

11/25/12

Dear Ped/Bike/Motor-Public Works Commissions,

As a daily (and nightly) path user and engineer with years of experience in LED lighting design, safety engineering and project management, I am strongly against the Current Southwest Path lighting project. I feel this way not only because of all the negative impacts on the environment and the neighborhood but because it will clearly impinge on the safe and comfortable enjoyment of the path for all users. The attached presentation shows why.

The current proposal is not “pro-biking” or consistent with any other goals of sustainable transportation. This project, in fact, represents an example of “what not to do” to a bike path in terms of lighting, not to mention the plan’s unnecessarily large impact on a unique and valuable natural environment. The permanent coupling of fossil fuel emissions to the acts of walking and biking are hard enough for many users to embrace, but this infrastructural gesture would be counter-effective as well. People have been pigeon-holed as being “for” or “against” “lighting the path”, but the only lighting choice that has been offered is detrimental to the safe and comfortable use of our most heavily-used path and far worse than “doing nothing”.

People that have actually viewed these test lights at night on the path usually understand immediately why this design would cause problems. Technically speaking, this proposal fails the two main criteria (glare and uniformity) that are used to evaluate the suitability of lighting for bike/pedestrian paths. The fact this project would introduce both deficiencies simultaneously is especially problematic.

Advocates for this proposal sometimes recite: “just as streets have lights, so should other transportation corridors such as a bike path”. This fuzzy rationale is typical of many of the problems with this project. Few would argue against investing in our bike/pedestrian infrastructure and improving night-time visibility on our paths. The illumination requirements for motorized and non-motorized transportation corridors are not the same, however. The differing needs are not bridged by reducing the height of the poles; if anything, this makes these fixtures even *less* suitable for any non-motorized path because of the increased overhead glare and decreased uniformity of illumination that results.

Although the Bike Federation of Wisconsin claims 70% of respondents to their survey were “for lighting”, it is likely that many of the respondents to their statewide blog’s “action alert” had never previously heard of the Southwest Path, let alone seen the test lights there at night. It is worth noting that the question of “have you seen the test lights?” was not asked in the Bike Federation or Traffic Engineering surveys that have been variously put forward as being representative of a desire for, or acceptance of, this project.

A better gauge of the actual observations of path users about these lights can be found in the comments on the city's project website. Many opponents of this plan cite their personal observations of the test lights at night as a motive for their opposition.

See: <http://www.cityofmadison.com/bikemadison/planning/project.cfm?id=41>

Experts in lighting and transportation engineering have also contributed knowledgeable comments (e.g. see 7/20/12). The total count as of Nov1 on this site is 272 to 119, or a ratio of 2.3 to 1 against. If you ignore just the comments submitted on 7-13 (the day after the first Bike Fed statewide "action alert") then the count jumps up to 251 to 78, or 3.2 to 1 against. Even so, it is unlikely that safety engineering issues on such a topic are best resolved by "survey".

Discourse for this project has been distorted by the inaccurate packaging of the entire issue as "Homeowners vs. Path Users". Some proponents have attempted to marginalize the legitimate concerns of adjacent property owners as a self-interested "Nimby" reaction while also falsely lumping all opposition for the project into this category. Aside from being somewhat divisive, this framing is disingenuous because many, if not most homeowners on or near the path are also daily recreational and commuting path users. Virtually everyone who lives on or near the path is indeed against the project. People in this group are also the most likely to be familiar with the path and its mix of users. This group is also more likely to have seen the test lights for themselves, because they have been sent notices by the city about the project. Path users from other areas who have seen the test lights at night are usually similarly opposed to this project.

With the current proposal, the downward illumination under each fixture is about twice that of a neighborhood streetlight, and it drops to nearly zero in between (Fig. 1).

The "bright" and "dark" zones are each roughly 120 feet in length along the path. This is contrary to WisDOT guidelines for lighting uniformity for Bike-Ped paths (Fig. 2).

The proposed fixtures are unshielded towards users on the path (even though they are still considered "full cutoff") and therefore expose user's eyes directly to the fixture's high-intensity LED point sources for the entire approach towards the fixture (Fig.3).

Measurements taken at the test fixtures near Council Crest show that when a walker or biker is within 25 feet from one of these fixtures, looking horizontally down the path, their eyes will receive the same amount of light (20lux) as if they were looking straight up into the fixture from directly below. This means discomfort glare and squinting for every path user that travels under these lights (Fig.4).

Although either glare or uneven illumination by itself is undesirable, the simultaneous introduction of large amounts of both at regular intervals would create a new visual safety hazard on the SW path (Fig. 5). This is mainly related to the finite time that it takes for the eye to adjust to abrupt reductions in brightness. A subdued version of this problem has always existed on the SW path when cyclists leave the lighted zones at Prospect, Virginia Terrace and Council Crest crossings. These are the regions where dark-clothed pedestrians are least visible to bikers that have just crossed the lighted zone. The new overhead fixtures produce far more glare than these current ones, and would be placed in areas with little or no spillover “fill-in” light from adjacent streets. This means that the new glare/transition hazards introduced from adoption of this proposal would be unprecedented both in their magnitude as well as their quantity (Fig. 6). This project repeats the worst aspects of the path’s current lighting scheme.

The attempt to transfer overhead LED lighting technology that was recently acquired by the City for streets to the different application of a bike path is at the root of the technical problems with this proposal. This resulted in a design that does not meet any reasonable goals for lighting of the SW path in the first place (Fig7).

An installation with better overall uniformity and far less glare could be achieved for even lower cost than the current proposal. Such a design would capitalize on the uniquely uniform natural lighting (or lack of it) in the SW path corridor and the relative absence of competing spillover light from any adjacent streets and parking lots. An effective design would rely on the selective placement of clusters of low-glare fixtures on straightaways and at all crossings, ramps, and curves. A low-power ceiling “wash” fixture would be installed in both the Edgewood and Spooner tunnels. Other options will no doubt emerge as the nascent field of outdoor LED lighting matures. Advisory signs about safe path use (e.g. use a light, etc.) can however be immediately installed. These can be lit and therefore very attention-getting to night users.

Proceeding with the current proposal will lock in a fundamentally flawed lighting system on this highly used path for the foreseeable future. Most of the goals talked about for the SW path lighting project (e.g. collision avoidance, user comfort, and recruiting new regular path users after dark) are not controversial. The presumption that Traffic Engineering’s current proposal will promote these goals has been inaccurately presented as a “given” from the beginning. It is pretty obvious to many outside experts and regular path users that this overhead lighting project is not the best way to achieve these goals and in all likelihood would undermine them.

Madison’s valuable multi-use paths and their users deserve much better.

Thanks and

Regards,

Perry Sandstrom BSEE

For the Southwest Path Alliance <https://www.facebook.com/OWLPATH>