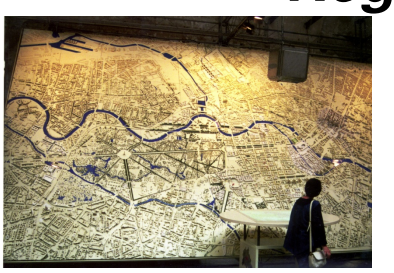
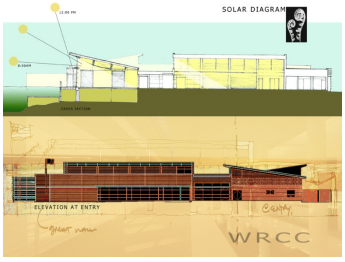
Rappahannock-Rapidan Regional Commission



Applying Innovative Urban Environmental Policies From Abroad



Dale Medearis, Ph.D.
June 11, 2009
Culpeper, Virginia

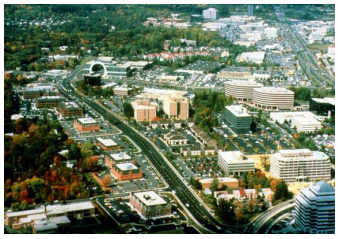
The Challenge

Greenhouse Gas Emissions in Northern Virginia are at approximately 20 metric tons/person of C02 (2005)

By 2020, C02 emissions are estimated to rise to 33.6 million metric tons and to 44.1 million metric tons by 2030 under "business as usual scenario"

500,000 new residents moving to Northern Virginia by 2020

The Causes



Greenhouse Gas Emissions by Sector

Transportation	34 %
Commercial Aviation	6 %
Industrial Fuel	7 %
Residential Fuel	10%
Energy and Electricity Generation	30 %
Other	13%

Renewable Energy Generation

	Virginia	Northern VA
Hydro	440,692 kW	0 kW
Wind	22 kW	0 kW
Solar	435 kW	112 kW
Biomass	540,545 kW	159,400 kW

Source: Renewable Sources in Virginia

http://www.energy.vt.edu/vept/renewables/RenewPlants.csv

Recognizing That

COUNTRY	ENERGY INDEX*
United States	5.1
EU 25	2.6
Sweden	3.5
Germany	2.6
China	0.5
India	0.2

*The relative average per capita energy use – the energy use of each region's inhabitants relative to the energy used on average by all the world's inhabitants

Positive Responses

COOL COUNTIES
TOGETHER WE KEEP THE NATION COOL!

- 80% Reductions in GHG Emissions by 2050
- Inventorying Fairfax County Government GHG Emissions
- Implementing Fairfax County Transit Program / Metrocheck / Teleworking
- Preserving 45 % of County Tree Canopy
- Purchasing 5.8 million kWh of Wind Energy
- Methane Recapture
- County Projects Greater than 10,000 Square Feet to be LEED Certified

Are Current Initiatives Adequate?

What are the Short-Term, Quantifiable Benchmarks That Will Help Align Long-term Reductions Goals?

What Does Success Look Like After 12-months, After 2 Years, After 10 Years?

Are We Satisfied with Progress and Aspirational Goals?

Elements of Community Energy Planning

Energy Efficiency

Heat Recovery

Renewable Options

Energy Distribution

Leadership and Community Engagement

Transparency and Outreach

World-Class Energy Efficiency Targets

Integrated Utility Approach

Large-Scale Planning

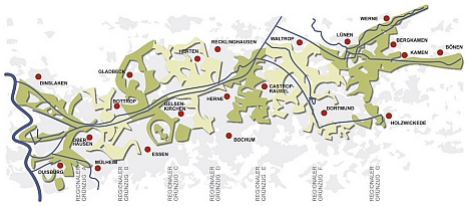
Continuous Improvement and Updating and Monitoring

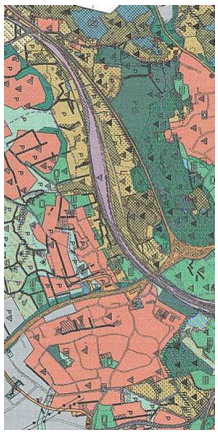
In Germany: Compact Urban Form…

It is national policy in Germany to reduce sprawl development by 25% over the next 15 years

Landscape Plan

Regional Plan





Multi-modal Transportation Systems…

Over 60% of trips in Stuttgart (and most German cities) are on bike or public transit

