

# Building the Case for Energy Smart Growth

*Green Communities: Building Location-  
Efficient, Healthy and Energy-  
Conserving Homes*  
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# About EESI

*Seeking Innovative Environmental and Energy Solutions*



- Dedicated to promoting sustainable societies through innovative policies on energy, climate, transportation, agriculture, and smart growth
- Founded in 1984, by a bipartisan Congressional Caucus
- Provides timely information regarding science, policy, and technologies
- Organizes ~20 Congressional briefings a year
- Builds coalitions and networks
- Publishes 3 electronic newsletters
- EESI Associates Program allows companies and individuals to participate

# Why should we care about energy?

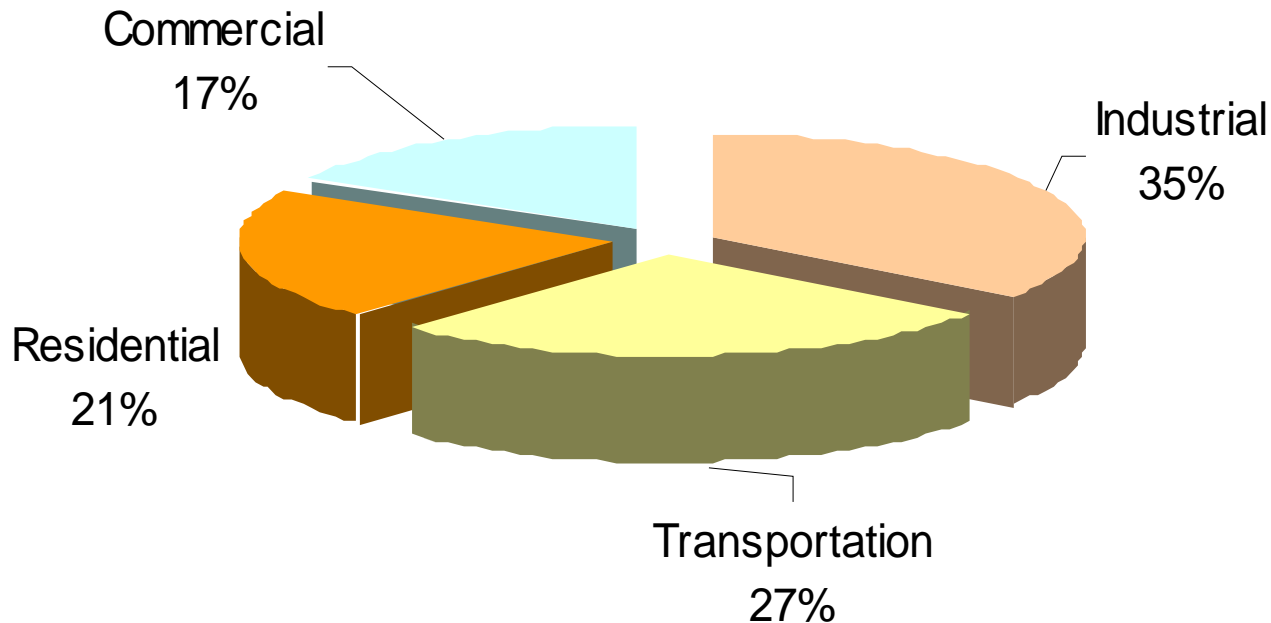
- Energy problems have found their way into every U.S. household
  - rising gasoline prices, electricity blackouts, high heating, air conditioning costs
- Foreign oil dependence and national security concerns
- Heavy dependence on fossil fuels
  - Worsens the U.S. Trade Deficit: Oil imports cost **\$166 billion** in 2004
  - Impacts on our climate, and
  - Harms the health of our most vulnerable populations – low income residents, children, and the elderly
- What are the benefits of including energy in land-use planning and decision making?

