

HEALTHY PEOPLE

The Health Benefits of Climate Solutions



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Benefits of Lower Carbon Living

- I. Better Heart and Lung Health
- II. More Physical Activity
- III. Better Diet and Food Choices
- IV. Energy Efficient Living

Significance of Reducing Carbon Pollution for Heart & Lung Health



Lower Carbon Living – Part I

Where do Pollutants Come From?

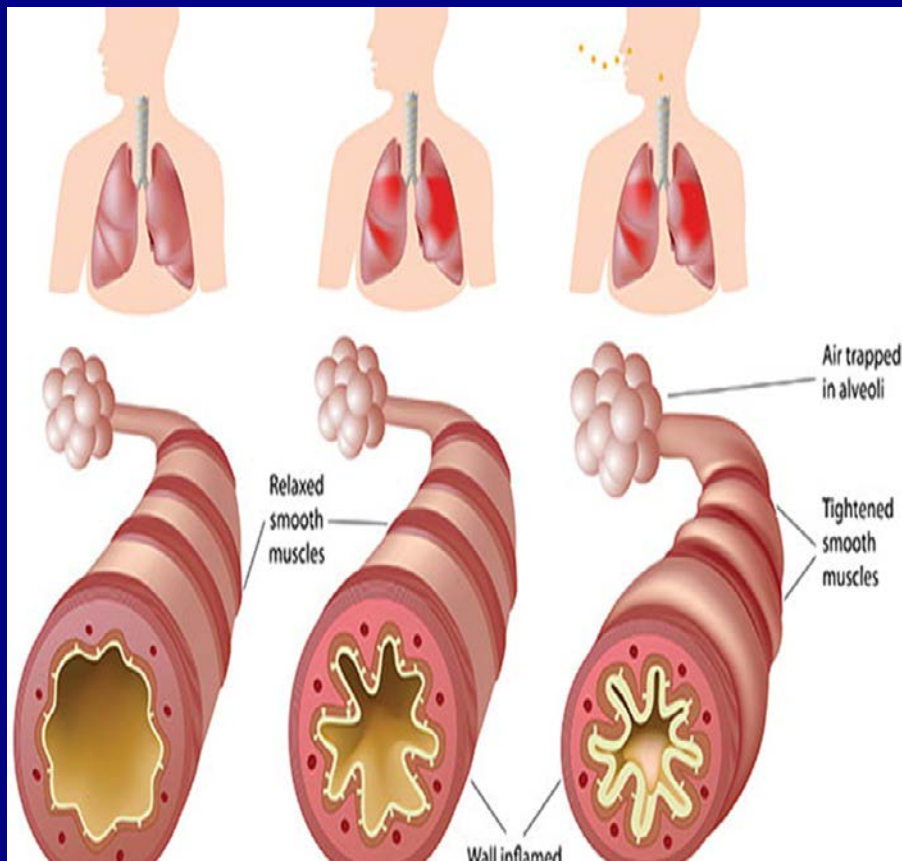
- **Ozone** forms when exhaust from burning fossil fuel emissions react with heat + light [i.e. smog]
- **Particulate matter** comes from
 - * Power Plant emissions
 - * Industrial processes
 - * Vehicles, trucks > cars[all from burning fossil fuels]
- Dust
- Fires
- Pollen