System Design

Multi-modal Transportation Systems

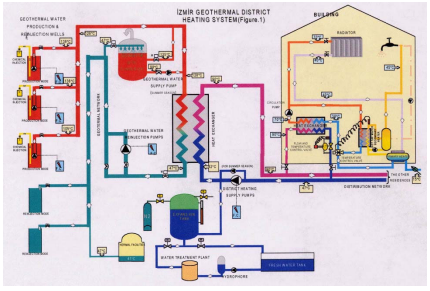
Pedestrian and Bike-Friendly Transportation Systems

Energy Efficient Homes and Renewable Energy Policies…

Germany is the largest producer of installed PV and wind energy in the world

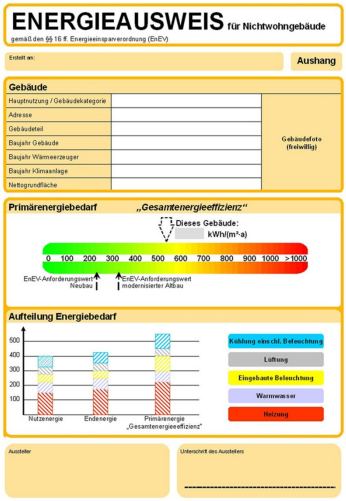
Stuttgart – Scharnhauser Park

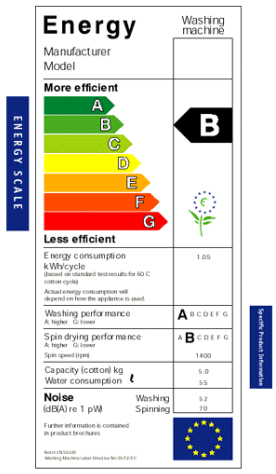
District Heating and Combined Heat/Power Systems



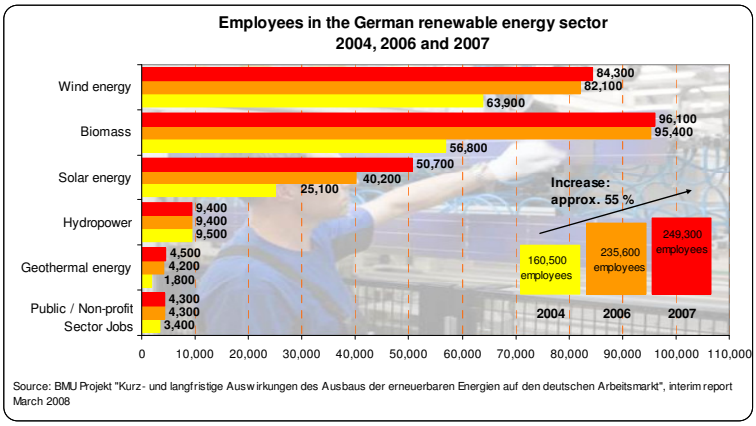
Energy Performance of Buildings Directive

Creates an energy performance certificate for sale/rent of buildings





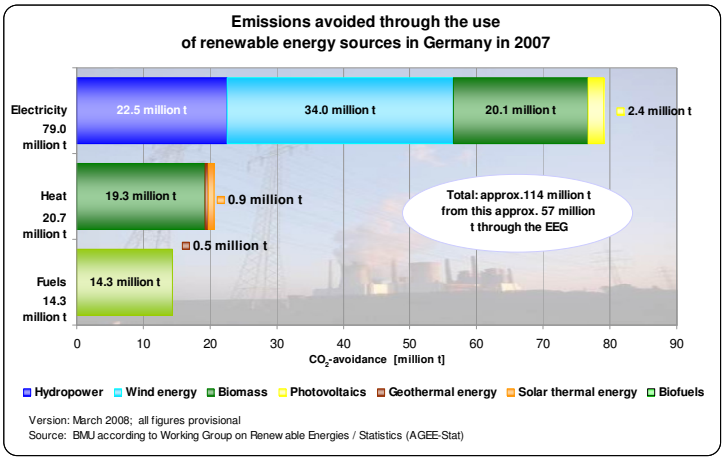
Over 215,000 Jobs Created in German Renewable Energy Sector. Will Reach 500,000 by 2020



Source: BMU Projekt "Kurz- und langfristige Auswirkungen des Ausbaus der erneuerbaren Energien auf den deutschen Arbeitsmarkt", interim report March 2008

