Puerto Rican Luminaries [1]

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Si las bombillas del sistema de alumbrado público se reemplazan por las nuevas tabletas LED, esto daría lugar a una reducción sustancial de la factura anual de energía de Puerto Rico de

aproximadamente $93 millones de dólares. (Youtube)

Reproducimos un texto sobre la iniciativa de Casa Pueblo, en la que participa la Universidad de Puerto Rico, para presentar opciones al consumo energético en la isla. Decidimos publicar el escrito en el idioma en que fue redactado originalmente.

Various efforts are being made to lower Puerto Rico's energy consumption, and the following story illustrates a vivid one.

It was almost dark and the man was just about to light up a very special Christmas tree in front of Casa Pueblo, just a few days before *Nochebuena*, or Christmas Eve in 2014. The bucket truck had been parked right next to the tall tree, and the man settled in the bucket, waiting for the gears to engage and bring him up very near the treetop. Kind of a chilly air was making its way through the streets of Adjuntas and, from above, he could see the people huddled together in expectation. That night, the temperature would reach 66 degrees –which would seem like an attempt of subversion in Puerto Rico, where the average temperature runs in the eighties– but the *adjunteños* were not worried; they were used to evenings in the low sixties.

Hovering from above, the man grasped at the treetop and split open the lamp casing. He removed the old light bulb and installed the new one. It was a rather odd-looking "light bulb"; a small panel sprinkled with several light emitting diodes, which would allow for the control of the lighting pattern. Technology had him running on edge, and with this LED based prototype, soon the City of the Sleeping Giant and, eventually, all of Puerto Rico would be lit just like the sky on this starry night. Satisfied, he closed the lamp casing and as soon as he could, joined the crowd. From below, he watched the tree come alive, irradiating the street with thousands of lumens. Instantaneously, the crowd erupted in applause.

But this was no Christmas tree. Although originally a pine tree, this was a public lighting lamp post, and the man replacing the light bulb was a worker from the Puerto Rico Electric Power Authority (PREPA). Two other workers had lit up contiguous lamp posts and the lights captured the attention of all the people who had gathered for the event. The seemingly Christmas scene would soon be revealed in its core.

One of the special guests for the evening was the President of the University of Puerto Rico (UPR), Uroyoán R. Walker Ramos. He would not have missed the "unveiling" of the project developed at UPR's Mayagüez Campus. He was extremely pleased with the achievement, and, very proud also, because Mayagüez was "his" campus; where he used to lecture on Mathematics before becoming UPR's highest chair. John Fernández Van Cleve, the Chancellor, was also present, along with faculty members and students. Walker Ramos proudly tweeted as the inaugural ceremony went under way. Within eight minutes of the lighting, the hashtags #energy and #solution, were dressing his first tweet, in which he declared the "POSTErriqueño" ("Puerto Rican lamp post") –as it has been baptized– ready.

Another very special guest was U.S. Congressman Luis Gutiérrez. Born in Puerto Rico, Gutiérrez has always been in touch with his roots, and this initiative had a very special meaning for him. José Maeso, Director of the Office of Energy Policy for Puerto Rico was also on board. He had a keen interest in the project, as it was a vital aspect of his job, being in charge of overseeing the

development of Puerto Rico's public policy on energy. Also present was Humberto Campán Colón, from PREPA's management, as well as Ángel Figueroa Jaramillo, President of the Unión de Trabajadores de la Industria Eléctrica y Riego (UTIER), PREPA workers union.

LED Team

The new "light bulb" is a prototype developed by a team of professors and students from the University of Puerto Rico. Forty students and four professors make up the LED Team, most of them from the Department of Electrical and Computer Engineering (Andrés Díaz Castillo, Pedro Resto, Gerson Beauchamp, Rachid Darbali Zamora). Also, mass production of the luminaries has been undertaken by the Model Factory within the Department of Industrial Engineering. Arturo Massol, one of the major driving forces behind this project, is a professor of Biology at the Mayagüez Campus, and is also the Chairman of the Board of Directors of Casa Pueblo.

Massol is the link between the community-driven organization and the university, where an ongoing project on LED panels was already active. The University had been working in the production of an LED panel that would substitute the regular fluorescent tube light bulbs installed throughout the campus. The goal is to supply panels for all of the University's facilities and then market it to Government and private companies. The Office of the President of UPR is one of the first places where the LED panels have already been installed. In September, Walker Ramos announced that the newly lit activities lounge would serve the purpose of a continuous demonstration or showcase for diverse audiences, as a means of informing the public about the project based on a new energy model.

