



# Landuse Indicators

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# SOLEC '96 Findings

- **Land Use has been Destructive**
- **Current Land Use is not Efficient**
- **Planning and Incentives are the Keys**



# Considering Land Use

- **Economic Efficiency**
- **Healthy Society**
- **Future Generations**
- **Rest of the Ecosystem**



# Selecting Indicators

- SOLEC '96
- Other References
- SOLEC Criteria
- Expert Panel
- Final Selection



# State of Ecosystem

- **Development**
- **Transportation**
- **Natural Features**
- **Water Quality**
- **Social & Aesthetics**
- **Economics**



# Land Use as Stressor

- Land Conversion
- Pollution Levels
- Resource Use
- Ground Surface Hardening



# Responsive Measures

- **Brownfield and Redevelopment**
- **Sustainable Agriculture**
- **Green Planning and Management**



# Efficient Development

- **Make better development decisions**
- Population per acre of planned space
- **Community indicator only**
- High density is better







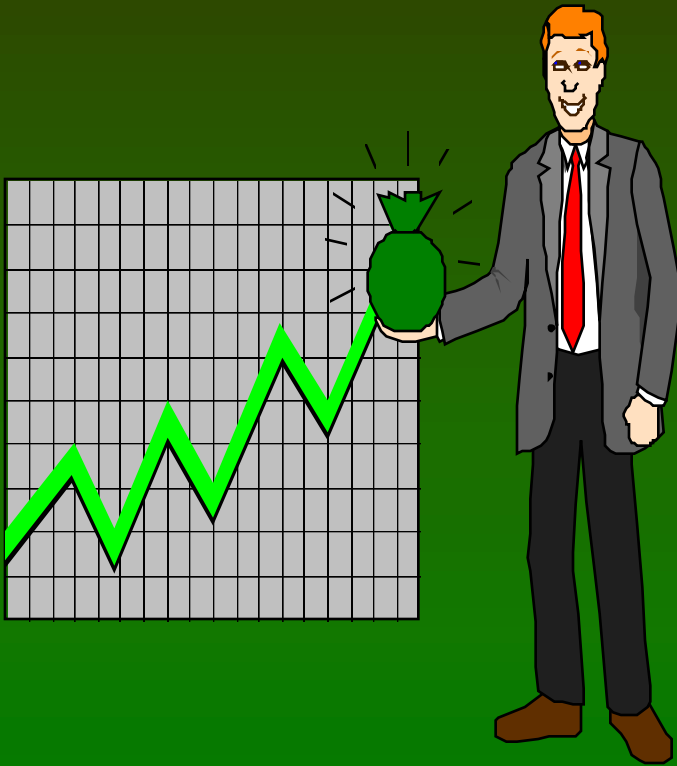
# Sprawl vs. Central Development

## 2 Million Added to Toronto by 2021

Urban Form	Urban Density	% Extra Land needed	Greenfield Lost (ha)	Extra Costs for Sprawl over 25 years
Sprawl	39/ha	60%	91,000	\$20 Billion extra
Central	50/ha	23%	36,000	25% less costly