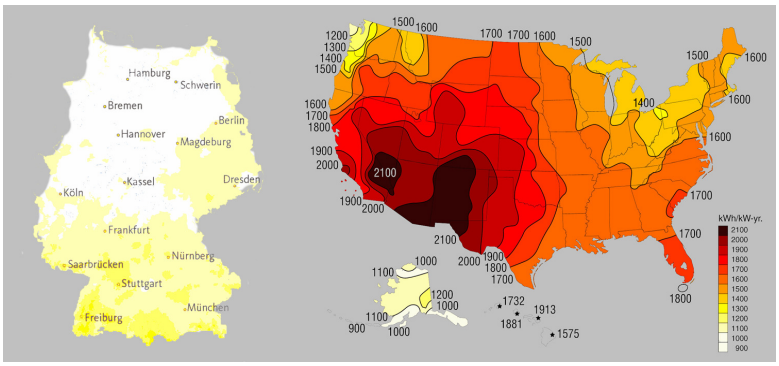
Source: BMU, March 2008.

Germany Has Reduced Emissions of Greenhouse Gases Substantially



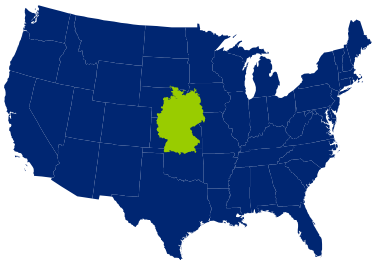
Source: BMU, March 2008.

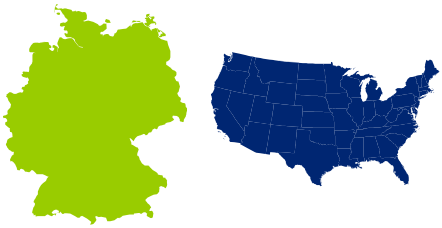
Comparison of Solar Resources



Virginia has high solar PV potential (over 11,000MW) compared to world leader Germany

Landmass vs. Wind Capacity (MW)
Germany and Continental U.S. (2007)





