

Strengthening Communities through Sustainability

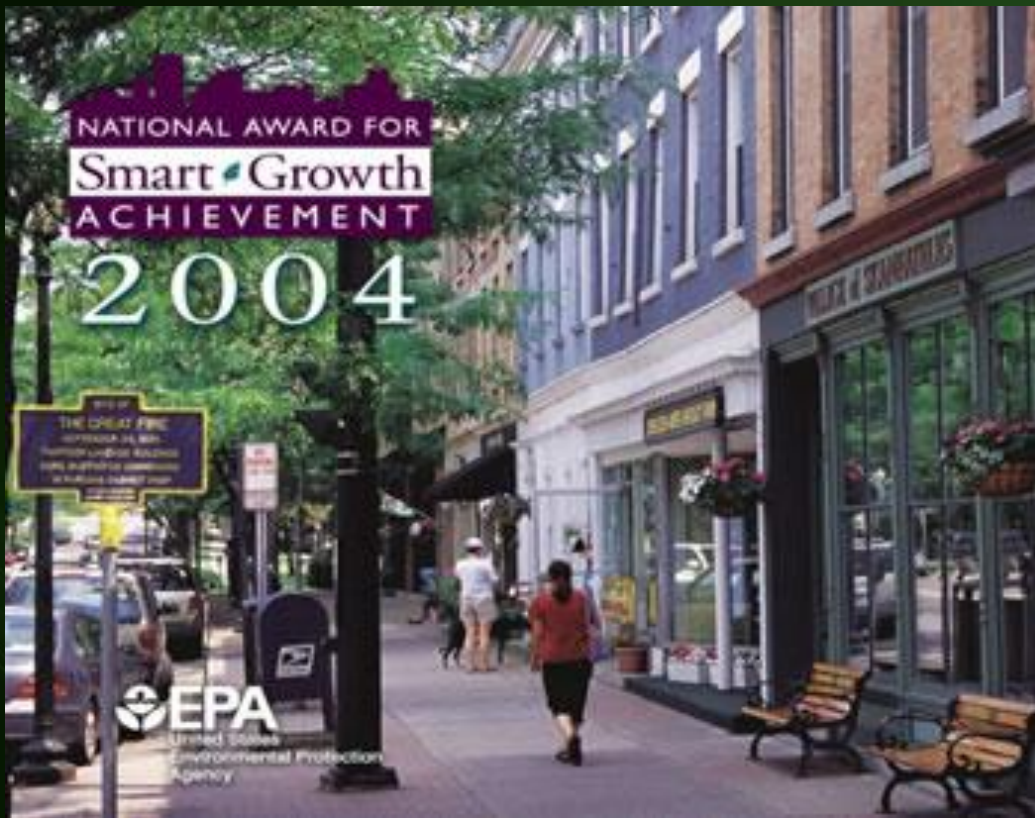


Julien Dupré (1851-1910) *La Faneuse*. Image courtesy of Rehs Galleries, NYC, NY

Energy
Environment
Economy
Community

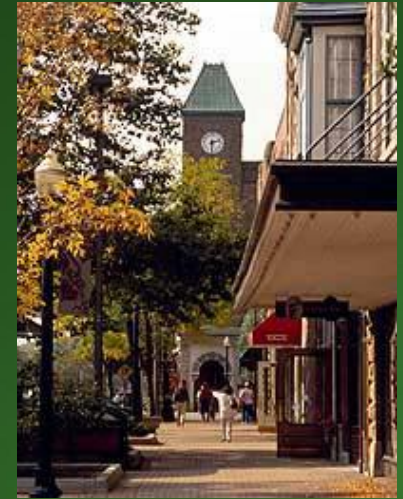
National Sustainability:

Smart Growth:



State Sustainability:

Commonwealth of Pennsylvania Keystone Principles & Criteria for Growth, Investment, and Resource Conservation



Sustainability:

PennDOT's Smart Transportation



County Economic Development Action Plan



consistent with Pennsylvania's Keystone Principles for growth, investment and resource conservation."

