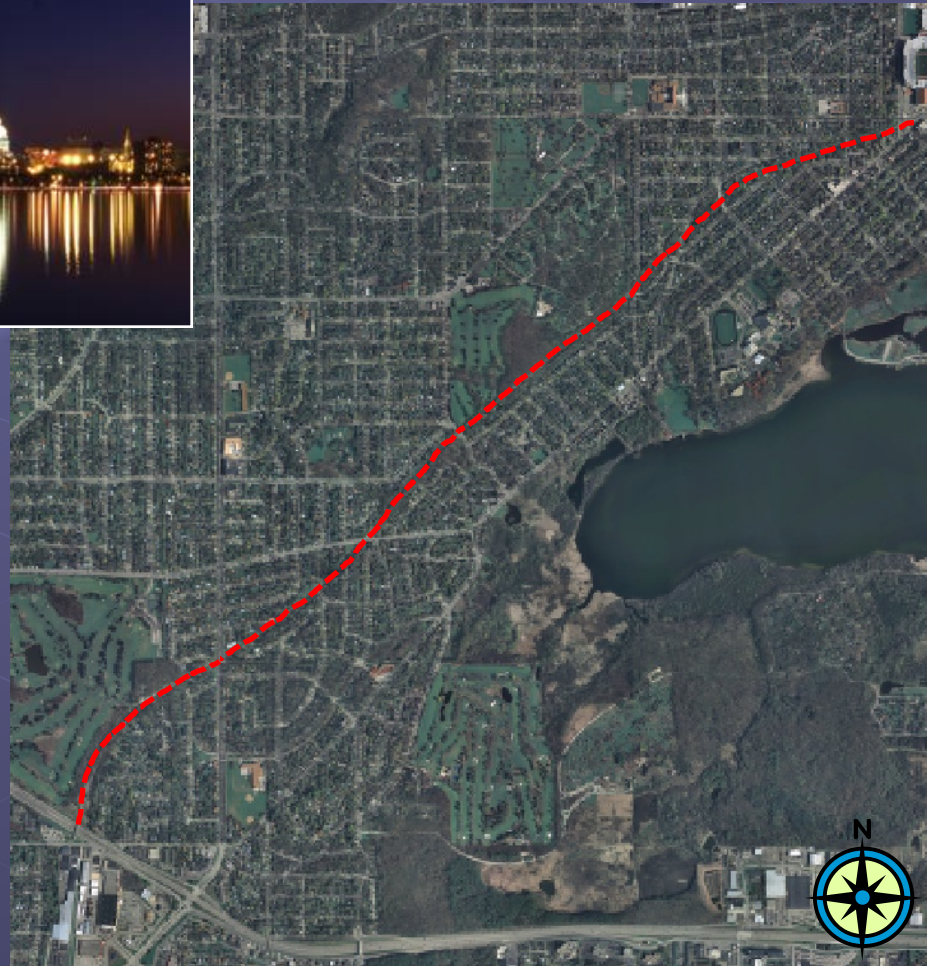


Southwest Path Lighting Project



*BPW
Nov. 28, 2012*

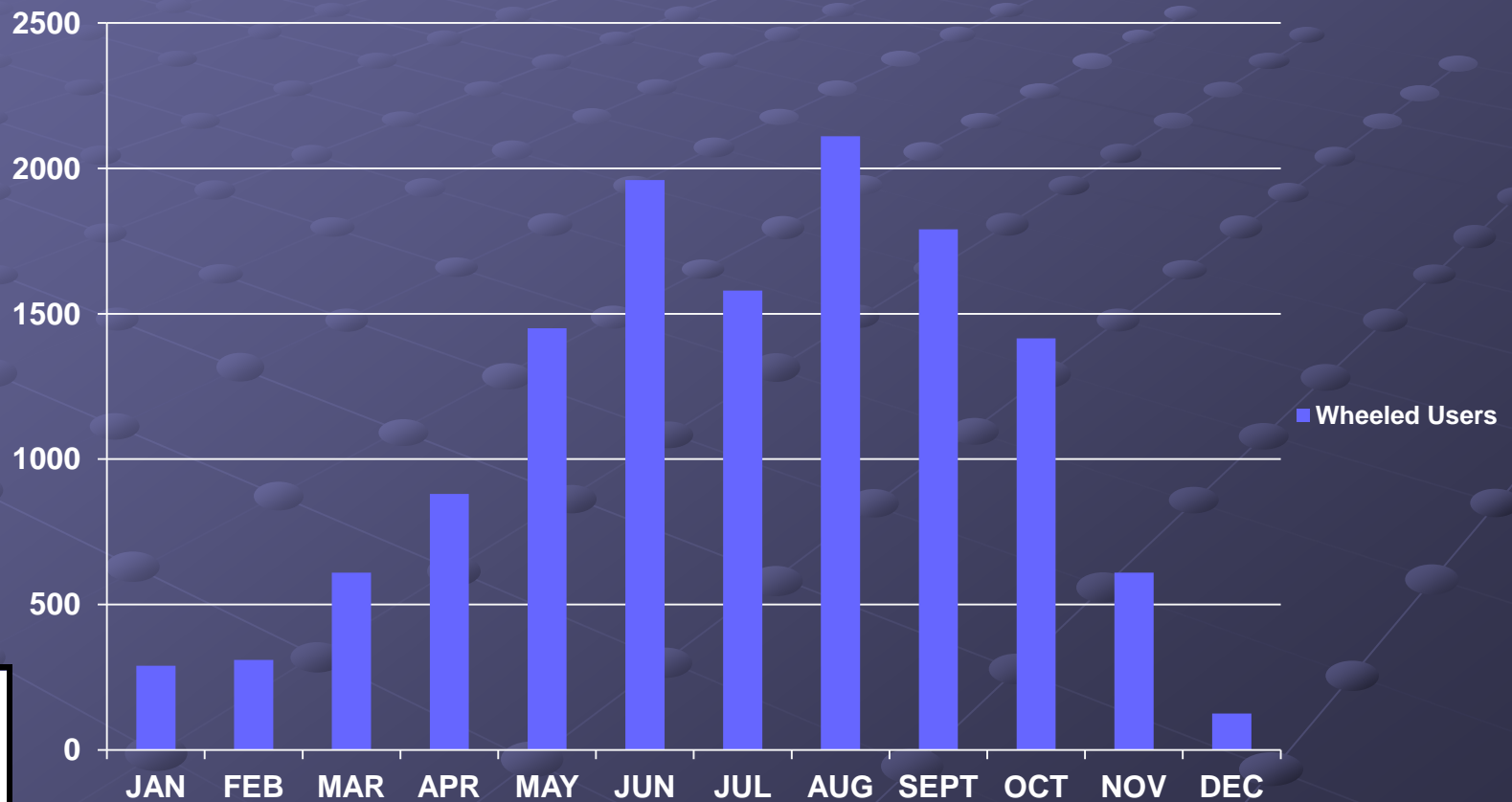
Project Description

Project:	Southwest Path Lighting
Project Budget:	\$250,000 - \$300,000