Effects of Air Pollution

Ozone

- Directly irritates the lungs



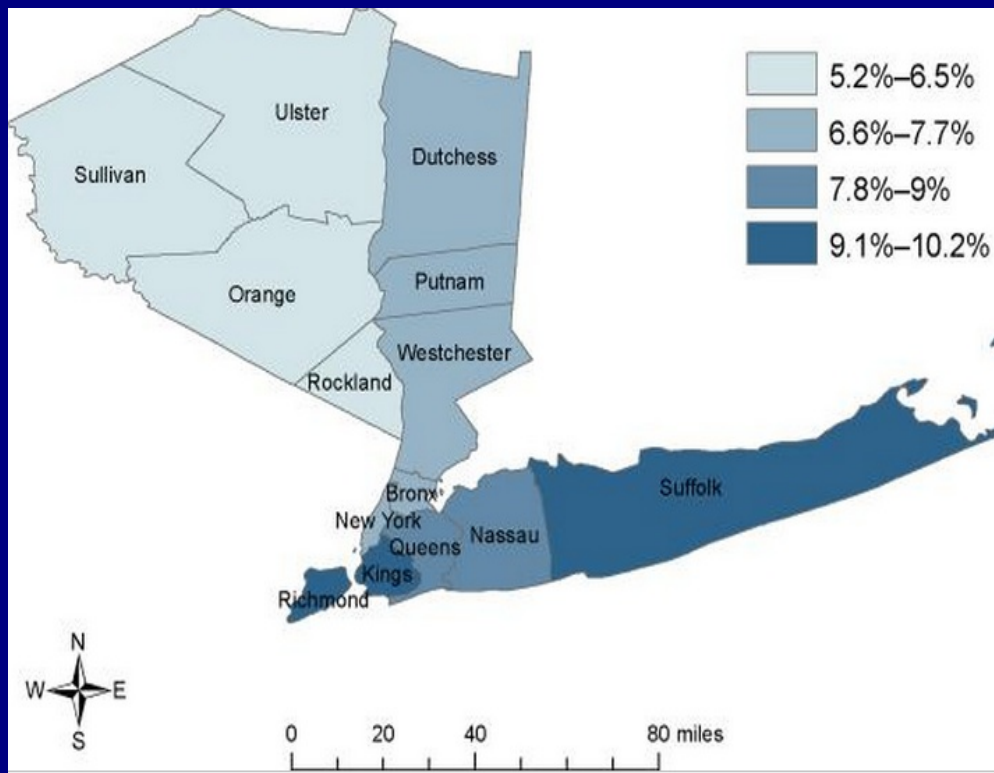
Particles (PM 2.5)

- Small particles get deep
- into the lungs
- Produce inflammation
- Associated with:
 - * poor lung development in children
 - * worsening heart disease
 - * ER visits/hospitalization

Pollutants Affect People of All Ages



Climate-Related Ozone will Increase NY Pediatric ED Asthma Visits 5-10% by 2020



Sheffield PE, ^{Se}[Am J Prev Med](#).p;41(3):251-7

Benefit of Clean Renewable Energy

Stopping the burning of dirty fossil fuel creates immediate improvement in air quality (ozone, PM) which means immediate improvement in the negative impact on the lungs and heart.