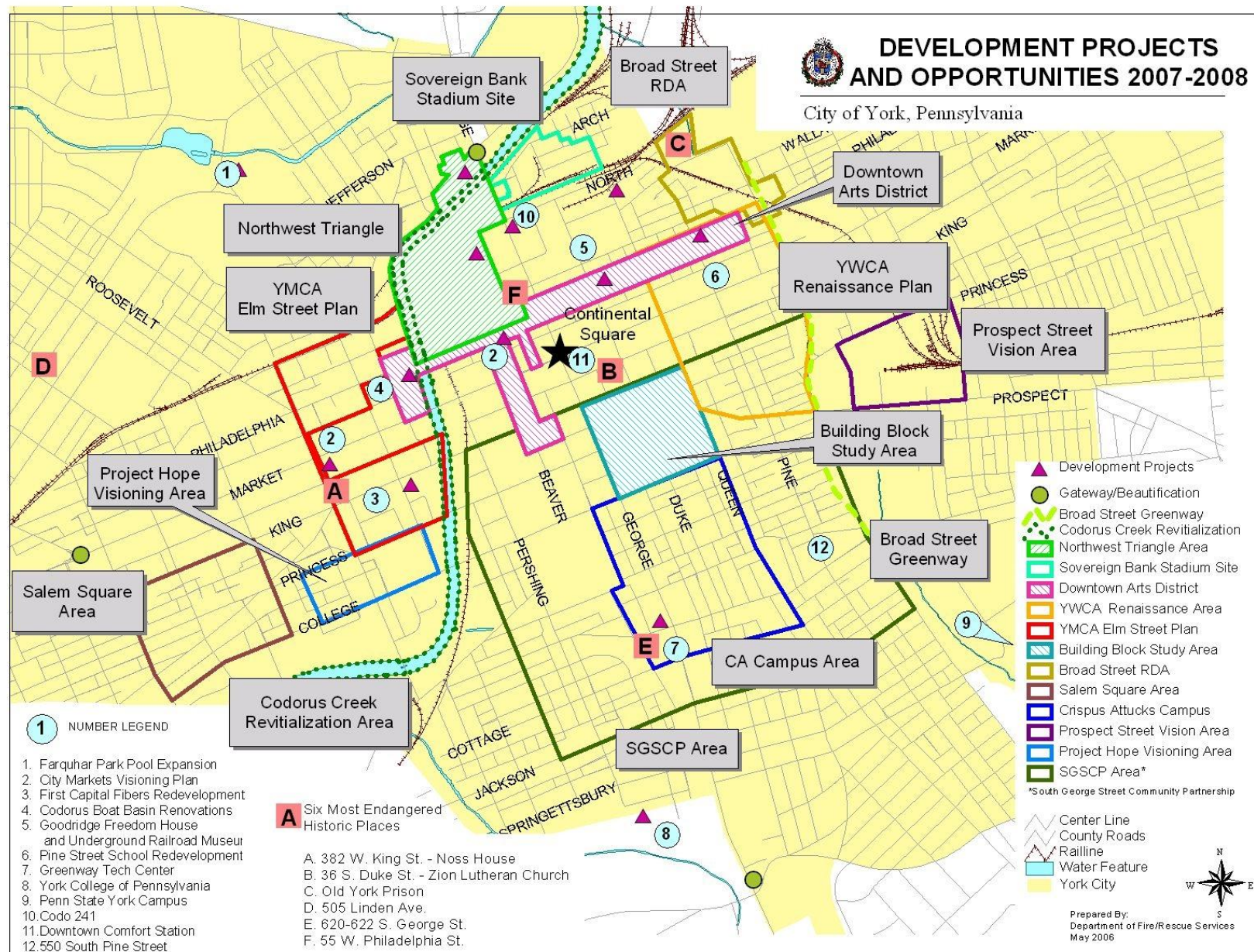
Sustainable Land Use



"...the earth belongs to each generation during its course,.... But no generation can contract debts greater than can be paid during the course of its own existence."

-Thomas Jefferson, 1798

What are we doing?