# Other Energy Facts

- Transportation accounts for about 2/3 of U.S. oil consumption (transportation sector almost completely dependent on petroleum for fuel; 60% of transportation related oil is used for cars and light trucks)
- About 55% of the petroleum used in the U.S. is imported, and this number is rising
- More than half of our electricity comes from coal-fired power plants (severe air quality, water quality and public health issues)
- U.S. generates about 25% of the world's greenhouse gas emissions

# Energy Background

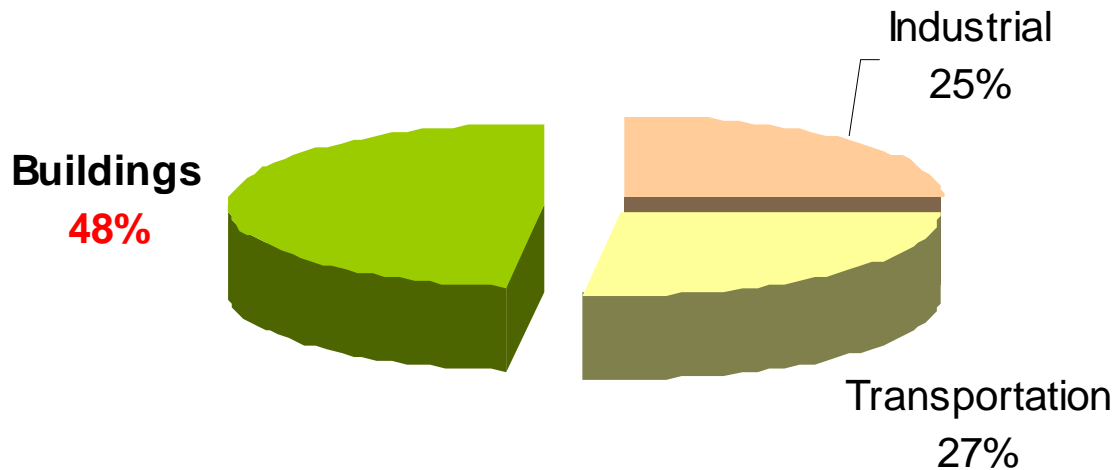
## U.S. Energy Consumption



**On a community level, transportation can account for 40 to 50% of total energy use, and residential buildings another 20 to 30%**

# Reorganizing the Energy pie\*...

## Buildings are a new category



**Buildings consume almost *half* the energy**

\* Ed Mazria, renowned architect reorganized Department Of Energy information to reflect building energy usage. See <http://www.mazria.com/ItsTheArchitectureStupid.pdf> for more information

# The Energy/Land-Use Connection

- ***Where*** and ***How*** we grow has tremendous bearing on our energy needs now and in the future
- Local planning decisions impact national energy efficiency and energy independence goals
- Our built infrastructure lasts for decades
- Therefore it is important to make good energy decisions at the outset of any new building

# Energy and Smart Growth

- Smart growth – Many advantages
  - Compact and mixed use development
  - More transportation options – transit, biking, walking
  - More green space
- Smart growth could become even smarter – How?
- By becoming ***Energy Smart***
  - Land use decisions
    - Energy efficient neighborhoods (buildings and transportation)
    - Building design
    - Efficient locations

# What Can We Do?

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**Efficient Location**

**+**

**Good design**

**= Energy Smart Growth!**

# The Energy and Land-Use

## *Making the Connection*

- Smarter growth land use policies have both a direct and indirect effect on energy consuming behavior
- Energy smart development practices also can affect energy supply, in addition to demand
- Energy and development practices intersect in many ways – yet, this connection is ignored

# Where to Build: Location Matters!

## Location Efficiency affects:

- **Transportation energy usage**
  - Locate development near transportation hubs
- **Infrastructure energy usage**
  - Direct development away from remote locations
- **Integrating land use and energy planning**
  - Increase opportunities to site energy facilities close to development; build efficiency and renewable energy use into our built environment