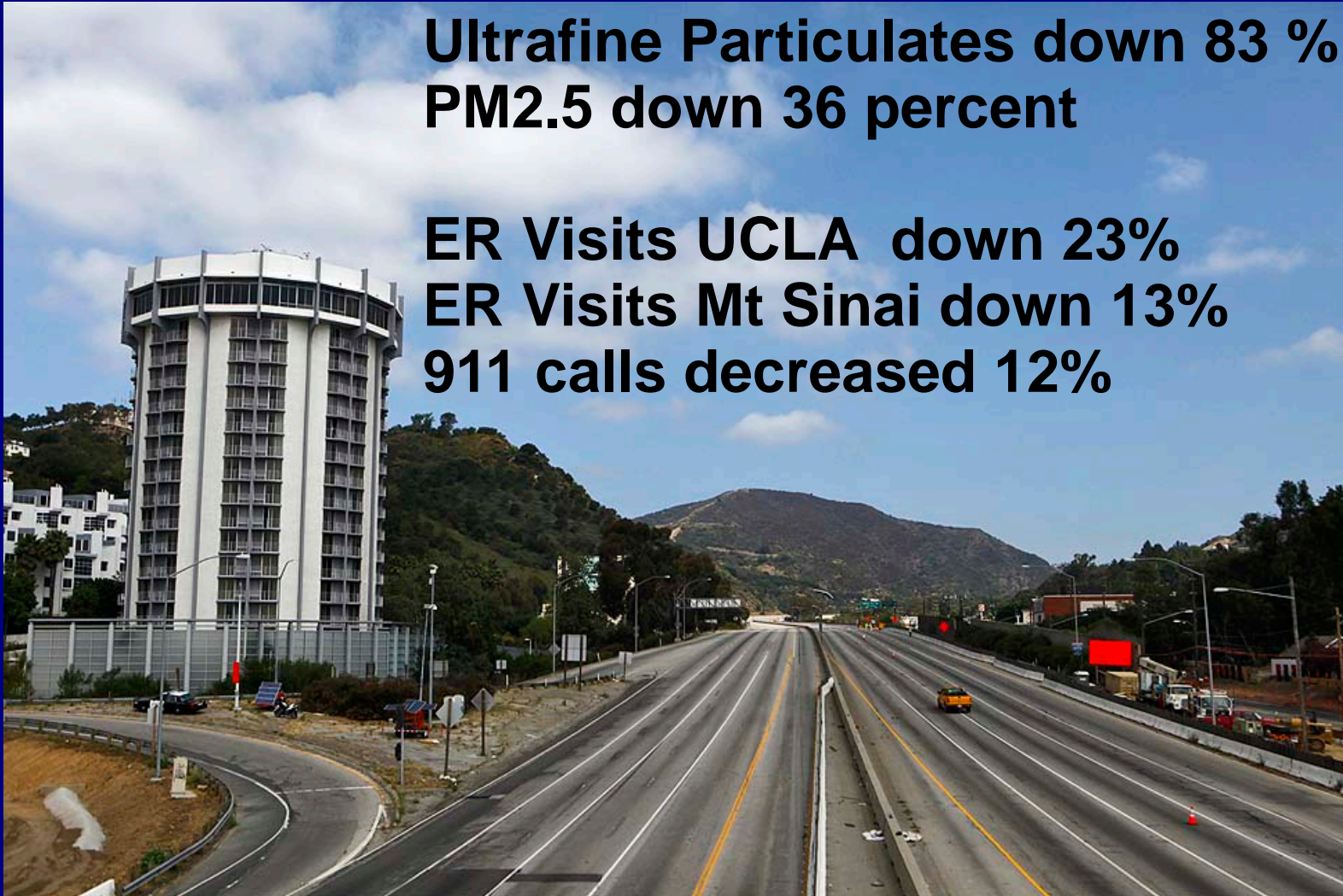


CARMAGEDDON!

**Los Angeles, CA; 405 Freeway
Closed for 36 hours**

**Ultrafine Particulates down 83 %
PM2.5 down 36 percent**

**ER Visits UCLA down 23%
ER Visits Mt Sinai down 13%
911 calls decreased 12%**



1996 Olympics in Atlanta, GA



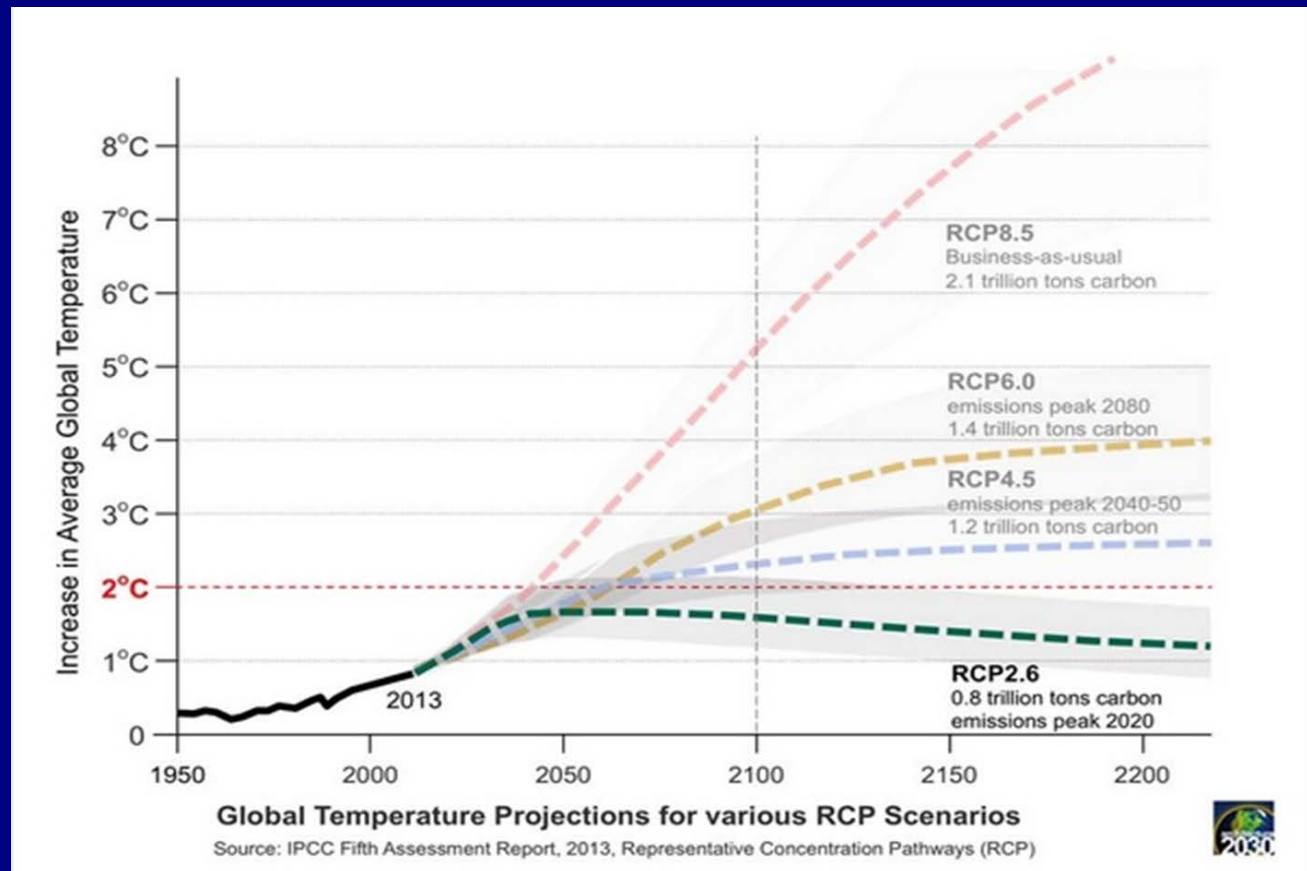
During the 1996 Summer Olympics Games in Atlanta, due to traffic restrictions, peak morning traffic decreased 23%, peak ozone levels decreased 28%, emergency visits for asthma events in children decreased 42%.