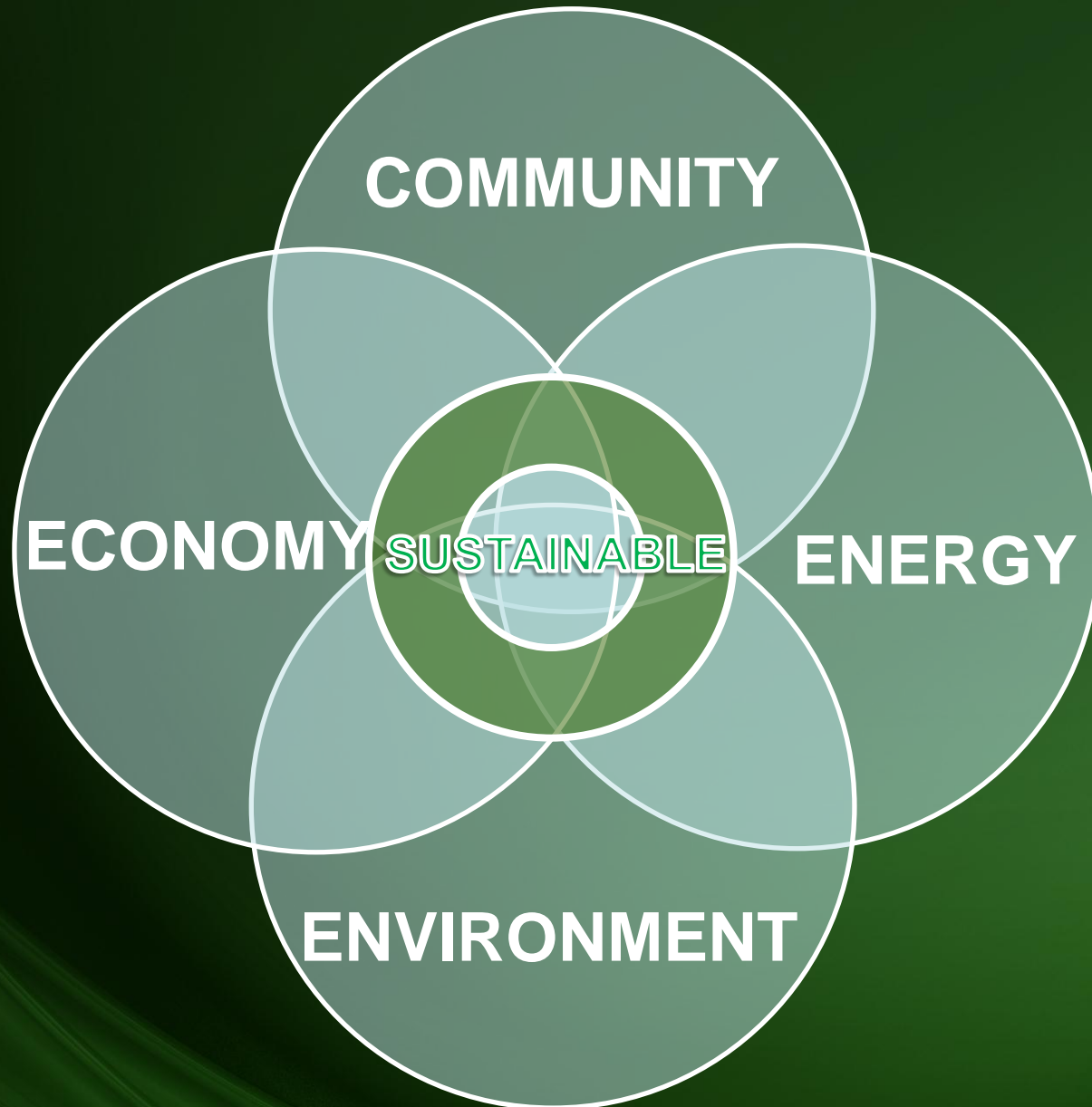
Initiative Misdirection

green•wash
(grēn'wōsh')

Used to describe the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service.



Initiative Direction



Economic Strength through Energy Practices



Exporting money for fuel... Does not help our local economy

Creating local jobs and local energy



Economic Strength through Environmental Protection



Environmental Restoration –allow currently manicured areas to revert back to natural conditions, thereby minimizing maintenance costs while creating riparian buffers.

Economic Strength through Community initiatives



Environmental Conservation - practices that save energy and money by conserving undeveloped lands.