Project Limits:	Breese Terrace to South Beltline Hwy
Assessments:	None
Two public meetings:	December 2011 July 2012



Usage

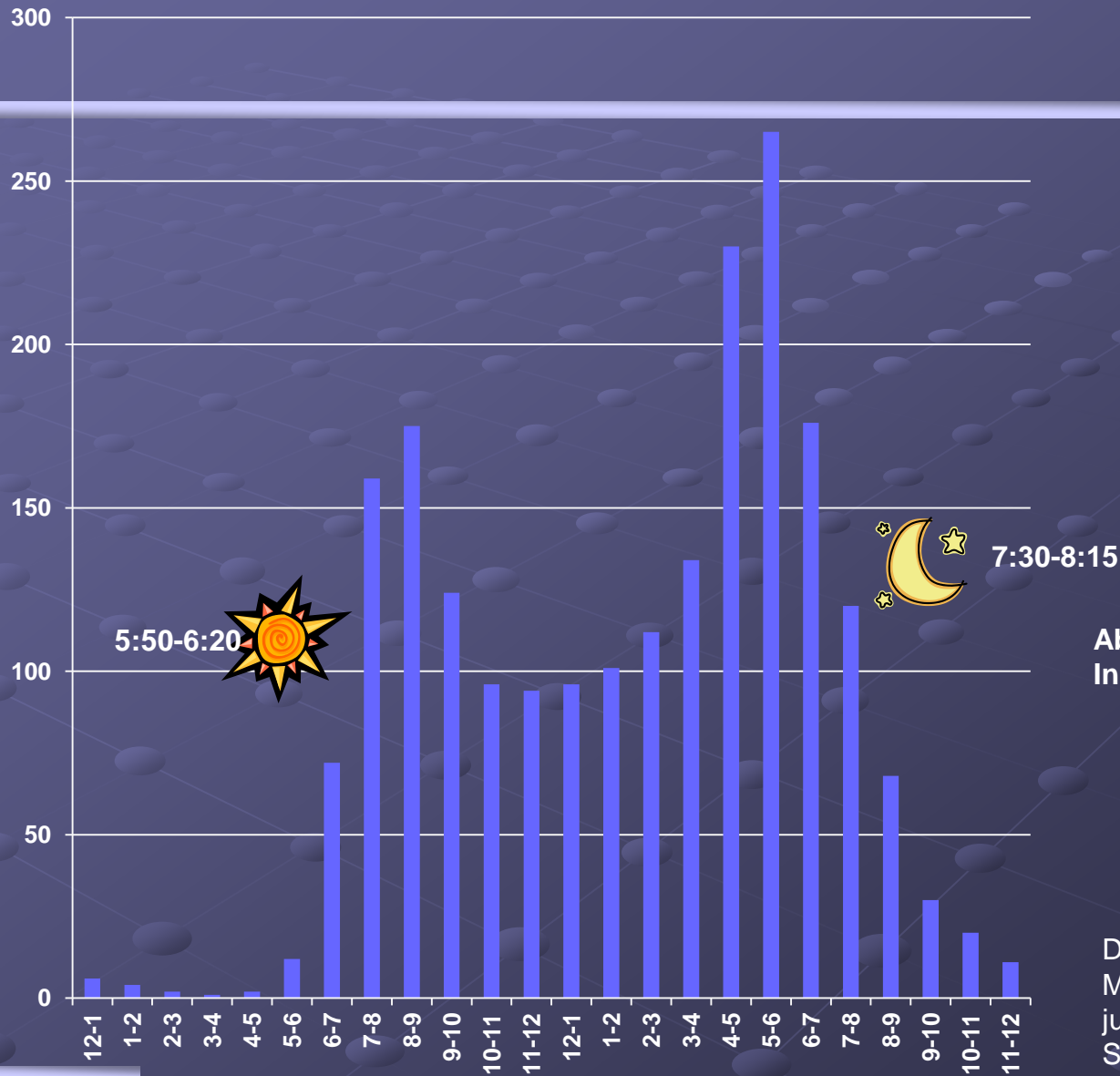
(Average Weekday Traffic by month)