Children's emergency room visits for causes other than asthma did not change.

Friedman MS, Powell KE, Hutwagner L, et al. Impact of changes in transportation and commuting behaviors during the 1996 Summer Olympic games in Atlanta on air quality and childhood asthma. *JAMA* 2001;285:897-905.

Longer Term Benefit *

- Getting into the low emissions scenario will avoid the largest increase in global temperature



*N.B. Pollution gets worse as it gets hotter

TOP 5 CAUSES OF DEATH IN US



1. Heart Disease

Obesity

Diabetes, Hi Blood Pressure

Physical Inactivity

Smoking

Cholesterol Level

2. Cancer

3. Chronic Lung Disease

Smoking

Pollution (2 ° fossil fuels)

4. Unintentional Injury

MVA's

5. Stroke

Low Carbon Transportation

Low Carbon Living, Part II

Enormous health opportunity from “Active Transport”

**80% of Americans do not meet
recommended levels of aerobic and
muscle-strengthening exercise
(DHHS, 2008)**

40% of trips by car are < 3 km

(Dept of Transportation)

Sam Moody Atlanta, GA

Pin it



BEFORE



AFTER

Physical Inactivity Contributes to Poor Health

- Sprawl and disconnected street networks associated with increased rates of obesity, diabetes, heart disease (Marshall, 2014)
- Residents of “walkable” metro areas walk more & use more public transit. They have less obesity, lower blood pressure, less diabetes, and 3 years longer life expectancy than people living with sprawl.
(Ewing, 2014)
- Users of public transit are 45% less likely to be obese or overweight (Zheng, Y. 2008)

Walkable Living



Driving Smart, Driving Less



Vs.



POLICIES FOR ACTIVE/PUBLIC TRANSIT

Smarth growth, Infrastructure Investment, Coordination (Health in All Policies)