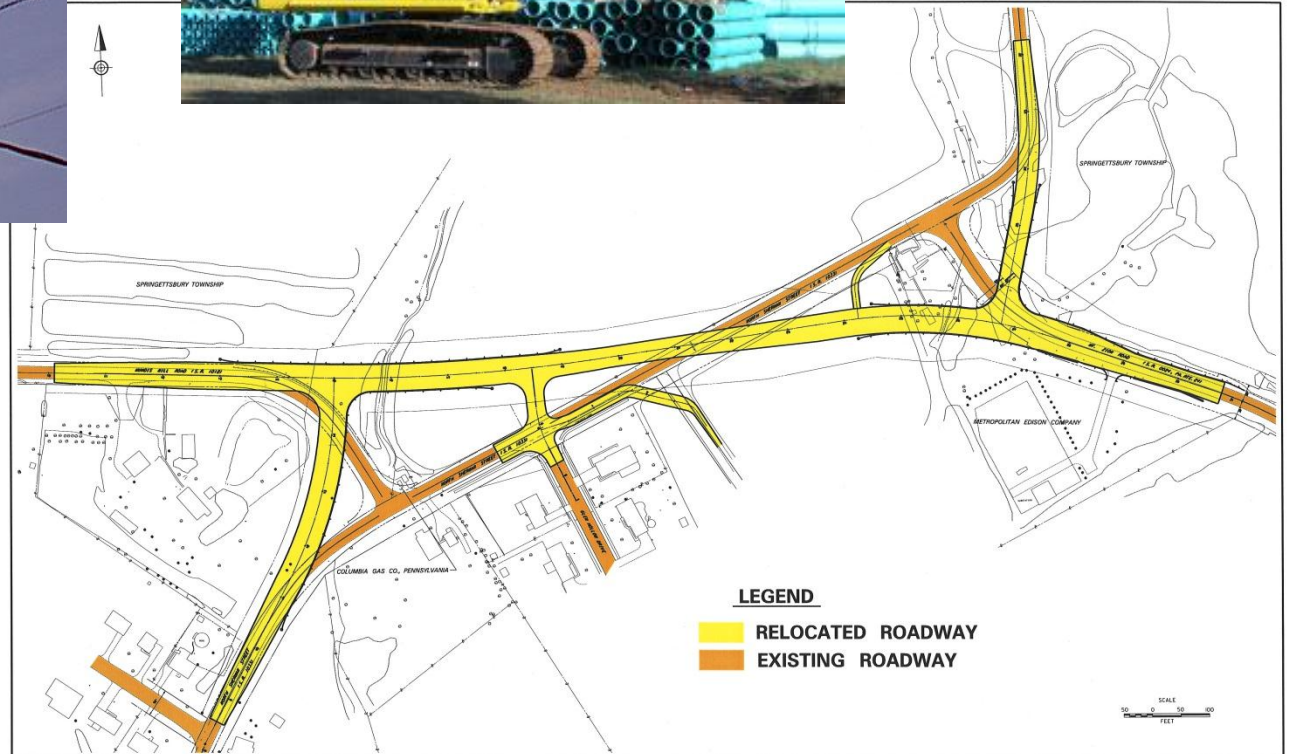
Community Planning ??



