

Calculating Local Government Carbon Footprints: About ICLEI, and Arlington County's *AIRE*

John Morrill, Energy Manager

Dept. of Environmental Services, Arlington County

The Carbon Trading-Green Building Connection

March 6, 2008

Fairfax, VA

Virginia Sustainable Building Network

Dewberry

MWCOG

- Overview: Arlington Initiative to Reduce Emissions
 - It starts with baseline numbers: how we got ours
 - Introduction to ICLEI and its emissions software
 - Next steps for Arlington & AIRE
 - Wrap-up and Q&A
- * Slides without AIRE banner are from ICLEI, used with permission

- January 1, 2007 announcement by County Board Chairman Paul Ferguson
- Set goal: 10% reduction in greenhouse gas emissions from County government operations from 2000 to 2012
- Outlined specific actions in 2007 by government, and outreach to residents and businesses
- Climate action plans will set future agenda, work plans, community target



- Cut energy use in County buildings by 2% per year through improved energy efficiency
- Plant 1,200+ trees
- Solar projects on County facilities
- Distribute 2,000+ CFLs
- 20 free home energy audits

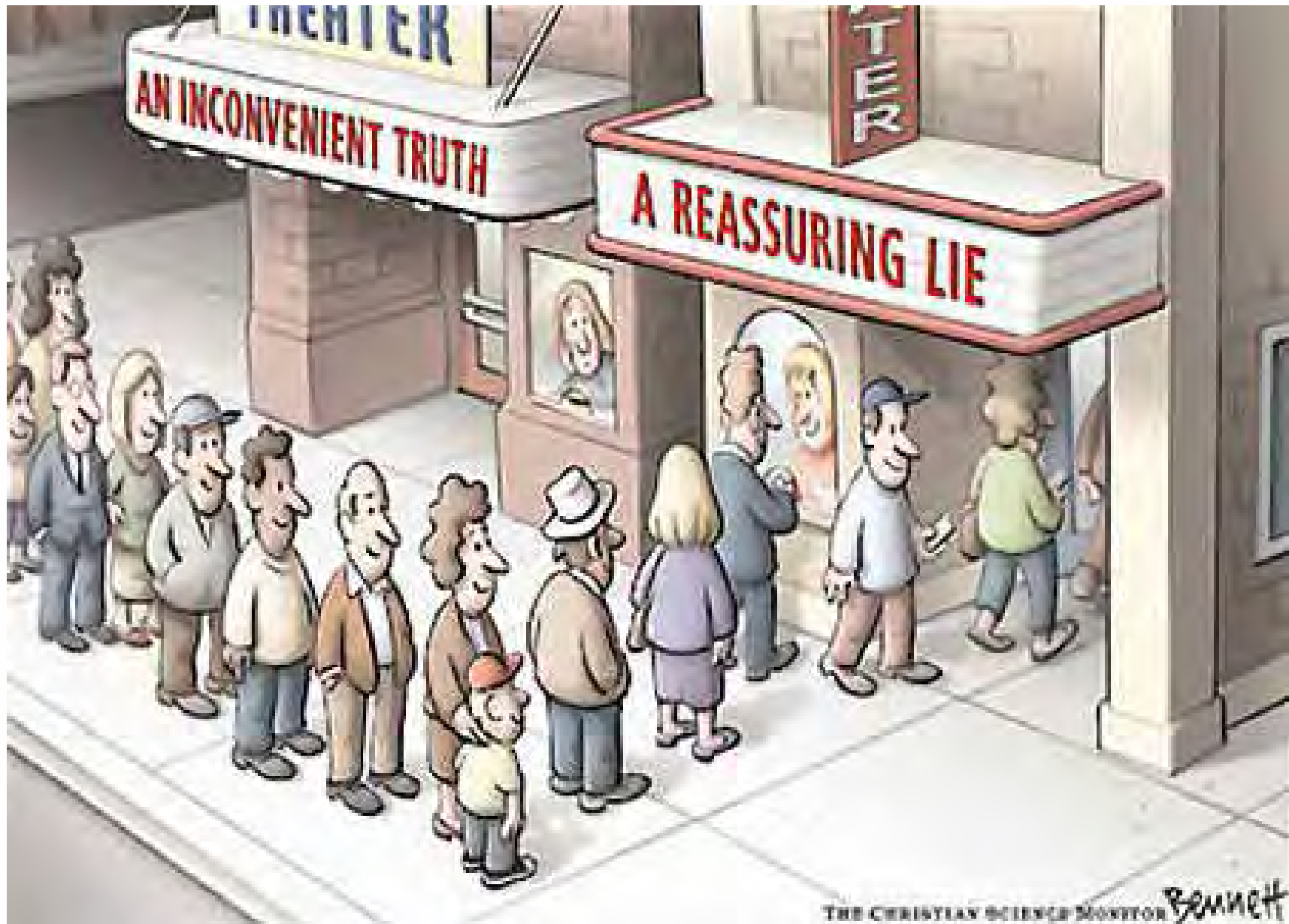


- Buy more wind power
- New county green building policy
- Renewed emphasis on recycling