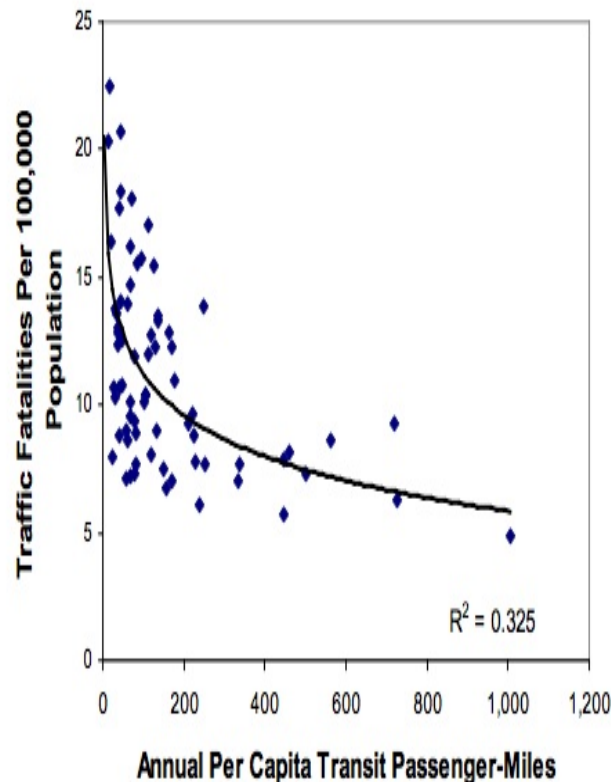
TRANSIT DECREASES MVA DEATHS

Urban Traffic Fatalities/100,000

by Cities' Transit Miles per Capita

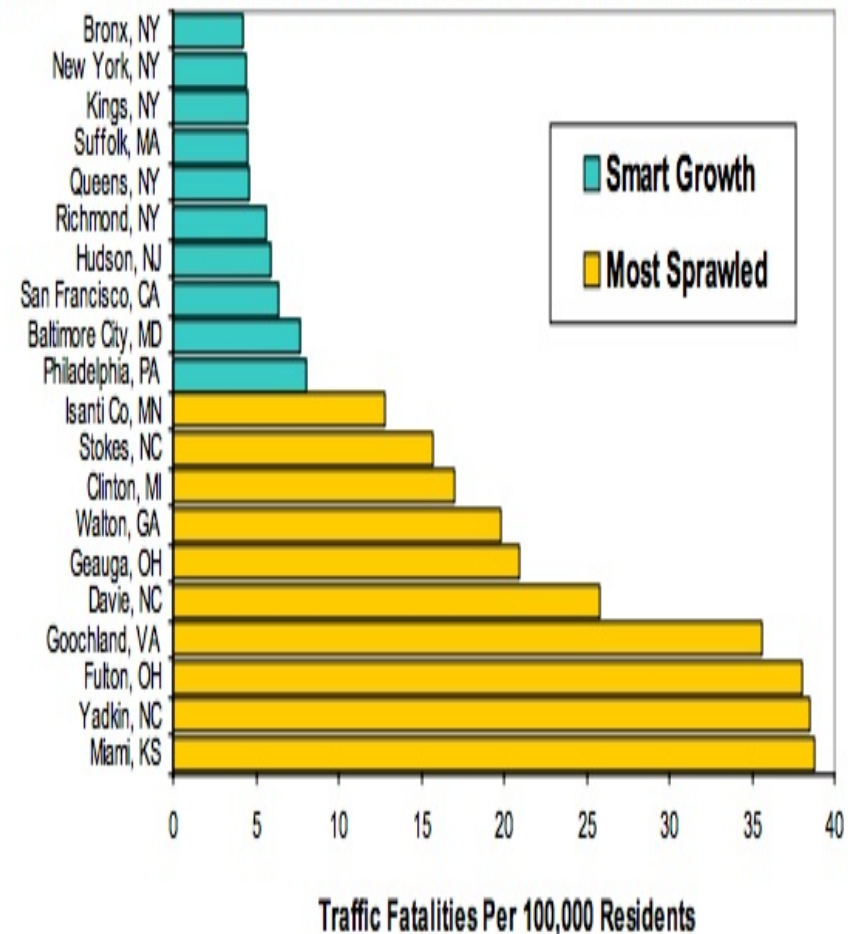
by Smart Growth vs Sprawl

Figure 6 Traffic Fatalities Versus Transit Travel in U.S. Urban Regions (Litman and Fitzroy 2006)



Per capita traffic deaths tend to decline as public transportation ridership increases. Each dot represents a U.S. urban region.

Figure 8 U.S. County Traffic Fatality Rates (Ewing, Schieber and Zegeer 2003)





Pie in the Sky?



Consider this:

- 1879 Thomas Edison demonstrated the incandescent light bulb; by 1900 all NYC was lit
- 1990 Very few cell phones, no laptops; 2010 both were everywhere

Change in Transportation:

- Increased walking and biking can begin now; improve over 5 years
- With vision, vision, vision + business development could have improved public transportation in 10 years

Low Carbon Dietary Habits

Low Carbon Living, Part III

Co-benefits: Food and Agriculture



Red Meat

NIH-AARP Study: 20-50% increased mortality from cancer and CVD (Sinha, 2009)

Womens' Health Study:

28% more incident DM over 8 years (Song, 2004)