Casa Pueblo

The idea of a new public lighting system originated in Casa Pueblo, a non-governmental organization with a mission to preserve and protect natural, cultural and human resources. The core in Casa Pueblo is a family with exceptional ties to Puerto Rican culture. An engineer who left his traditional career in the metropolitan area of San Juan when he realized the dangers that awaited Puerto Rico –if things continued in the path they were going– and went back to his roots to start a project that would provide an alternative. After a family reunion, Alexis Massol, with his wife Tinti Deyá and their sons, went back to Adjuntas to start their projects. Casa Pueblo has taken on major initiatives such as the conservation of the Bosque Nacional de Puerto Rico, the Forest-School Olimpia, and Madre Isla coffee production, in an effort to call attention to Puerto Rico's agriculture, and also as a source of income. Massol was awarded the Goldman Environmental Prize in 2002 for the work in preserving the forests, a joint effort with the community and his family. Their perennial environmental mission has led them to devise energy conscious alternatives, not only for them, but for the greater community.

In 2011, the group had vehemently opposed a natural-gas pipeline proposed by the government which would rip right through the Cordillera Central, the line of mountains which seem to divide the island's northern and southern parts, where more than 8 million cubic meters of earth would be displaced. Casa Pueblo delved into a research project, and concluded that the gas pipeline was an imminent danger to the ecosystem, threatening with devastation of natural resources. Conscious of the need for lower energy costs, they resorted to articulating a proposal; they are

ones to believe that you should not only protest, but you should also propose a solution. Which is what they did.

In 2012, Casa Pueblo approached the engineers at UPR's Recinto Universitario de Mayagüez, searching for an alternative lighting system which could be used for street and public roads lighting. They submitted a proposal in which they requested a design for a high-efficiency lighting system that would bring down energy costs. Projects at the university were already under way for other type of lighting systems, and the engineers accepted the challenge. And, thus, the prototype, or "the tablet", was born.

Benefits

The results could be impressive. If the whole public lighting system light bulbs are replaced with the new LED tablets, this would result in a substantial reduction of Puerto Rico's annual energy bill –approximately $93 million. The new 33-watt LED tablet replacing the actual 200-watt bulb has an estimated duration of 20 years versus the 3-5 year duration of the light bulbs currently used by PREPA, and is 83% more efficient. Once in place, replacing the tablets will be significantly less frequent, every twenty years, than replacing the actual light bulbs, every 3 to 5 years, resulting in additional savings. The cost of the tablet is estimated at $250 while the cost of the lamp bulbs currently used is $450. Also, operating cost for the tablets is estimated at $28 for the new lamp posts, versus $164 for the actual lamp posts (based on a $0.26 kilowatt per hour rate). Other benefits include providing unidirectional lighting, which reduces contamination by light, a claim that cannot be made by the sodium-discharging technology in use. (http://casapueblo.org/posterriqueno/ [3])

In 2013, the cost of public lighting in Puerto Rico was deemed at $113.5 Million, an amount said to be subsidized by the public corporation. However, PREPA passes on this cost to its residential and business customers, as an "ajuste por combustible" or "fuel adjustment" charge, so the customers are really the ones "subsidizing" the public lighting system. Massol estimates that each customer pays approximately $120 a year to cover this "subsidy". With the new system in place, consumers would be paying less. Also, the new tablets are designed and produced in Puerto Rico, providing a source of employment.

The path to light

Although on that starry night, the lights shone on Route PR-123, right in front of Casa Pueblo, the LED Project will still undertake a rigorous journey along its Research and Development Route, vying for expansion. The installed lamps will allow the team to collect data on certain aspects such as the materials performance, durability, yield, climate effects and other aspects which will be taken into account in order to improve on the design and make the necessary adjustments.

The first fully installed lighting system will be set up in Hormigueros, a small town on the northwestern part of the island. Although it is very close to a major highway, there is a particular sector called Plan Bonito, where *cocuyos* (sort of a native firefly; *luciérnaga* or *candela)* still light up at dusk, glowing with a greenish kind of fluorescent flame, and starry nights drape the hills. No doubt that with the new LED tablets, which reduce light contamination –because the candelas

delivered will be unidirectional– there is less of a threat for the *cocuyos* survival. Still, another way in which Casa Pueblo manages to accomplish its mission of protecting our natural resources while seeking to address Puerto Rico's energy consumption issue. The Puerto Rican luminaries will glow, and so will the *cocuyos*.