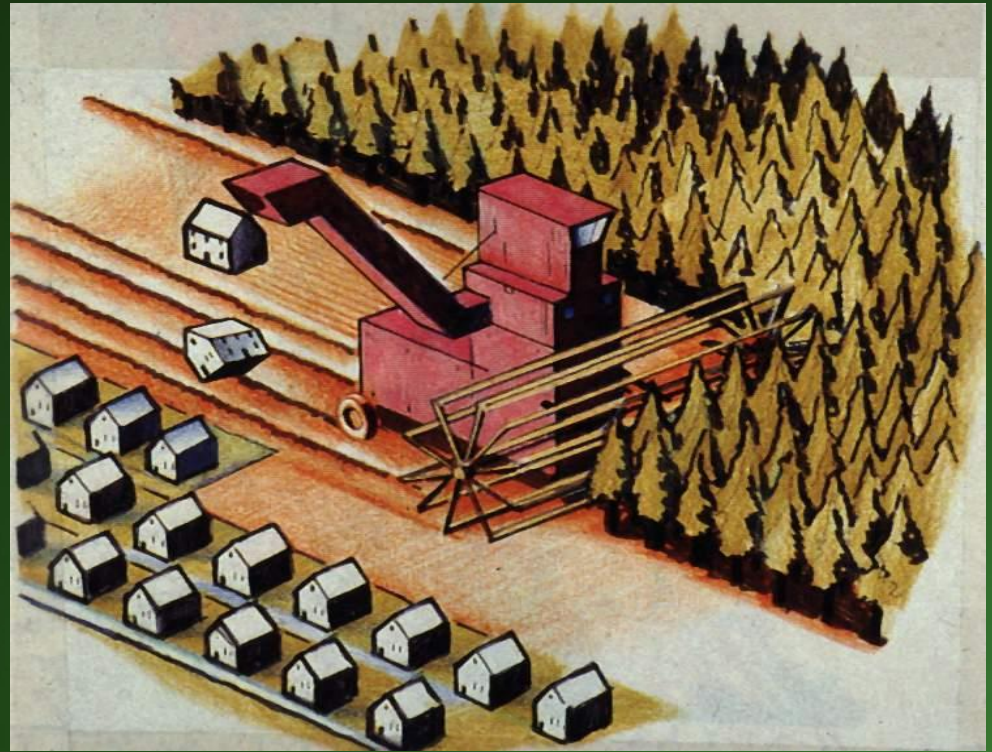
**stop
subsidizing
sprawl!**



Cost of Sprawl Development



Green Verses Smart



Sustainability - Borrowing from the Past

Economy, Energy, Environment, Community:



Brick Paving

Sustainability – Improving on the Past



New Paving machine; brings labor price of brick paving down from \$.90/square foot to \$.15/square foot.

