
6. A six minute video of "Sustainable Raleigh" describing in more detail the numerous initiatives the City has undertaken in recent months to reduce energy, improve the environment and enhance the quality of life for the city's residents.

The RCC Periscope Kiosk is running on a high resolution dedicated flat screen monitor that is touch screen enabled. When unattended, Periscope cycles through each tab continuously. However, when visitors are present, they can browse through information on individual tabs and "drill down" to details on the Solar and EV tabs to view individual sites or stations by merely touching the screen. The Kiosk then resumes its rotating view of the information presented.

Activelogix personnel worked closely with RCC personnel to ensure that the requirements were met in a timely manner.

Results:

The interactive kiosk was installed and has been operating since February 2012. It has been shared with multiple agencies and will be made available on the City web page in the future. The Sales and Marketing staff of the Convention Center have had an orientation session and they now profess to have a tool to describe not only what is on their rooftop, but all the solar and sustainable initiatives in the City.

The casual visitor to the Convention Center, whether a longtime or new citizen of Raleigh, or the visitor from out of the City, State or Country has access to real time solar power production data and Sustainable Raleigh information.

See: <http://periscope.raleighnc.gov/periscope>

Username:rcckiosk

Password: rcc

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