Nurses' Health Study/ Health Professionals

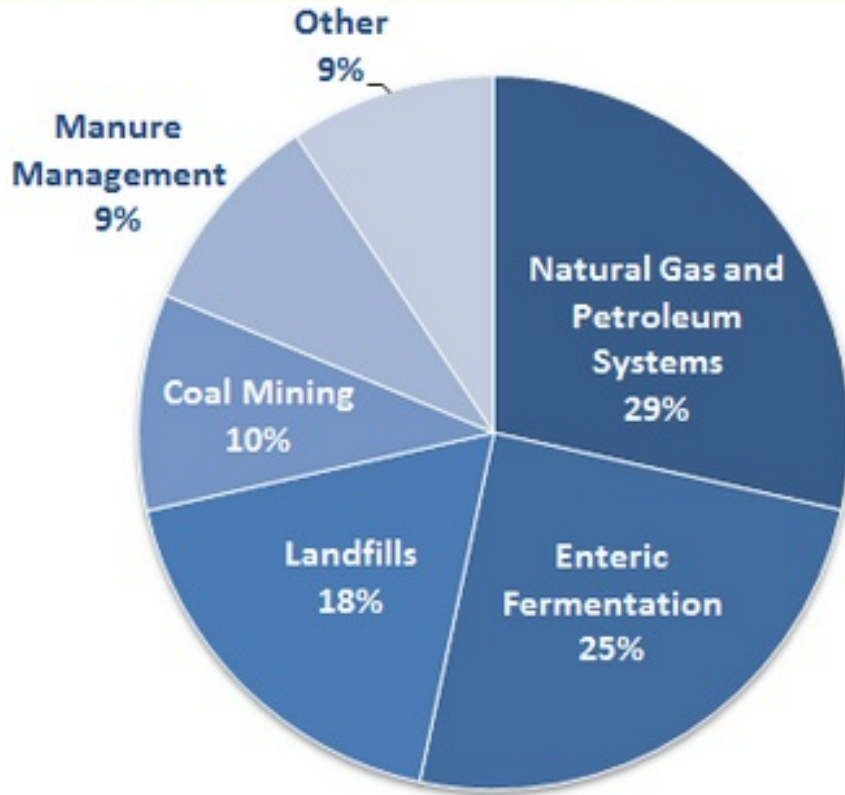
Followup Study: 13% increase in mortality per serving (all cause, cancer, and CVD). (Pan, 2012)

Extra daily **half serving of meat raised risk of DM 48%** for subsequent 4 years (Pan, 2013)

Meat Diet and Methane Pollution

(70 x warming power of CO₂)

U.S. Methane Emissions, By Source



Note: All emission estimates from the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2012*.



Mediterranean Diet



HEALTHY FOOD SYSTEM

LOCAL HEALTHY FOOD



INTERVENTION STUDIES

Mediterranean Diet

60% decrease cardiac events (Ornish, 1998)

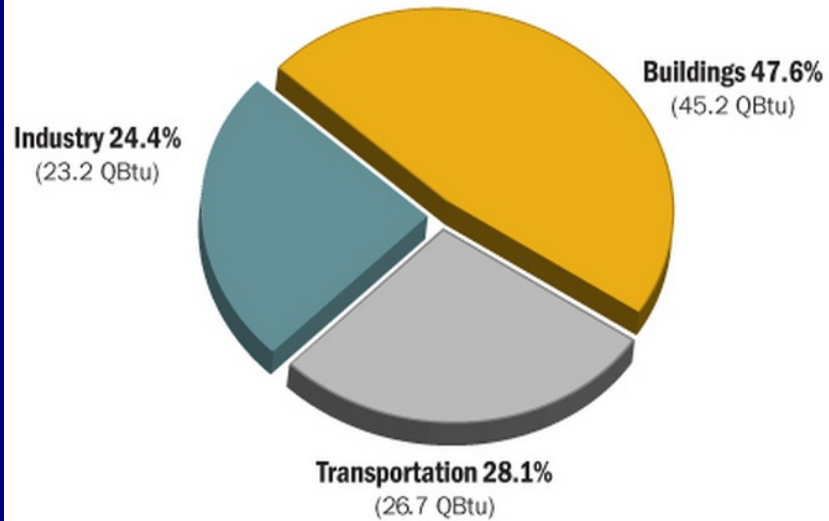
70% decrease CVD mortality (DeLogeri, 1994)

35- 48% decrease in metabolic syndrome
(Esposito, 2004, Azadhbakt, 2005)