Data collected 2010/2011. Machine Count Sta. #5005 just W of Breese
Source: City of Madison Traffic Engineering Division

Usage

Weekday Wheeled Traffic by Hour August 2011



5:50-6:20



7:30-8:15

About 200 users
In hours of darkness

Data Aug. 2011.
Machine Count Sta. #5005
just W of Breese
Source: City of Madison
Traffic Engineering Division

Why Light?

Generally -- two reasons why any lighting project is initiated:

- 1) **Lighting to address crime;**
For example, we receive frequent requests from neighborhoods and MPD to address criminal behavior with additional light, or
- 2) **Lighting for street or path safety.**
For example, local streets are routinely lit based on City policy, crashes are not tallied before a street is lit.

This project is proposed under no. 2---to improve path usefulness, user safety and comfort. The Path is a very highly used transportation and recreational corridor.

Light will...

1. Illuminate path obstructions and debris
2. Provide vertical illumination of walkers and bicyclists
3. Cyclists and peds will now be more visible to each other as they approach, remember, pedestrians are not required to carry a light.



Why Light?

People have asked “Why don’t bicyclists light the path?”

SS 347.489 Requires bicycles have a white, front light that is visible from 500 ft away. Plus a red rear reflector or light visible from all distances from 50 to 500 feet.

The law does not require a bicyclist’s lights to illuminate the road or path.

The light is only intended to make the bicyclist visible to others, such as drivers on the street.



Proposed

Lighting the path

- 20 ft black pole (standard street light pole is 30 ft high)

Why?

- 20 ft pole effectively lights the path and provides the vertical illumination desired--it is a balance Between lighting the path with a minimal number of fixtures, Reducing cost, power consumption, and maintenance



Pole and Fixture

Council Crest (Initial pole and fixture)



Bollards

Did the City consider using Bollards?

Yes, but it was not considered cost effective.



Bollards

Bollards Do Not:

1. Cost effectively light the path
2. Do not provide the vertical illumination of path users desired

Bollards Do:

1. Increase project cost —
estimate 670 fixtures and a
project cost approaching \$1.1 million
2. Require more fixtures, and interferes with
usage of running area just off the path
3. Requires more energy
4. Require more maintenance
(experience with vandals, and plows)
5. Light your lower extremities



Proposal

53 Watt LED, special Type 2 w/backlight control

Benefits of LEDs

- Higher color rendering, increased luminance uniformity
- More efficient--use less energy
- Longer lifespan
- Less maintenance/ no relamping
- Produces a directional light



Completed

Path	Pole Spacing	Pole Height	Light Type	Pole Type
Brittingham	230 ft	25 ft	MH	Concrete
Marsh View	230 ft	20 ft	MH	Black
Southwest Path (South of Beltline)	180-205 ft	25 ft	MH	Concrete
Starkweather	200 ft	25 ft	MH	Concrete
Wingra Creek (Olin to Beld)	220 ft	25 ft	MH	Concrete
Yahara River (Johnson-E. Wash)	185 feet	20 ft	MH	Black
Cannonball Path*	220-240 ft	20 ft	LED	Black

* Same pole and fixture as proposed was installed on the Cannonball Path this summer/fall, with few complaints.