Watch a video related to the December 20th event, when the Posterriqueño was lit:

La autora es historiadora y especialista en tecnologías de la información. Este texto fue publicado originalmente en *La Respuesta*, una revista de la diáspora boricua. Pueden acceder el artículo original en el siguiente enlace: http://larespuestamedia.com/rican-luminaries/ [4]

Tags:

- Casa Pueblo [5]

Content Categories:

- Environmental and agricultural sciences [6]
- Engineering, math, and computer science [7]
- K-12 [8]
- Undergraduates [9]
- Graduates [10]
- Postdocs [11]
- Faculty [12]
- Educators [13]

Categories (Educational Resources):

- Texto Alternativo [14]
- Transcripción [15]
- Noticias CienciaPR [16]
- Ciencias ambientales [17]
- Física [18]
- Ciencias Ambientales (superior) [19]
- Ciencias Físicas- Física (intermedia) [20]
- Física (superior) [21]
- Text/HTML [22]
- Video [23]
- Externo [24]
- Ingles [25]
- MS/HS. Energy [26]
- MS/HS. Human Impacts/Sustainability [27]
- MS/HS. Matter and Energy in Organisms/Ecosystems [28]
- 6to-8vo- Taller 2/3 Montessori [29]
- 9no-12mo- Taller 3/4 Montessori [30]

- Noticia [31]
- Educación formal [32]
- Educación no formal [33]

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Links
[1] https://www.cienciapr.org/en/external-news/puerto-rican-luminaries [2] http://dialogoupr.com/noticia/puertorico/puerto-rican-luminaries/ [3] http://casapueblo.org/posterriqueno/ [4] http://larespuestamedia.com/rican-luminaries/ [5] https://www.cienciapr.org/en/tags/casa-pueblo [6] https://www.cienciapr.org/en/categorias-de-contenido/environmental-and-agricultural-sciences-0 [7] https://www.cienciapr.org/en/categorias-de-contenido/engineering-math-and-computer-science-0 [8] https://www.cienciapr.org/en/categorias-de-contenido/k-12-0 [9] https://www.cienciapr.org/en/categorias-de-contenido/undergraduates-0 [10] https://www.cienciapr.org/en/categorias-de-contenido/graduates-0 [11] https://www.cienciapr.org/en/categorias-de-contenido/postdocs-0 [12] https://www.cienciapr.org/en/categorias-de-contenido/faculty-0 [13] https://www.cienciapr.org/en/categorias-de-contenido/educators-0 [14] https://www.cienciapr.org/en/categories-educational-resources/texto-alternativo [15] https://www.cienciapr.org/en/educational-resources/transcripcion [16] https://www.cienciapr.org/en/educational-resources/noticias-cienciapr [17] https://www.cienciapr.org/en/educational-resources/ciencias-ambientales [18] https://www.cienciapr.org/en/educational-resources/fisica [19] https://www.cienciapr.org/en/educational-resources/ciencias-ambientales-superior [20] https://www.cienciapr.org/en/educational-resources/ciencias-fisicas-fisica-intermedia [21] https://www.cienciapr.org/en/educational-resources/fisica-superior [22] https://www.cienciapr.org/en/educational-resources/texthtml [23] https://www.cienciapr.org/en/educational-resources/video [24] https://www.cienciapr.org/en/educational-resources/externo [25] https://www.cienciapr.org/en/taxonomy/term/32180 [26] https://www.cienciapr.org/en/educational-resources/mshs-energy [27] https://www.cienciapr.org/en/educational-resources/mshs-human-impactssustainability [28] https://www.cienciapr.org/en/educational-resources/mshs-matter-and-energy-organismsecosystems [29] https://www.cienciapr.org/en/educational-resources/6to-8vo-taller-23-montessori [30] https://www.cienciapr.org/en/educational-resources/9no-12mo-taller-34-montessori [31] https://www.cienciapr.org/en/categories-educational-resources/noticia [32] https://www.cienciapr.org/en/educational-resources/educacion-formal [33] https://www.cienciapr.org/en/educational-resources/educacion-no-formal