LED LIGHTING
DOWNTOWN OKEMOS

Michigan State University – Practicum 2010
Agenda

- Introduction
- Project Background
- Site Background
- Importance of Illumination
- LED Advantages/Disadvantages
- Application in Other Cities
  - Oakland, CA
  - Elk Rapids, MI
  - Lansing, MI
- Public Involvement
- Recommendations
- 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 Black 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 driver's ability to see
  - Total in 2009: 14 Accidents

<table>
<thead>
<tr>
<th></th>
<th>Accidents in Daytime</th>
<th>Accidents at Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Percentage</td>
<td>29%</td>
<td>71%</td>
</tr>
</tbody>
</table>

- 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 Ottowa 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

- Nighttime safety
- Foot traffic
- Economic activity
- Neighborhood identity
Public Involvement - Post-Survey

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