



Gaspar Bakos
Department of Astrophysical Sciences
Princeton University

Dear FCC,

I urge you, in the strongest possible manner, to reject Reflect Orbital's proposal to launch space mirrors to reflect sunlight back on Earth.

The sky belongs to everyone. If someone came up with the idea of painting our blue sky red, we would oppose. If someone decided to fill our atmosphere with heavy orange smoke, we would resist. The view of the night sky is our treasure. It does not belong to Reflect Orbital.

It is an aggressive move that exploits the lack of clear environmental guidance on the issue. When settlers invaded the West Coast of North America, they cut down much of the redwood forest. You have surely seen proud lumberjacks standing on the 20-ft-diameter cut stems of majestic, thousand-year-old trees. Of course, we now – in retrospect – find that outrageous and meaningless. This is how we would see Reflect Orbital's space mirrors a couple of decades from now, had we let it happen.



Let me list a couple of strong reasons against such a project.

Wildlife is very sensitive to ambient light. Some birds and insects settle at dusk, while others become active. They can not handle sudden, rapid changes that reflectorbital's mirrors would cause. What would fireflies or owls do? What about migrating birds or butterflies? The very idea of this project lacks environmental sensitivity at the most basic level.



Second, our human health has been shown to depend on artificial light at night by now hundreds of refereed publications. Once in the 5km "beam", there will be no way of hiding. This light is not *targeted*, but would shine on everything within the circle. This is completely against best lighting practices and would floodlight a large area in a rudimentary manner.

Third, reflect orbital argues that the beam will be collimated and will be present only



Gaspar Bakos
Department of Astrophysical Sciences
Princeton University

within a 5km radius. Due to the scattering of light in our atmosphere, just like the sky before sunrise or after sunset, there will be a huge glow in the night sky visible from tens of kilometers, both from direct light from the mirror being scattered in air (and clouds), and also by the reflected light from Earth shining “back” in the atmosphere (and clouds). Detailed simulations show that the effect will be devastating to the night-sky environment.

Reflect Orbital also argues that this is clean energy. Ignoring the pollution caused by the launch and possible de-orbiting, as well as the manufacturing process, it is indeed “green”, but it is used for the wrong purpose. We currently waste about 75% of the light at night due to significant uplight, glare, and overlighting. Our efficiency could be improved by reducing energy waste and optimizing current ground-based lighting, such as using well-shielded lights, eliminating uplight, using timers and dimmers, and using on-demand lighting. The true green way is *not* floodlighting earth from space. To illustrate this with two simple examples: imagine using solar power to charge the batteries of coal-mining trucks, or wind power to run offshore oil-drilling platforms. You surely resonate with the understanding that these would not be eco-friendly, even though they use green energy.

Finally, there is the beauty of the night sky, with constellations, the Milky Way, and the Zodiacal light. These are an important part of our cultural heritage, going back hundreds of thousands of years. One of mankind’s oldest mythological themes is the Pleiades (the Seven Sisters), a gorgeous cluster of relatively faint stars. Everyone must see this. Reflect Orbital’s space mirrors will erase all these from our night sky.

While this is a pilot study, which will probably lead to a statement of “*there was no significant objection, and we now proceed with more*”. This project must be stopped at this very moment, before we see nothing but shiny billboards flying overhead, advertising the best hamburger. Because once the night sky is gone, with tens of thousands of space mirrors shining, there won’t be any arguments against the billboards.

I would like my kids to be able to point out the Big Dipper to their children without saying, “Let’s hurry up, Beam #1237 is coming towards us, and we have 30 seconds left.”

I thank you for reading this through, and again, I urge you to reject this proposal at this stage, given its environmental impact.

Cordially,

Gaspar Bakos