# Site Development Considerations for Changing Weather Patterns Commercial Development Case Studies

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#### **Outline of the Presentation**

- Overview of LID Strategies Appropriate for Commercial Sites
- Commercial Case Studies: Mitigation vs. Avoidance
- How Does Urban Form Impact Resource Consumption and Sustainability?
- Summary and Open Discussion





LID Strategies for Commercial Sites

### Green Roofs & Green Walls









#### Rain Water Re-use & Stormwater Polishing Systems







# Porous sphalt and Permeable Pavers, State Capitol, Hartford, CT urtesy of CDM Smith orous e cour **Pavement** Porous Parking Lot, Hilversum, Netherlands Photo by Dave Sousa



# Rain Gardens/ Vegetated Swales











# **Commercial Case Studies**

#### Price Chopper Saratoga Springs, NY



- Within multi-story, mixed-use development
- In-Town location with access to transit
- Parking structure





## Benefits of In-Town Stores

- Small 'footprint,' both physically and environmentally
- Supports urban lifestyles
- Customers can walk, bike or take bus to store.







#### 'Big-Box' vs. 'In-Town' Retail Land Use





#### Suburban 'Big Box' Store

 For each acre of retail floor space this Big Box Store has 3 times the # of impervious acres as the 'In-Town' equivalent.

#### **'In-Town' Stores**

- The redevelopment of 1 acre of In-Town land for retail, will save 13 acres of green fields.
- This huge savings is due to:
  - Multi-story buildings
  - Less highway infrastructure
  - Significantly less parking demand

for In-Town sites.



#### **Other In-Town Prototypes**











## Preservation and Adaptive Re-Use

- Avoids costly & resource intensive new construction
- Provides 'critical mass' of buildings and people in our downtowns.









#### **Overseas Examples**



Punggol Eco-Town, Singapore Image courtesy of CDM Smith







# Urban Form, Resource Consumption & Sustainability

### **Urban Form and Sustainability**

Urban form greatly impacts resource consumption, the environment, and sustainability.

Compare



#### **Dense Urban Form**

- Less pavement
- Less infrastructure
- More open, green space
- Less travel, shorter trips
- Efficient resource use





#### **Sprawling Urban Form**

- Extensive pavement
- More infrastructure
- Less open, green space
- Longer travel distances
- Greater resource use



#### Sustainable Regional Development





# Summary & Open Discussion

#### Summary



Best practices for LID are gaining acceptance among commercial sites in spite of the costs and other barriers.



Mitigation is good; avoidance is better.

Compact development should not be overlooked as an effective means to a more sustainable future.



The integration of transportation and land use is key to effecting regional sustainability.



Sustainable development provides better hydrologic and environmental outcomes, AND better health outcomes.



#### **Open Discussion**

- What are the barriers to implementing LID on large-scale, commercial sites?
- Mitigation vs. avoidance.
- How can policy-makers preserve resources and reduce environmental degradation on private commercial and industrial sites?
- "Carrot vs. the stick?"





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