Concerns for using 'old' technology

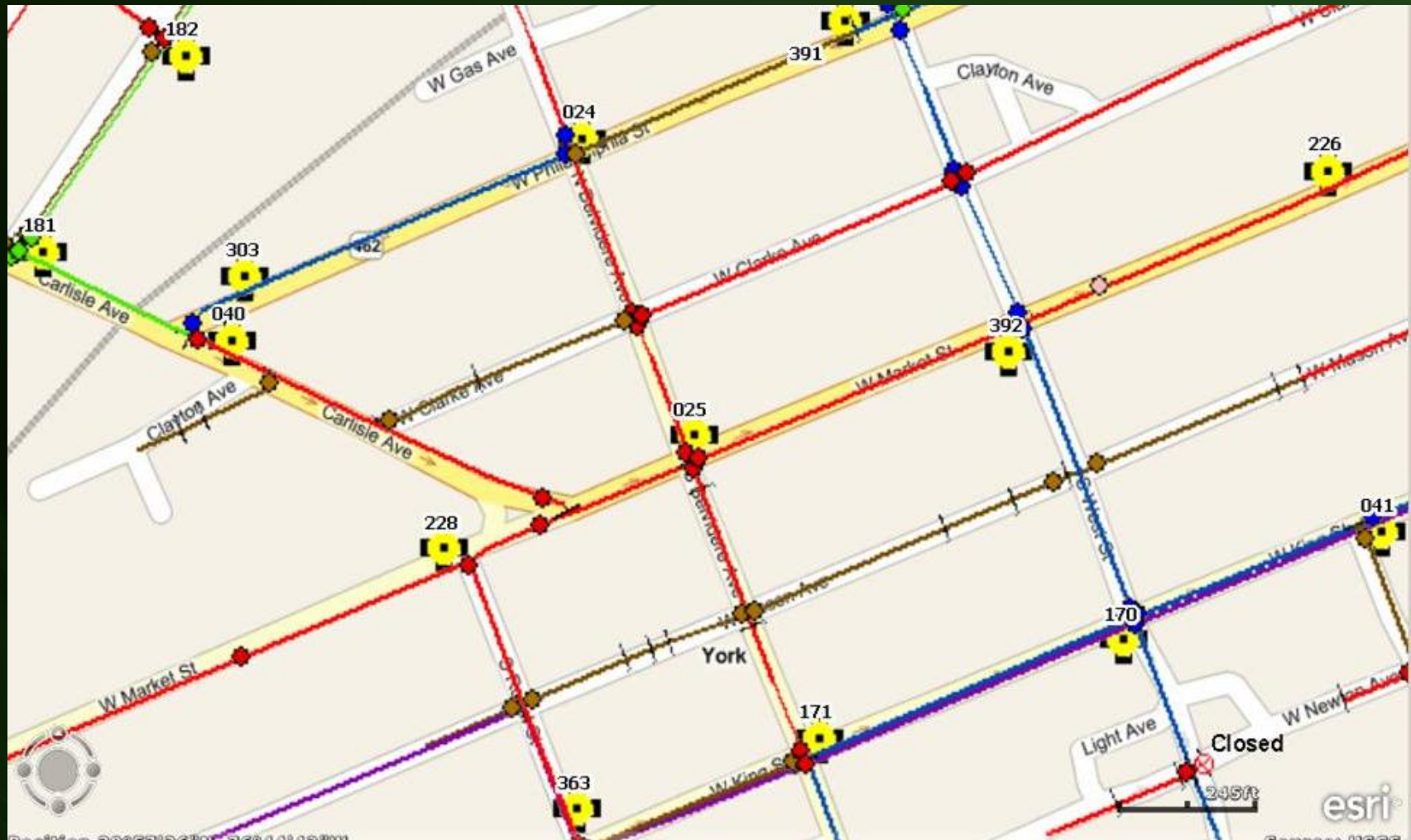


UTILITY MAINTENANCE

TRANSPORTATION ISSUES



Solutions to concerns using modern technology



USE GIS TO IDENTIFY UTILITY REPLACEMENT SCHEDULES, HEAVY TRAFFIC AREAS, STORMWATER PROBLEMS AND PREFERRED PEDESTRIAN ROUTES TO DEVELOP A PLAN

What makes sense



Sustainable
Design
is expensive: **FALSE!**

Brownfield redevelopment: infill, green building, supports local restaurants, on the bus route, short distances to the YMCA, Market, City and County offices, existing utilities on site....

What makes sense



BUILD LESS



**More is more...to
maintain, more expensive,
and more damaging to the
environment**

Think small- property by property

Use permeable surfaces to recharge groundwater.



distribute runoff to maximize infiltration

What makes sense

Economy, Energy, Environment, Community:



Build green—
literally

Where would you
rather live?



Green verses Sustainable

- COMMERCIAL DISTRICT
- PEDESTRIAN ACCESS
- YEAR ROUND AESTHETICS
- MAINTENANCE



Green verses Sustainable

- YEAR ROUND AESTHETICS
- MAINTENANCE



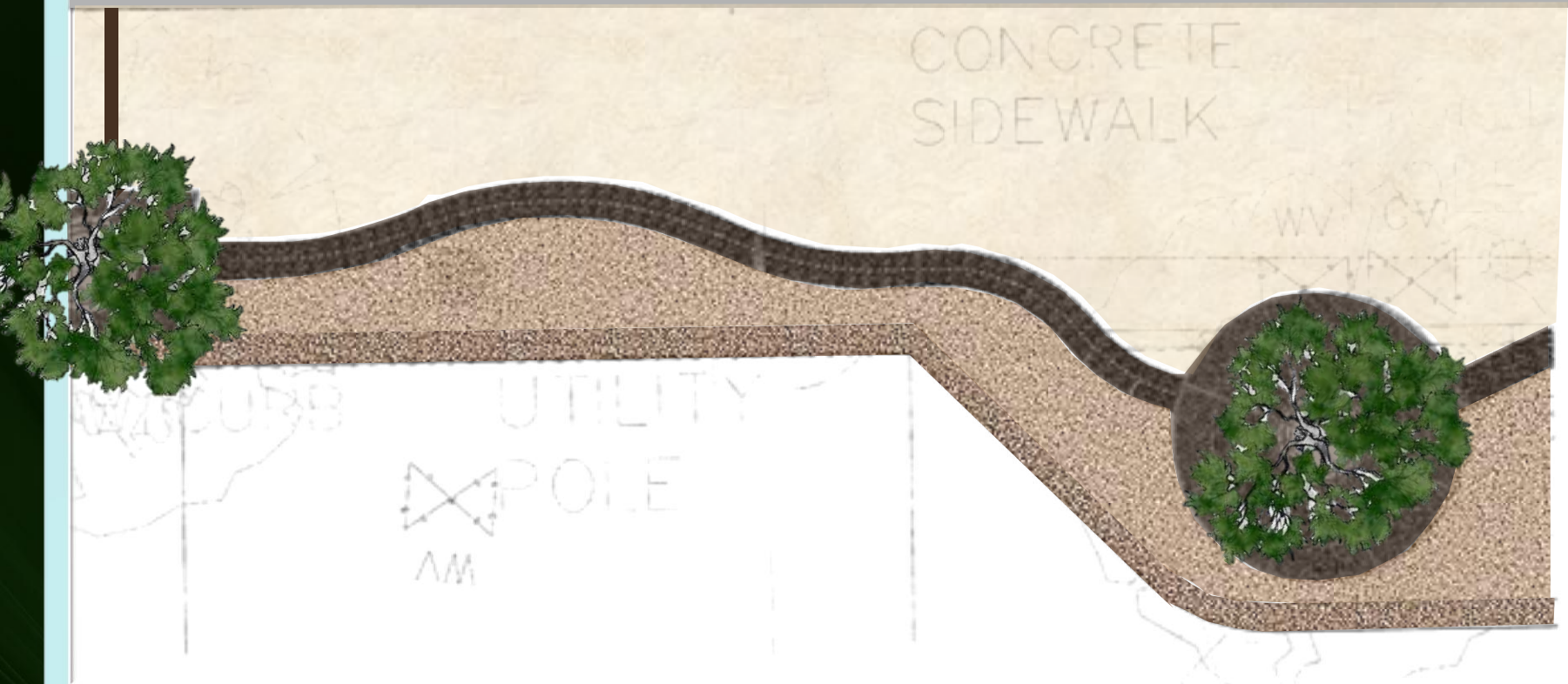
Etna Borough 'Streetscape'

