

LED LIGHTING DOWNTOWN OKEMOS

Michigan State University – Practicum 2010

Agenda

- Introduction
- Project Background
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- LED Advantages/Disadvantages
- Application in Other Cities
 - ▣ Oakland, CA
 - ▣ Elk Rapids, MI
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- Public Involvement
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- Conclusions
- Comments/Questions

Introduction

- Who we are
 - ▣ Practicum students - Urban and Regional Planning, Michigan State University
- Who our client is
 - ▣ Paul Brake, Executive Director for the Meridian Township DDA
- What our project is
 - ▣ LED lighting, downtown Okemos
- Why complete the project
 - ▣ Evaluate the potential impacts of LED lighting in downtown Okemos
 - ▣ Develop and design a pre- and post-survey to assess public knowledge on LED technology
 - ▣ Assist in the creation of content to be aired on HOM-TV

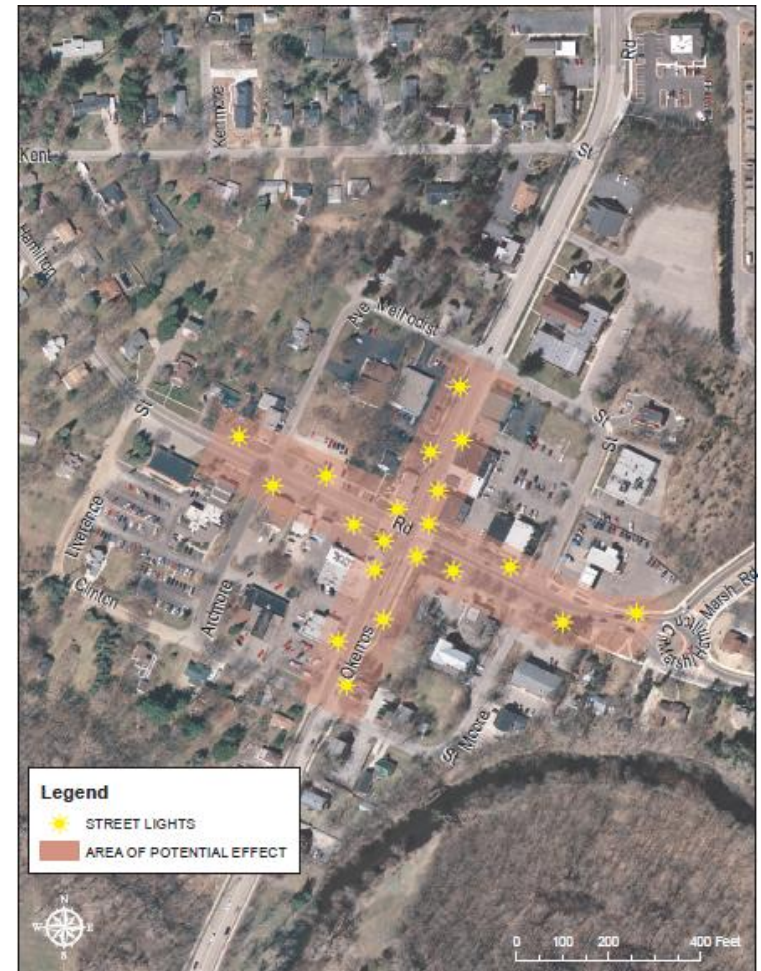
Project Background

- Who
 - Meridian Township Downtown Development Authority (DDA) working with the Lansing Board of Water and Light (LBWL)
 - Project stemmed from Energy Efficiency and Conservation Block Grant from Michigan Department of Energy, Labor, and Economic Growth (DELEG)
- What
 - 20 proposed LED streetlights in downtown Okemos
- When
 - Estimated work outline – January 2010 to September 2010



Project Background

- Where
 - ▣ Placed along Hamilton Road and Okemos Road
- Why
 - ▣ Improve lighting in the target area
 - ▣ Implement energy efficient technology
 - ▣ Increased cost savings
 - ▣ Promote an improved business climate
- How
 - ▣ Estimated cost is \$204,000
 - ▣ Funded through DELEG grant (\$50,000) & Tax Increment Financing
- Important Notes
 - ▣ Public Involvement through HOM-TV



Site Background

□ Location and Zoning

- Downtown Okemos – Meridian Township
- Area bordered by Ardmore Avenue and Methodist, Moore, and Clinton Streets
- Downtown is divided into three zones:
 - Core Zone
 - Downtown Zone
 - Edge Zone
- Downtown is zoned Community Commercial (C2)
- LED streetlights enhance the permitted uses in the designated Community Commercial District



Site Background (cont.)

□ Current lighting conditions

- ▣ Four existing streetlights



- ▣ Other lighting includes private lights to illuminate business signs



Importance of Illumination

- Safety (In the Study Area):
 - ▣ Generally, crimes occur more often in dark places
In 2009 --- 1 Threat; 3 Larcenies
100% happened at Night
 - ▣ Dark intersections can hinder a drivers ability to see

Total in 2009: 14 Accidents

	Accidents in Daytime	Accidents at Night
Numbers	4	10
Percentage	29%	71%

- Adequate lighting may reduce the number of crimes and accidents, which can result in poorly lit or unlit areas

Importance of Illumination

- Increase Walkability – Aim to create a safer and more comfortable environment
- Increase the sense of community – Enable residents to feel at home
- Stimulate local aesthetics – Attract visitors and foot traffic to the area