Area

Germany: 357,030 km²
US*: 8,154,157 km²

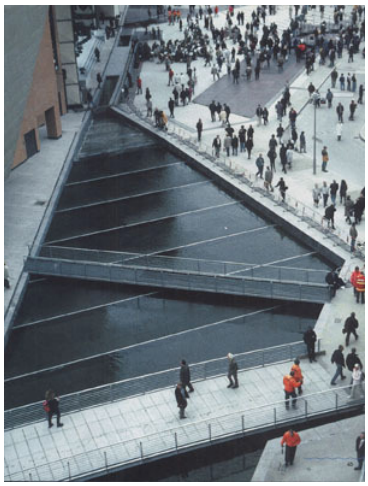
*23 times larger, without Alaska

Installed Capacity

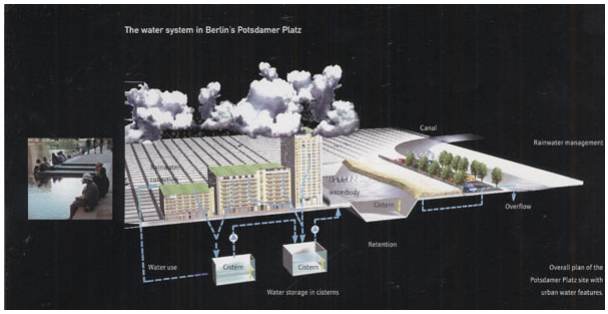
Germany*: 22,247 MW
US: 16,818 MW

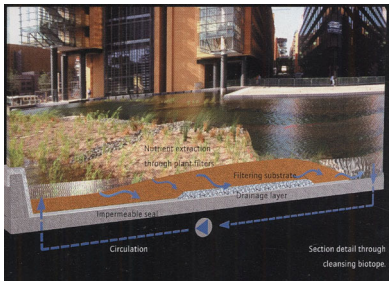
*1.3 times larger

Low-Impact Development

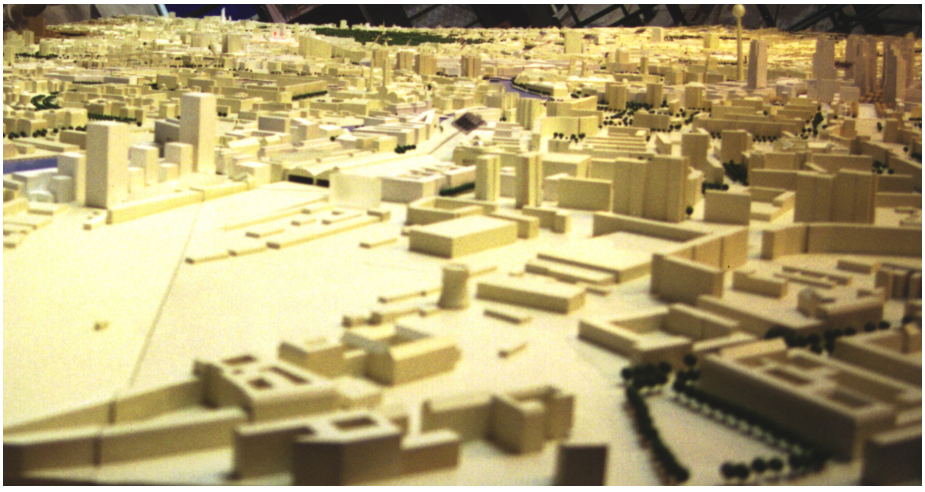


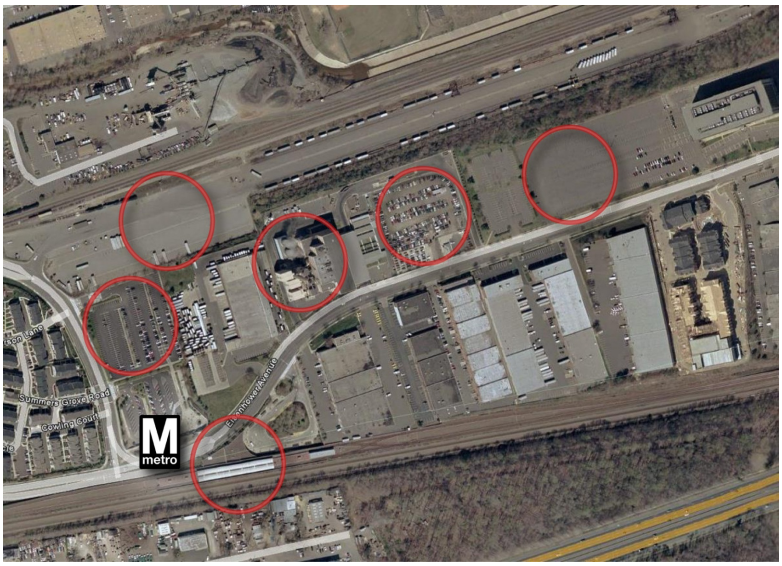
Low-Impact Development






LBBW
LBBW
BOSCH





Climate Adaptation -Lessons Transferring to Northern Virginia

“Green” Rooftops in Stuttgart, Germany

“Green” Rooftops in Arlington, Virginia

Perspective Before –
Mt. Vernon Ave. to West

Perspective After –
Mt. Vernon Ave. to West

Perspective Before – Mouth of Long Branch

Perspective After – Mouth of Long Branch

Mt. Vernon Ave Plaza

Brownfields
Emscher Park – Tetrahydron

Emscher Park – Duisburg Nord

Emscher Park – Zeche Zollverein

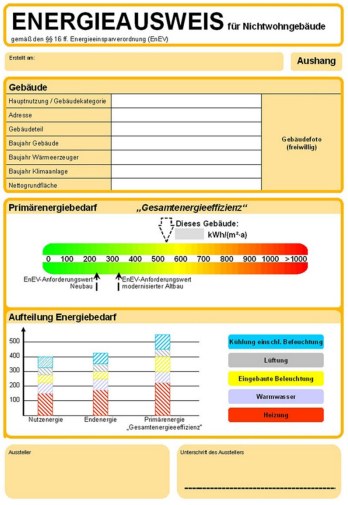
Other Precedents for Harvesting Lessons: Industrial Ecology

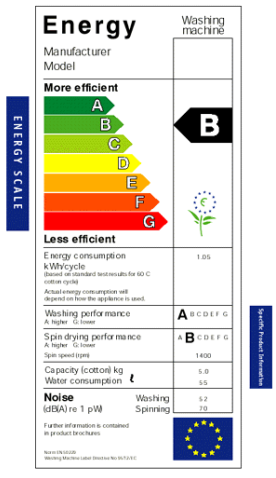
Building One, the first building in the Sustainable Technology Park.
The stormwater retention and filtration pond is in the foreground.

Cape Charles Ecological Industrial Park

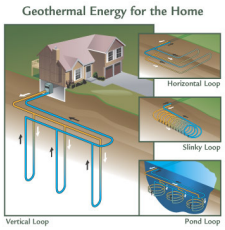
CEP Tools From Abroad:

Energy Performance Building Labels





CEP Tools From Abroad



Stuttgart – Scharnhauser Park