- COMMERCIAL DISTRICT
- NARROW PEDESTRIAN AREAS



Etna Borough Sustainable Streetscape

Butler Street Roofs



BH project: Etna Borough



2009 GBACPA Design Award

Using materials on site
Stormwater BMP's
Bike Trail Connection
Shared Parking
Native planting
Naturalized areas

Sustainable Site Design Minimizes Impact on Natural Environment

As planned, the Hershey Center for Applied Research (HCAR) in Hershey, PA will eventually incorporate 12 buildings totaling 1.2 million square feet. The site development principles specify protecting natural resources and minimizing negative impact on the environment. The guidelines specifically address stormwater management objectives, including utilization of Best Management Practices.

The 165-acre parcel incorporates a restored stream, protection of the associated floodplain habitat, native vegetation enhancement, and extensive implementation of Stormwater Best Management Practices. The development did not disturb areas within the 100-year floodplain and maintained a minimum buffer of 200 feet from the tributary. Center employees and visitor have the option of alternative transportation, as it is within a quarter-mile of two bus routes and a free shuttle to HCAR. The site also includes a connection to the Jonathon Eshenhour Memorial Bike Trail located on the property.

The stormwater management plan limits the peak discharge rate by promoting infiltration and controlling discharge rates from the two stormwater basins. Stormwater runoff is treated by utilization of rain gardens, vegetated swales, and bio-swales, and is minimized by the use of vegetated pervious pavement for fire lanes. The parking lot is divided by linear landscaped bio-swales that collect runoff. Small dams spaced in the swales slow the flow of rainwater, promoting infiltration and allowing solids to settle out prior to entering the inlet at the end of the swale.



Project: Hershey Center for Applied Research
Location: Hershey, PA
Clients: The Hershey Trust Company
Westford Science & Technology, LLC



HERSHEY CENTER FOR APPLIED RESEARCH

HERE FOR TOMORROW



2009 GBACPA Design Award



for
Sustainable Sites

Presented to

Buchart Horn Inc.

For

Hershey Center for
Applied Research



Susquehanna Water Tank

Stormwater Best Management Practices Pervious pavement



Columbia Water Company

Stormwater Best Management Practices

Pervious pavement

Smart lighting



York City WWTP

Generating
electricity from
byproducts

Harvested waste
heat for reuse

Reducing
emissions



The microturbine project at the York City Waste Water Plant replaced internal combustion engine generators with microturbines that use methane gas to generate electricity for the plant. Methane gas is a byproduct of the on-site anaerobic digestion process used to treat waste water at the facility.

The microturbines are essentially jet engines that will generate 2.5 million kWh of electricity from the plant's methane gas. The completed project will save more than \$277,000 in energy costs annually. A heat recovery unit also harvests waste heat from the digester gas microturbines. That recovered heat is used to heat the digesters and onsite buildings.

The project also added five 200kw microturbines that burn natural gas to generate electricity that will permit the waste water plant to shave peak electrical power demand and provide emergency backup power. Installation of the digester gas and natural gas microturbines and heat recovery equipment significantly reduces emissions of nitrogen oxides, sulphur oxides and carbon dioxide.



Project: Microturbine Project
Owner: York City Sewer Authority
Location: Manchester Township, York County, PA
Firm: Buchart Horn, Inc., York, PA

ACEC/PA

Microturbine Project City of York WWTP



Heat exchanger harvests hot exhaust air for a hot water loop heating system onsite.

