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Program Information

Program Name: Bright Ideas for Protecting Dark Skies
Program Start Date : 09/24/2008
Jurisdiction Type: Federal Government
Jurisdiction Name: Department of the Interior, National Park Service
Jurisdiction Unit: Acadia National Park
Jurisdiction Population: 308000000
Website: n/a
Applied Previously: No
Eval Team: NULL

Essays:

1. Please provide a two sentence summary of the innovation. This description should accurately and succinctly convey the essence of the innovation. (maximum 50 words)

The NPS and Island Astronomy Institute are working to measure, promote, and protect the night sky in Acadia National Park and surrounding communities. The NPS has pioneered technology to accurately measure light pollution and transferred this capability to the IAI as tool for monitoring night sky quality and educating the public.

2. Please tell the story of your innovation,

- o including the circumstances leading to its conception (such as previous efforts to deal with a particular problem),
- o the initiation of your program (for example how it was designed and launched), and
- o the program's ongoing operations and achievements (for example how it has been modified in response to obstacles or opposition).
- o Dates would be helpful in anchoring the narrative.

(maximum 400 words)

Among the many aspects of natural beauty in Acadia National Park is the view of the starry night sky. Acadia provides millions of visitors with the opportunity to enjoy a high-quality night sky and natural darkness similar to the experience that more remote national parks in the West may offer. Acadia's night sky is a nationally significant resource that provides stunning views of the Milky Way to millions of visitors, a sight that two-thirds of all Americans cannot see at home due to light pollution.

Once considered only a backdrop to the park, the National Park Service now recognizes the natural night sky as an integral part of a park's resources, an element of cultural heritage, and a source of inspiration for visitors. In 2006, the NPS adopted a policy that state it will "preserve, to the greatest extent possible, the natural lightscapes of parks, which are natural resources and values that exist in the absence of human-caused light."

Unlike many resource management challenges at Acadia National Park, light pollution is a relatively easy problem to fix, and the natural dark sky is 100% recoverable. Outdoor lighting that protects

the night sky typically saves energy, reduces glare, and improves nighttime visibility and safety. The solution is straightforward, instantaneous, and economical since it costs more to pollute the night sky than to protect it.

As development continues to increase in surrounding communities, opportunities to enjoy the night sky at Acadia National Park are threatened. To prevent further impacts and improve the dark conditions that exist at Acadia, the NPS is seeking the cooperation of local governments; residents, businesses, schools, and others to prevent or minimize light pollution. The NPS and Island Astronomy Institute entered into a cooperative agreement in 2008 to measure, promote, and protect the night sky in and around Acadia. The strategy includes the following activities:

- Scientifically measure and monitor the quality of the night sky in Acadia National Park and surrounding communities.
- Complete demonstration projects in Acadia National Park and surrounding communities to install outdoor lighting fixtures that prevent or minimize light pollution.
- Educate and engage visitors, residents, business owners, and elected officials in promoting the values and benefits of the dark night sky.
- Develop and institutionalize lighting guidelines and ordinances that preserve the dark night sky.

3. The Innovations Awards four selection criteria are:

i) novelty, the degree to which the program or initiative demonstrates a leap in creativity

ii) effectiveness, the degree to which the program or initiative has achieved tangible results

iii) significance, the degree to which the program or initiative addresses an important problem of widespread public concern

iv) transferability, the degree to which the program or initiative, or aspects of it, has been successfully transferred to other government entities or shows promise of being successfully transferred.

Please show how your program meets each of these criteria.

(maximum 500 words)

i) Novelty:

Light shining on the ground from a fixture can be easily measured with a hand-held meter. When light shines into the sky it interacts with the dust and gasses along its path, scattering in complex ways causing the sky to glow. For many reasons, this sky glow is far more challenging to measure than light from a fixture. The NPS pioneered an innovative system to measure and accurately map this form of light pollution. The system uses a robotic camera to measure the brightness of stars from a given location. Knowing the amount of starlight lost as it passes through the atmosphere provides the key to the system's unique capabilities. The atmospheric loss is used to calibrate the faint glow recorded by the camera between the stars. The result is the most accurate maps of artificial sky glow in the world.

ii) Effectiveness:

The purpose of the innovation is to measure, promote and protect the night sky as a natural resource. Transfer of the NPS capability to the IAI produced a chain reaction in surrounding communities. Within months the Acadia All American Road became the first national scenic byway in the nation to commission an inventory of night sky quality. Increased residential awareness of the quality of their night sky lead to voter approval of four municipal lighting ordinances within two years. In addition, lead the Maine State Legislature to direct the Maine State Planning Office to

address the issue. Currently, Maine's Department of Environmental Protection is developing complimentary criteria.

iii) Significance:

The day-night cycle is the most important natural rhythm in the world. Its control is fundamental to the functioning of a modern society. However, growing evidence suggests the curtailing the natural daily cycle can negatively impact wildlife and the human circadian rhythm. The estimated lose loose \$10 Billion every year on poor lighting that makes North America visible from space.

Maine's "quality of place" makes tourism the largest part its economy. Acadia is one of the last places in the eastern half of the United States retaining a natural day - night cycle. Recognizing the economic value of promoting some of the nation's last star filled night time environments lead to the Acadia Night Sky Festival in 2009. In 2010 the festival became an official project of the Bar Harbor Chamber of Commerce.

To improve surveillance capabilities at its facilities, the Department of Defense now requires the solutions found in quality municipal lighting ordinances. Similar requirements in California's building code, were enacted purely to conserve energy. Currently, 10 states have adopted legislation to address the issue.

iv) Transferability:

Replication is essential to the success of this initiative. The NPS system is based on analytical techniques available in the public domain. With technical support of the NPS, the non profit Island Astronomy Institute has acquired a dedicated NPS measurement systems for the express purpose of making its capabilities available to the private sector. All educational materials developed for the initiative including ordinances is freely distributed via the internet.
