Sustainable Transportation / I-LAST
American Planning Association
April 16, 2013
Agenda

• Broad Sustainability Discussion
  o Define “Sustainable Transportation”
  o Why should we be sustainable?
  o Sustainable Design vs. GHG
• How sustainable are transportation agencies?
• I-LAST Discussion
  o What it is
  o How it will be used
  o Costs to implement
  o How it is being implemented
  o How Scoring Works
What does “Sustainable Transportation” Mean?
What does “sustainable transportation” mean?

Allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations.

Is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy.

Limits emissions and waste within the planet’s ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and production of noise.

Sources: European Conference of Ministers of Transportation, Organization of Economic Coordination and Development, 2004. Centre for Sustainable Transportation, University of Winnipeg, 2005
Why should we be sustainable?

1. It is the “right thing” to do.
2. It is a good business decision.
3. It is beneficial for agencies to deploy certain sustainable strategies on their projects.
4. Sustainable design is an important tool for reducing the impacts of greenhouse gas (GHG) emissions.
2009 McKinsey GHG Curves
2009 McKinsey GHG Curves

Where is sustainable design?
2009 McKinsey GHG Curves

Emissions and abatement potential by sector and region
GtCO₂e per year; 2030

By sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>BAU emissions</th>
<th>Abatement potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>18.7</td>
<td>10.0</td>
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<tr>
<td>Petroleum and gas</td>
<td>3.5</td>
<td>0.9</td>
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<tr>
<td>Cement</td>
<td>3.5</td>
<td>1.0</td>
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<tr>
<td>Iron and steel</td>
<td>4.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Chemicals</td>
<td>3.7</td>
<td>1.7</td>
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<tr>
<td>Other industry</td>
<td>3.0</td>
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<tr>
<td>Transport</td>
<td>11.4</td>
<td>3.2</td>
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<tr>
<td>Buildings</td>
<td>4.6</td>
<td>1.3</td>
</tr>
<tr>
<td>Waste</td>
<td>1.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Forestry</td>
<td>7.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Agriculture</td>
<td>7.9</td>
<td>0.6</td>
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<tr>
<td>Total</td>
<td>70</td>
<td>38</td>
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</table>

By region

<table>
<thead>
<tr>
<th>Region</th>
<th>BAU emissions</th>
<th>Abatement potential</th>
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</thead>
<tbody>
<tr>
<td>North America*</td>
<td>9.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Western Europe**</td>
<td>6.2</td>
<td>3.2</td>
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<tr>
<td>Eastern Europe***</td>
<td>3.9</td>
<td>1.9</td>
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<td>OECD Pacific</td>
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<td>1.4</td>
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<tr>
<td>Latin America</td>
<td>6.9</td>
<td>4.5</td>
</tr>
<tr>
<td>Rest of developing Asia</td>
<td>8.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Africa</td>
<td>4.2</td>
<td>2.8</td>
</tr>
<tr>
<td>China</td>
<td>16.5</td>
<td>8.4</td>
</tr>
<tr>
<td>India</td>
<td>5.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Middle East</td>
<td>3.2</td>
<td>1.4</td>
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<tr>
<td>Global air and sea transport</td>
<td>3.3</td>
<td>0.8</td>
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</tbody>
</table>
### 2009 McKinsey GHG Curves

#### Exhibit 3.0.2

**Examples of behavioral changes beyond technical abatement measures**

<table>
<thead>
<tr>
<th>Category</th>
<th>2030 Estimate (GtCO₂e per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings</td>
<td>1.5</td>
</tr>
<tr>
<td>Transportation - road</td>
<td>0.5</td>
</tr>
<tr>
<td>Transportation - air</td>
<td>0.2</td>
</tr>
<tr>
<td>Modal shift</td>
<td>0.2</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0.6</td>
</tr>
<tr>
<td>Spill-over effects to industry sectors</td>
<td>0.8</td>
</tr>
<tr>
<td>Total behavioral changes</td>
<td>3.7</td>
</tr>
</tbody>
</table>

#### Illustrative calculation assumptions

- **Buildings**
  - -2°C change in HVAC, i.e., -12% energy use
  - -20% for residential water heating; lighting; appliances
  - -20% floor space for new builds

- **Transportation - road**
  - Consumers: smaller cars, driving more efficiently, driving less
  - Commercial transport: increased vehicle capacity or utilization, improved route planning, etc.