Gas conditioning system removes Hydrogen Sulfide and Siloxane and compresses digester gas that powers turbines.



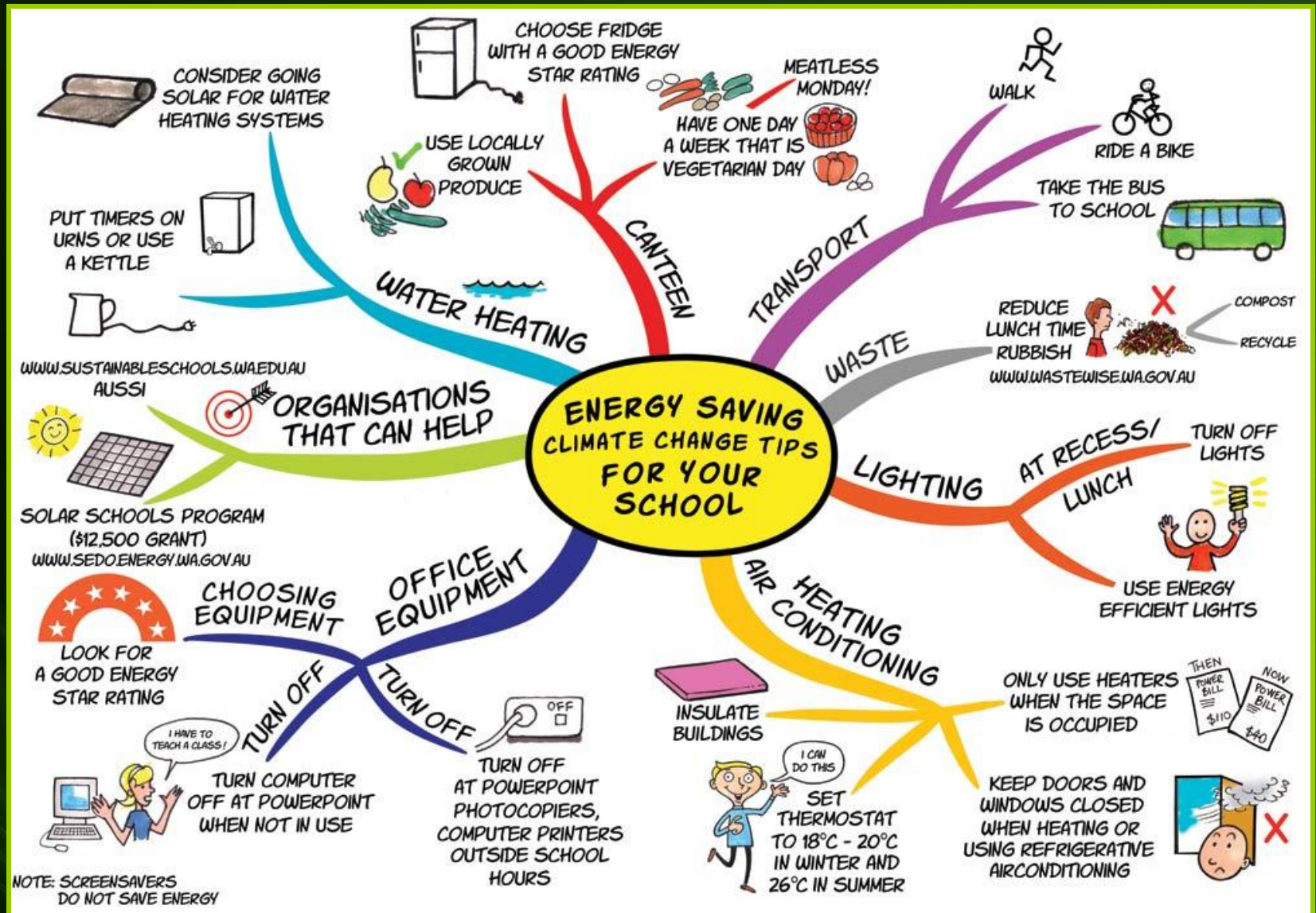
Sustainable Tasks

Work with municipalities to update zoning and land development ordinances to require sustainable planning and design.

- Storm water is a resource, not a waste product
- Allow mixed use & preserve open space, thereby minimizing sprawl.



Sustainable Tasks



Sustainable Tasks

Educate the adults about sustainability



Strengthening Communities through Sustainable Design



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Economy
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