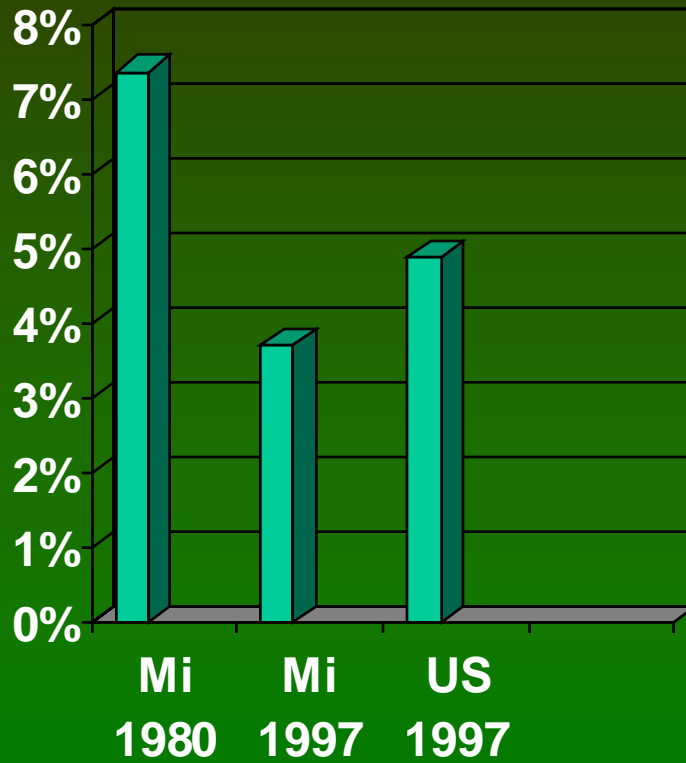
# Economic Activity



- **Indicator of prosperity**
- Per capita GDP and unemployment rates
- **Basin indicator**
- High GDP and low unemployment are desirable



# South East Michigan Economy



# Land Conversion





# Land Conversion

- **Indicates an irreversible loss of land**
- Acres converted to urban and other development uses
- **Community and basin indicator**
- Slower rates of conversion would better allow for future generations

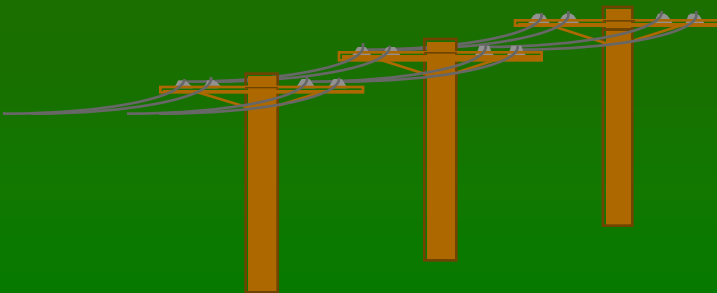
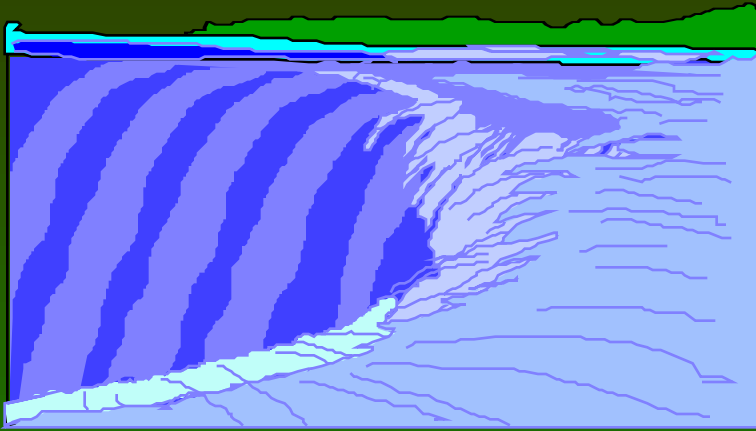


# Loss of Farmland

- 9.6% (4.52 million acres) lost in Great Lakes basin between 1981 to 1992
- 70% of converted Michigan farm land near SE Mich, Grand Rapids, Kalamazoo
- 96% of Toronto between 1966 and 1986 was prime farm land