- **Transportation - air**
  - -20% air travel

- **Modal shift**
  - -5-10% road transport by switching to rail, bus, walk or cycle

- **Agriculture**
  - Meat consumption for developed world -20%; ROW -10% (after 40% consumption increase towards 2030)
  - Replace 0-50% consumption of ruminants** with other meat

- **Spill-over effects to industry sectors**
  - Cement: -15% (buildings)
  - Iron & Steel: -10% (buildings); -5% (transport)
  - Chemicals: -5% (buildings); -5% (transport)
Illinois Transportation Agencies Sustainability Efforts

- Illinois Tollway
- Chicago DOT
- Chicago Aviation
- RTA / CTA / Pace
- IDOT: Illinois Livable and Sustainable Transportation (I-LAST) system
The Development of I-LAST

Illinois Livable and Sustainable Transportation
I-LAST

Highway Sustainability Guide:
• Specific for Illinois DOT
• Resource Guide
• Checklist
• Rating System
I-LAST Team

Cooperative, volunteer effort between members of:

- Illinois Department of Transportation
- American Council of Engineering Companies of Illinois
- Illinois Road & Transportation Builders Association
Why develop I-LAST?

The transportation industry believed that there was:

- No organized approach to sustainable design
- Practice was too reactive to public demands
- Existing sustainable practices not recognized
- Belief that future sustainability requirements likely

Desire to be proactive
Why develop I-LAST?

IDOT desired to build on their historical approach:

• First on-site pavement recycling
  Edens Expressway Reconstruction (1960s)
• First Traffic System Center (1970s)
• 100 percent Pavement Recycling
  Dan Ryan Reconstruction (2005)
• Statewide CSS Policy (2005)
• Statewide Complete Streets Policy (2010)
Audience

Project teams:
• Engineers
• Project Managers

Includes:
• Design level issues
• Construction issues were added later
• Working within existing IDOT policy
Applications

• Guide to existing practices
• Source for information
• Comprehensive approach
• Sustainable ideas raised by project team
• Improved reception by public

• NYState GreenLITES served as a starting point; many other programs have jumped into the fray
Cost Implications

Finances are very limited

- No extra administrative costs
- Costs to yield results, not documents
- Must still work within financial constraints
Implementations

• Too many recent legislative mandates
• Staff shortages
  o No mandated use
• Able to implement without policy changes
  o Bottom up approach
  o Useful to design teams
  o Faster Implementation
Project Types

Range of projects and conditions very large

• Urban
• Suburban
• Rural

• Resurfacing
• Reconstruction
• New Construction

• Local Street
• Collector
• Arterial
• Expressway

Needs to fit all projects, not just premier projects
Project Phases

- Planning
- Preliminary Engineering / NEPA
- Plan Preparation
- Construction
LEED vs. I-LAST

**LEED**
- Project scopes consistent
- Multiple versions
- Expensive to certify
- High profile projects
- Complete project score

**I-LAST**
- Project scopes vary
- One version
- Low cost
- Includes all projects
- Score at each phase
Content Approach

• Comprehensive: Cover all issues
• Brief: Volunteer authors, easily accessible to users
• Useful: References to source material
• Ease of Use: No calculations, no certifications
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight major categories:

1. Planning

- Context Sensitive Solutions – 4 Items
- Land Use / Community Planning – 6 Items
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight major categories:

1. Planning
   - Alignment and Cross Section – 7 Items
   - Context Sensitive Design – 6 Items

2. Design
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight major categories:

1. Planning
   - Wildlife and its Habitat – 11 Items
   - Trees & Plant Communities – 10 Items
   - Noise Abatement – 13 Items

2. Design

3. Environmental
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight major categories:

1. Planning
   - Reduce impervious area – 11 Items
2. Design
   - Stormwater treatment – 10 Items
   - Construction practices – 13 Items
3. Environmental
4. Water Quality
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight major categories:

1. Planning
2. Design
3. Environmental
4. Water Quality
5. Transportation

- Traffic Operations – 6 Items
- Transit – 10 Items
- Bicycle & Pedestrian – 13 Items
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight major categories:

1. Planning
   - Reduce Electrical Consumption – 7 Items
   - Stray Light Reduction – 2 Items
2. Design
3. Environmental
4. Water Quality
5. Transportation
6. Lighting
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight major categories:

1. Planning
2. Design
3. Environmental
4. Water Quality
5. Transportation
6. Lighting
7. Materials

- Material Specifications – 31 items in 13 Groups
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight major categories:

1. Planning
2. Design
3. Environmental
4. Water Quality
5. Transportation
6. Lighting
7. Materials
8. Innovation
What Is In I-LAST?