Clean Power Plan with more Efficient Energy Use

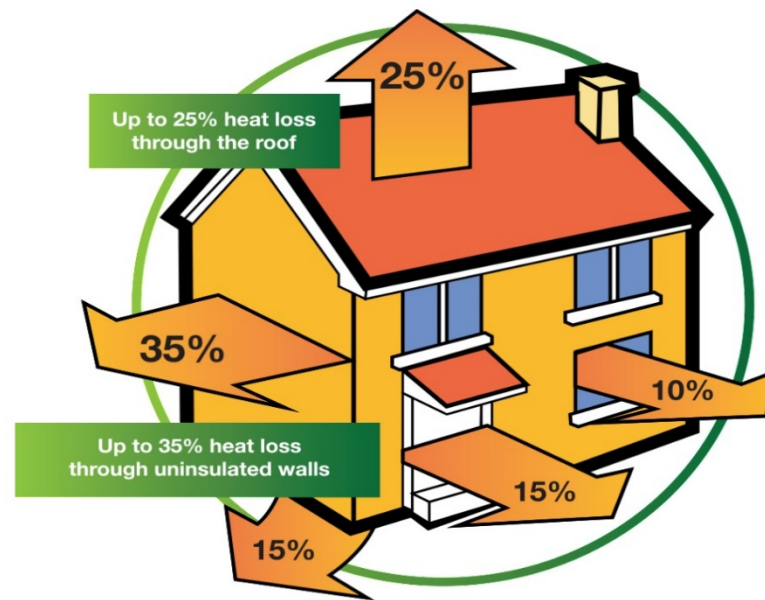
Low Carbon Living, Part IV

MORE EFFICIENT BUILDINGS



U.S. Energy Consumption by Sector

Source: ©2013 2030, Inc. / Architecture 2030. All Rights Reserved.
Data Source: U.S. Energy Information Administration (2012).



Jeffery Thompson MD
Gundersen Lutheran Health System
LaCrosse, WI



\$1 MILLION ANNUAL SAVINGS
from improved EFFICIENCY



Powered by 100% Clean Energy

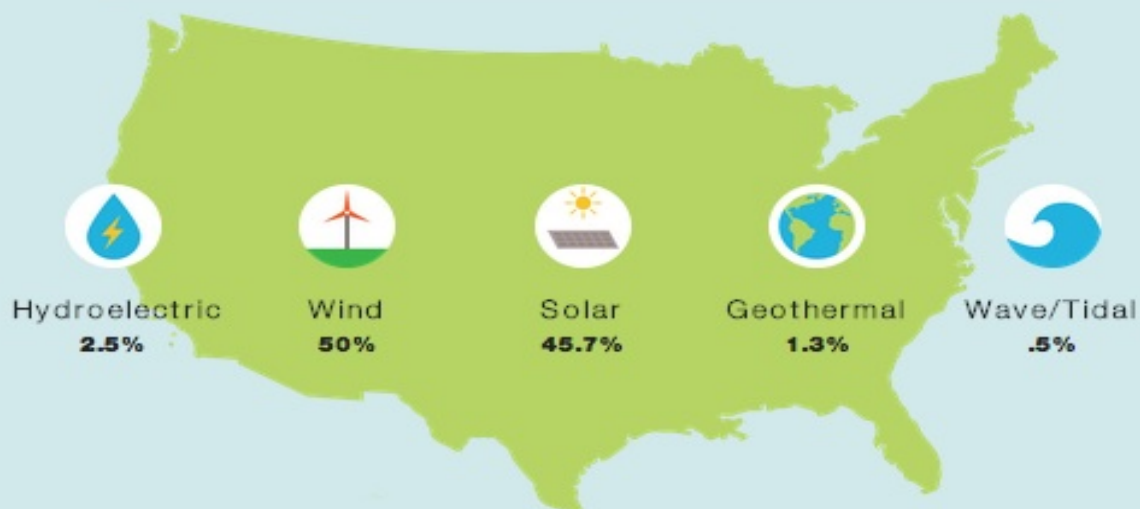


100% CLEAN BY 2050

thesolutionsproject.org

THE US CAN TRANSITION TO 100% CLEAN, RENEWABLE ENERGY

The technology is available today. 100% Wind Water Sun. For all purposes. For all people.