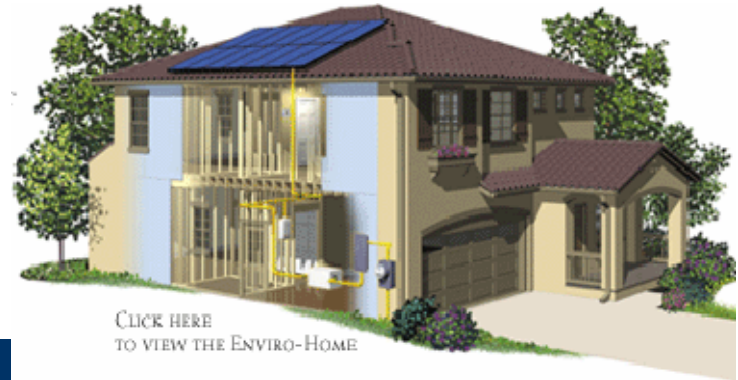
# Location Efficiency

- Vehicle trips decline while transit and pedestrian trips increase when density approaches around 20 dwellings per acre
- **Transportation** is the **second largest** household expense, after the cost of housing
- The cost of infrastructure (including water, electricity, sewage) to service a new unit in a greenfield neighborhood is \$50-60,000 per unit, whereas it costs \$5,000 to 10,000 per unit in a brown or greyfield

# Policies and Programs

- Integrated transportation and land-use planning
- Transit-oriented development
- Inclusion of energy issues in local comprehensive plans/Energy resources planning
- Consideration of renewable energy generation potential (and energy supply issues) in zoning, siting, and development decisions
- Location efficient financing (mortgages, Live Near Work programs)

# Some good examples!



- **California leading the way**
  - Encouraging localities to include energy in comprehensive plan updates
- **Sacramento's Blueprint program**
  - Integrated planning (land-use and travel behavior, economic land-use assessments, electricity and natural gas demand for each energy use)
  - citizen participation
  - Visual, GIS-based tool

## More good examples!

- **EcoCity, Cleveland; Clarum Energy Efficient Homes in Palo Alto – ‘green’ builders; Civano, AZ – mixed use development**
  - Energy efficient design
  - Solar power
  - Affordability/community economic development
- **Massachusetts** - transportation planning and funding projects factor in the impact of greenhouse gases
- **Portland, OR,**
  - Long history of smart growth practices
  - Has reduced global warming emissions, through changes in building, transportation and land-use, and the use of renewable energy

# How We Build: Think Smart!

- *How We Build* often ignored by smart growth advocates!

## A few simple ideas

- Solar orientation taking into account the movement of the sun in different seasons
- Energy-efficient design, materials, and appliances
- Shade trees, light roofs, roof top gardens
- Street design can encourage pedestrian and bicycle uses and enhance street connectivity
- Installing solar on roof tops (all those “Big Box” stores)

# How We Build: Size matters!

- **Housing size...** we *cannot* ignore housing size
- Size of the average home has **increased 55 percent** (to 2,330 square feet), while the size of the average family has decreased 13 percent since 1970
- 40 percent of homes in 2001 had a square footage greater than 2000 sq. ft.
- ***Larger homes = more energy***
  - Households with an average of **1750 sq feet** used **93.5 million BTUs** per household in 2001
  - Homes with an average of **3226 sq feet** used **126.8 million BTUs** per household in 2001

# So, What can we do?

- Be energy smart - Include smart buildings in the definition of smart growth
- Eliminate skewed incentives that promote inefficient development - e.g. larger tax breaks for buying larger houses
- Encourage integrated land-use and transportation planning
- Keep incentives for renewable energy, energy-efficient buildings strong, and provide additional incentives for communities and private builders to install them

## So, What can we do? Contd.

- Include incentives for builders and new grant/pilot programs
- Outreach and education
  - Information in the hands of planners, builders, community leaders, consumers and **POLICYMAKERS!**
- New research needs – including better measures on community design and energy benefits
- Include energy smart growth in housing and welfare policy

# Think Smart, Grow Smart

- Thinks about all the energy connections...
- It's about location... it's about design
- Using clean and less energy improves livability
- 'Energy smart growth', the true smart growth
- Increased collaboration between energy professionals, climate change reduction policy-makers, land-use planners, architects, builders and developers
- Need to level playing field for energy smart growth..more research... more disclosure to planners and consumers!

# Moving into the Future!

“In an era when smart growth is the common mantra, it may be worth considering that smart growth must, of necessity, be energy-efficient growth. Taking stock of how that equation can best be realized, however, will be no small challenge”. -*Jim Schwab, Planning, APA*

## ***For more information***



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