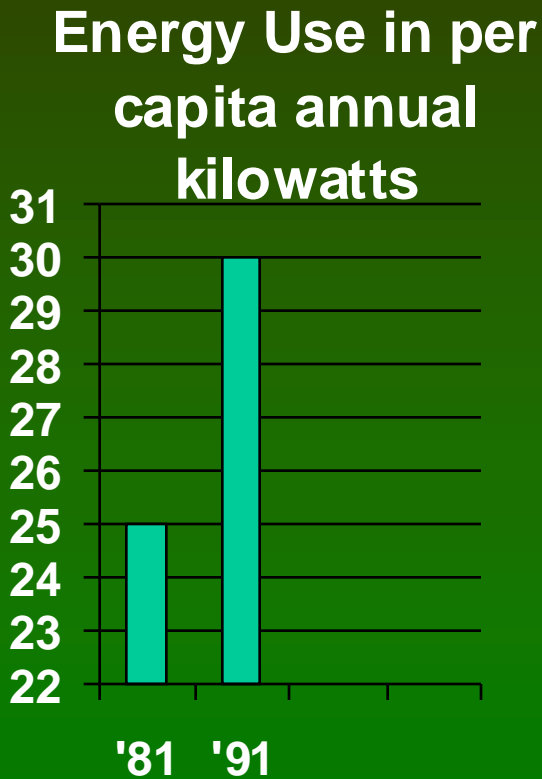
# Resource Use



- Human pressure on natural resources
- Energy and water use per capita
- **Basin wide indicator**
- The less used the more sustainable



# Toronto Electrical Energy Use



- **Electrical energy per capita in Metro Toronto rose by 20% from 25 to 30 kilowatts between 1981 and 1991**





# Brownfield and Redevelopment

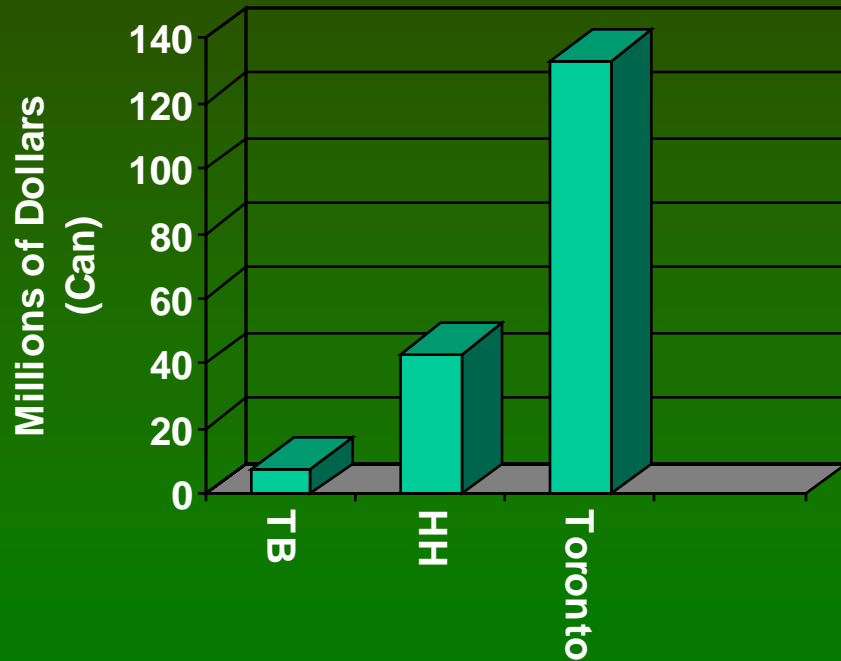
- **Restoration of polluted lands that are wasted opportunities**
- % change in acres of brownfields and redevelopment
- **Community and basin indicator**
- High levels of restoration are desirable

# Brownfields & Redevelopment





# RAP Restoration Potential Benefits



- Estimate of annual direct use benefits from clean up and restoration for Thunder Bay, Hamilton Harbour and Toronto RAPs



# Sustainable Agriculture

- **Mono-culture and aggressive cultivation practices have been destructive**
- % environmental farm plans
- **State/provincial and basin indicator**
- Ideally all farms would have environmental plans



# **Sustainable Agriculture**



# Environmental Farm Planning

- Farming uses 35 % of basin land
- \$15.2 (US) billion - 36 % of total product sales (1991/92)
- 203,993 Farms (1991/92)
- 58 million pounds pesticide used
- Ohio reduced 524 tonnes phosphorus in 1995
- Ontario reduced atrazine use by 2/3 since 1983



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