Money In Your Pocket Annual energy cost savings per person in 2050:

 **\$4.500**

Avoided health costs per year:



3.2% of US GDP

40-Year Jobs Created

Number of jobs where a person is employed for 40 consecutive years

Construction jobs:



4,950,200

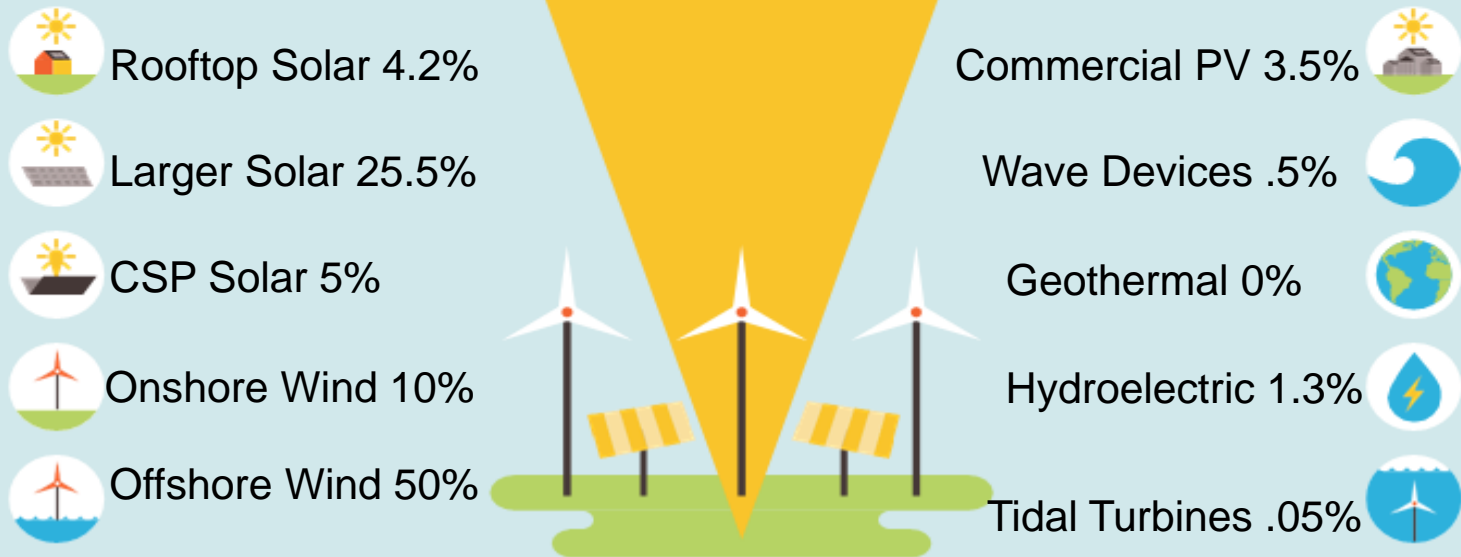
Operation jobs:



2,403,600

The Solutions Project: Virginia

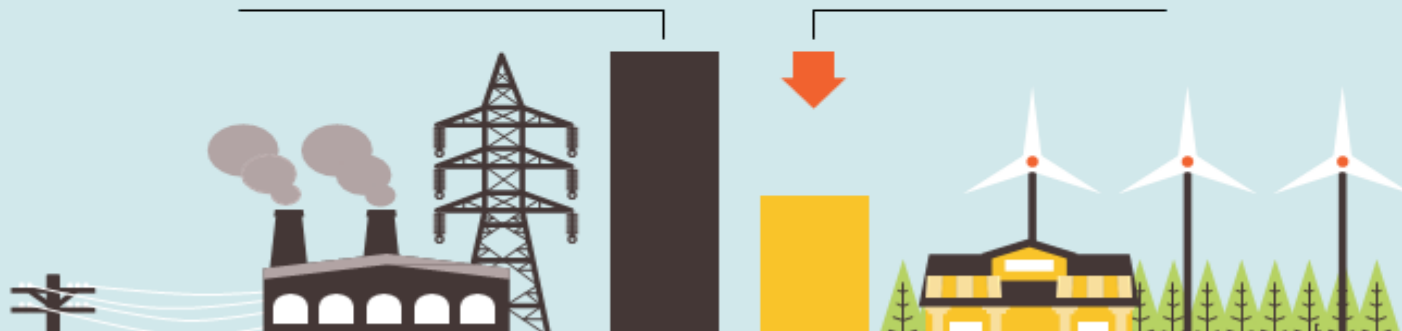
2050 Projected Energy Mix for VA



Jobs lasting 40 Yrs= 147,141

Operational Jobs 57,779
Construction 89,362

=10,000 jobs



Conclusion

- Healthier hearts and lungs
- More physical activity
- A healthier diet
- More efficient use of energy

In sum, low carbon living can improve the years of healthy living for Americans, decrease carbon pollution, decrease resources spent on energy use, and lead to development of healthier cleaner sources of energy to power our lives.

Acknowledgements

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