Over 150 sustainable items that can be considered in the design of highway projects. The items are in eight nine major categories:

1. Planning  
2. Design  
3. Environmental  
4. Water Quality  
5. Transportation  
6. Lighting  
7. Materials  
8. Innovation  
9. Construction
# Check List

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>ID</th>
<th>DESCRIPTION</th>
<th>Available Points</th>
<th>Project Points</th>
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<tbody>
<tr>
<td>P-1 Context Sensitive Solutions</td>
<td>P-1a</td>
<td>Identify Stakeholders and develop Stakeholders Involvement Plan</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>P-1b</td>
<td>Engage Stakeholders to conduct Context Audit and develop project purpose</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-1c</td>
<td>Involve Stakeholders to develop and evaluate alternatives</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-1d</td>
<td>Employ Stakeholder involvement techniques to achieve consensus for Preferred Project Alternative</td>
<td>2</td>
<td></td>
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<tr>
<td>Planning</td>
<td>P-2a</td>
<td>Promote reduction in vehicle trips by accommodating increased use of public transit</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-2b</td>
<td>Accommodate multi-modal transportation uses (e.g. transit riders, pedestrians, and bicyclists)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-2c</td>
<td>Increase transportation efficiencies for moving freight through features such as dedicated rail or intermodal facilities</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-2d</td>
<td>Partnerships that provide environmental or technological advancements while promoting environmental stewardship</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-2e</td>
<td>Project is consistent with regional plans and local managed growth-based Master or Comprehensive Plans</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-2f</td>
<td>Project is compatible with local efforts for Transit Oriented Design</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
P-2: Land Use / Community Planning

**Intent**
The objective of this section is to consider balancing community goals and transportation needs through increased consideration of transportation alternatives that accommodate a broad perspective of community interests.

**Rationale**
Sustainable transportation alternatives can emphasize the relationship between land use and transportation planning. Local and Regional planners are incorporating sustainable design principles into their development plans, thus reflecting the diverse goals and interests of communities. Social and environmental issues, such as congestion, greenhouse gas emissions, and energy consumption, can be addressed through consideration of managed growth planning initiatives. The growing concern for the environment is leading to the objective of developing multi-modal transportation solutions that address mobility needs in an effective, efficient, and responsible manner. By focusing on land use and transportation planning from a holistic perspective and considering all users, transportation projects can achieve higher levels of sustainability.
Item Descriptions

P-2a  Promote reduction in vehicle trips by accommodating increased use of public transit (2 points)
Criteria
Two points will be awarded for incorporation of design elements offering alternatives to single occupancy vehicular usage such as Park-and-Ride lots, dedicated bus lanes, or High Occupancy Vehicle (HOV) lanes.

P-2b  Accommodate multi-modal transportation uses (e.g. transit riders, pedestrians, and bicyclists) (2 points)
Criteria
Two points will be awarded to projects applying “Walkable Communities” and/or the “Complete Streets” concepts by providing safe access for all users including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. These designs include considerations for older people, children, and people with disabilities.
Scored Project Examples
Projects Rated Case Studies

Route 56 (Suburban)

Bishop Ford Stony Island Feeder Interchange (Urban)

Route 62 (Rural)
Illinois Route 56

DuPage County
East Winfield Road to Naperville Road

Project Score: 84 points / 164 Points
I-LAST Criteria Met: 51%
Illinois Route 62

Cook County

Project Score: 96 Points / 184 Points
I-LAST Criteria Met: 52%
Bishop Ford (I-94) Expressway

Cook County
South of Downtown at Stony Island Avenue Feeder

Project Score: 80 points / 99 Points
I-LAST Criteria Met: 81%
What Ratings Mean

• Apply Best Practices
• Performance Measurement
• Comparison
• Public Buy-In
• Context Sensitive
• No Perfect Score
Status

• In place for three years
• Initial ratings and feedback collected
• Format updates for ease of use
• IDOT adopting as a manual of practice
Future

Relation with other scoring systems:
- University of Washington: GreenRoads
- FHWA: INVEST
- ASCE / ISI: Envision

Where will they go from here:
- Co-existence?
- Tiered approach?
- Change to resource guide?
- Fade away?
How to get I-LAST

I-LAST Design & Construction Manual are located on the IRTBA website:

www.irtba.org/GreenCouncil
Questions?