FIGURE: Butterfly Statues in Study Area along Okemos Rd and Hamilton Rd

LED Advantages

- Reduce night sky light pollution
- Reduced energy consumption
- Can be recycled, and are made of non-toxic materials
- Reduced maintenance costs
- Does not produce radiation, ultraviolet, or infrared emissions
- Brighter and covers a greater area
- Longer lifespan than traditional lighting

LED Disadvantages

- Higher initial cost
- Dangerous to the naked eye
- Sensitive to extreme hot or cold temperatures

Application in Other Cities

- Oakland, California
- Elk Rapids, Michigan
- Lansing, Michigan



Oakland, California

- Who
 - ▣ Oakland – A host city for the DOE solid-state lighting (SSL) GATEWAY Demonstrations Projects
- What
 - ▣ LED Streetlight Project totaling 15 lights
- When
 - ▣ Efforts began in 2008, and were completed at the end of 2009
- Where
 - ▣ HPS luminaries were replaced by LED luminaries on Sextus Road and Tunis Road between Empire Road and Coral Road in a residential area.
- Why
 - ▣ Achieve energy-efficiency, with improved lighting technology
- Important Notes
 - ▣ Annual electrical savings are about 36% in Phase II and 52% in Phase III
 - ▣ The utilities company Pacific Gas and Electric Company provided the majority funding while Energy solutions helped with the data collection and analysis

Elk Rapids, Michigan

- Who
 - ▣ Elk Rapids Downtown Development Authority
- What
 - ▣ Retrofitted 96 streetlights
- When
 - ▣ Spring and Summer of 2009
- Where
 - ▣ Replaced all streetlights in downtown Elk Rapids
- Why
 - ▣ Reduction of light pollution, energy costs, maintenance costs, and to become a “Greener” community
- How
 - ▣ Tax Increment Financing and a promise of reduction in energy consumption
- Important Notes
 - ▣ The Village will save an estimated \$4,000 annually
 - ▣ 60% reduction in energy consumption



Lansing, Michigan

- Who
 - ▣ Lansing Board of Water and Light (LBWL)
- What
 - ▣ LED Streetlight Project totaling 246 lights
- When
 - ▣ Efforts began in 2007, and are continuing as the project expands
- Where
 - ▣ Grand Avenue between Ottawa Street and Lenawee Street, and on Allegan Street between Capital Avenue and Grand Avenue
- How
 - ▣ Original funding through the American Public Power Association (APPA) Demonstration of Energy-Efficient Development (DEED) grant . Continuing funding through the LBWL
- Important Notes
 - ▣ The BWL will save an estimated \$10,000 in annual energy costs
 - ▣ LBWL is a key partner in the streetlight design for the DDA lighting project



Public Involvement

□ Survey Efforts

- Pre-Survey: A pre-survey has been developed which will be distributed to local residents to query their knowledge of LED technology and thoughts on the project before actual installation
- Post-Survey: Post-survey efforts will commence after the streetlight project has been completed to determine the public reaction, and LED knowledge after installation

□ HOM-TV Content

- 30 minute educational program to air on HOM-TV regarding the benefits and costs of LED technology, and a summary of the project itself



Public Involvement-Pre-Survey

APPENDIX A: PRE SURVEY

Pre Survey Questions

1- Do you have any previous knowledge about Light Emitting Diode (LED) technology?

- Yes
- No

2- What kind of advantages and disadvantages do you think LED streetlights might have?
(Check all that apply)

Advantages

- Reduce light pollution
- Reduce energy consumption
- Provide safety for drivers and pedestrians
- Reduce maintenance costs

Disadvantages

- Higher initial price for LED lights
- Other

3- Have you ever seen LED streetlights within Okemos?

- Yes
- No
- I don't know

4- Do you think streetlights (such as LED lights) will improve nighttime safety in your neighborhood?

- Yes
- No
- I don't know

- Nighttime safety
- Foot traffic
- Economic activity
- Neighborhood identity

Public Involvement- Post-Survey

APPENDIX B: POST SURVEY

Post Survey

- 1- Did you watch the LED Streetlight Education Program on HOM-TV?
 - Yes
 - No
 - I don't know

- 2- Did you take the survey distributed before the installation of the LED streetlights?
 - Yes
 - No
 - I don't know

- 3- Since the installation of the LED streetlights along Okemos Road and Hamilton Road in downtown Okemos, have you noticed a difference in brightness compared to that before their installation?
 - Yes
 - No
 - I don't know

- 4- Do you feel the new LED streetlights installed in downtown Okemos have improved visibility for pedestrians and drivers in the area? (select only one)
 - Strongly improved visibility
 - Somewhat improved visibility
 - Not improved visibility
 - Unsure

- Education Program on HOM-TV
- Brightness
- Create less glare

Public Involvement-HOM-TV Content

□ **Show Treatment:**

- Inform and educate Meridian Township residents about the LED street lights and how they fit into the Meridian Township Master Plan
- General benefits of LED technology
- Case studies of other community projects
- The uniqueness of the grant Meridian Township
- Promote economic development
- Visual examples and resident opinions before and after the street lights are installed

Recommendations

□ Lighting placement

- Commercial signage should be taken into consideration
- Emphasis should be placed on Okemos Road in relationship to the number of LED streetlights
- An LED streetlight should be placed on the North-East corner of Douglas J. Salon & Spa (★)



Conclusions

- Benefits to Okemos
 - ▣ Reduced energy consumption
 - ▣ Reduced maintenance
 - ▣ Lower operating costs
- Opportunities for the Community
 - ▣ Increased walkability/sense of community
 - ▣ Greater safety for drivers and pedestrians
 - ▣ Improved commercial lighting



Thank You!