Revisions

Thru the process some technical issues heard were :

- Light too bright, too cold, too blue
- Poles too tall, will be able to see LEDs from below path
- Project too expensive
- Project does not provide continuous light
- Concerns about light pollution, glare and light trespass



Response

“Light too bright, too cold, too blue”

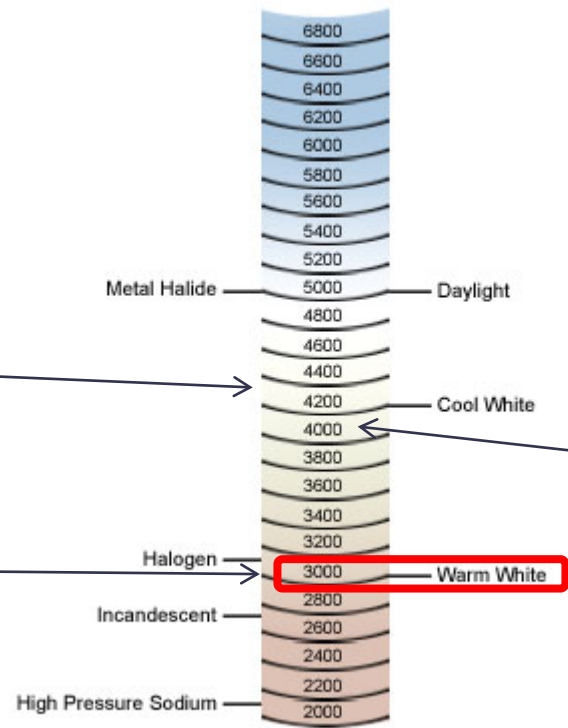
We went to work with our LED manufacturer...

- ✓ **Initial light output--6.6 Lux***
- ✓ **Revised and reduced light output--3.7 Lux***
- ✓ **4300 degree K down to 3000 degree K**
- ✓ **Result in warmer light....**
- ✓ **Engineered louvers also decrease light intensity as well as spillage**

*** Average output, 80 ft. distance from pole.**



Color Temperature



BEFORE

AFTER

Moonlight

Response

**“Poles too high, will be able to see LED lights below.”
Light trespass concerns.**

- ✓ **Can we reduce pole height? Poles are already much shorter than standard Street light pole. Shorter poles increase cost, requiring more to do the job, requires more fixtures, increased energy, maintenance, and siting issues, plus costs to maintain and stock non-standard equipment.**
- ✓ **The newly engineered louvers have reduced the visibility of the LEDs, also act to reduce the light intensity and further tightened the light output pattern.**



LED Fixture with Louvers



Fixture on test pole, and does not represent the pole recommended for the project.

Response

“The Project is too expensive”

- ✓ Considering the scope of work, the project is cost effective. Much more affordable than continuous lighting or using bollards
- ✓ Project cost is already less expensive than a comparable project because underground work has already been completed.



Response

“The Project needs to provide continuous light”

- ✓ While State DOT guidelines may recommend that paths be lit continuously, they are not requirements, there is no one-size fits all recommendation for lighting. Most Madison paths (and streets) are not lit continuously.
- ✓ Continuous lighting increases cost requiring many additional poles and fixtures.
- ✓ Continuous lighting is contrary to objections we receive where people request less light on projects.



Response

“Light pollution, glare and light trespass”

- ✓ LED lights are preferred because of their ability to direct light where needed.
- ✓ With the further modifications staff made to reduce the wattage of the fixture and to add engineered louvers, we find even less light trespass and glare.
- ✓ All the fixtures are full-cut off and International Dark Sky Compliant



Response

“The SW Path is an environmental corridor”

The path is a wonderful corridor, yet it remains a transportation corridor.

The Path runs within a State owned railroad corridor purchased from the Illinois Central Railroad.

It is not mapped by City Planning nor the Dane County Regional Plan Commission as an environmental corridor or E-way.

Funds to build the path were provided by the FHWA as a transportation enhancement project. Transportation was and is its primary purpose.



Response

- “Dark Sky concerns”

The fixture is a full cut-off fixture. It is a low wattage, well engineered down light. This is not the offensive wall pack that is the focus of the Dark Sky organization.

- “Educate path users to light themselves”

Certainly education is desirable. However, it does not address the overall problem of encouraging the use of the corridor, nor does it address the fact that a bicyclist’s light is only required to be visible to others. It is not required to allow the bicyclist to see other people or objects, including potential hazards on or adjacent to the path surface.



Summary

A challenging project:

- ✓ Addressed the technical questions and concerns
- ✓ Developed a cost effective project
- ✓ Minimized light trespass
- ✓ Minimized environmental impact by using fewer poles and fixtures while reducing the power required
- ✓ and created a fixture that is unique to Madison...