Climate action serves many County goals

- Serve seniors, fixed-income, and low-income populations. Affordable housing means more than low rent: make it more efficient so operating costs lower.
- Public health: reducing greenhouse gas emissions also improves local air quality.
- Smart transport planning serves people, business, and community.
- Energy-smart is business-smart





- CFL giveaways
- Home & small business energy audits
- Businesses, faith communities, Chamber of Commerce
- Environmental groups, regional & national groups, other jurisdictions





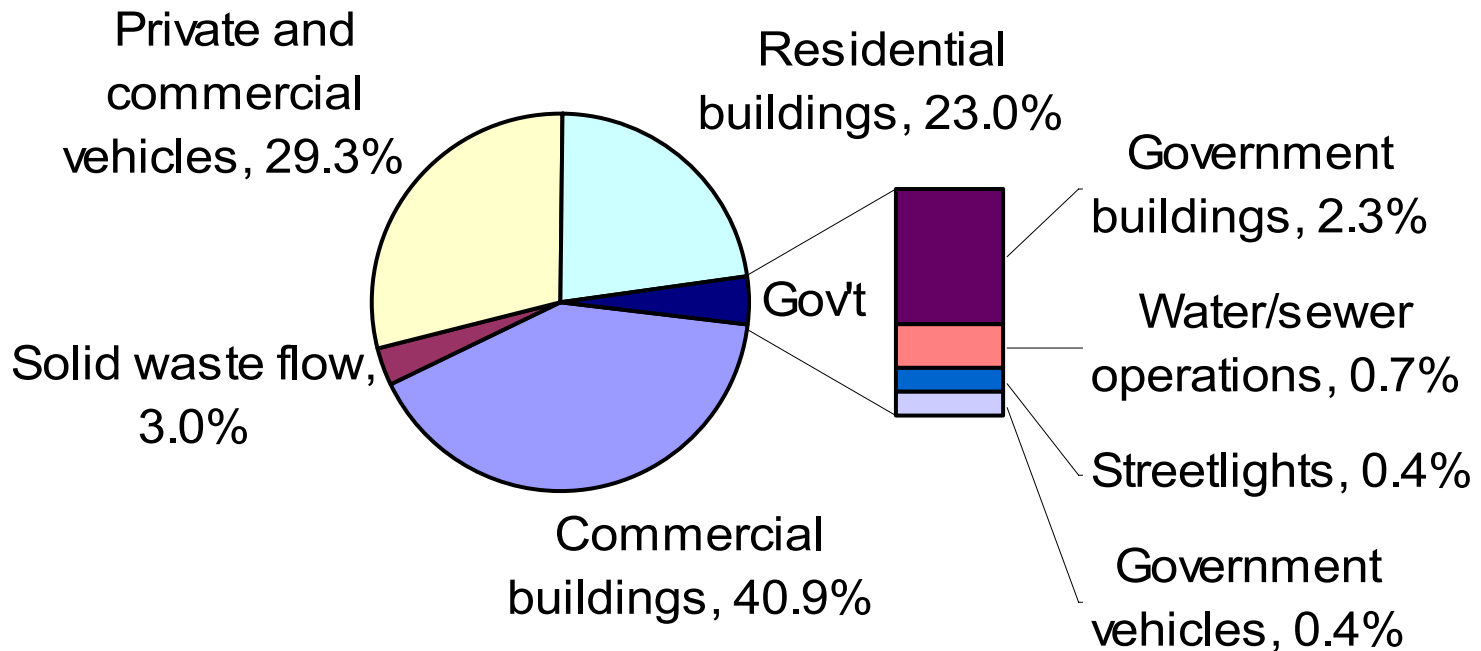
- Year 2000 baseline emissions inventories prepared using ICLEI CCP software
- Corporate emissions (109,000 tons total):
 - 74,000 tons eCO₂ government
 - 35,000 tons eCO₂ schools
- Community emissions:
 - 2.9 million tons eCO₂
(about 15 tons per person)



Total Arlington County Greenhouse Gas Emissions by Sector, 2000

Total community emissions: 2.9 million tons CO₂-equivalent

Government < 4% of total, so community outreach critical



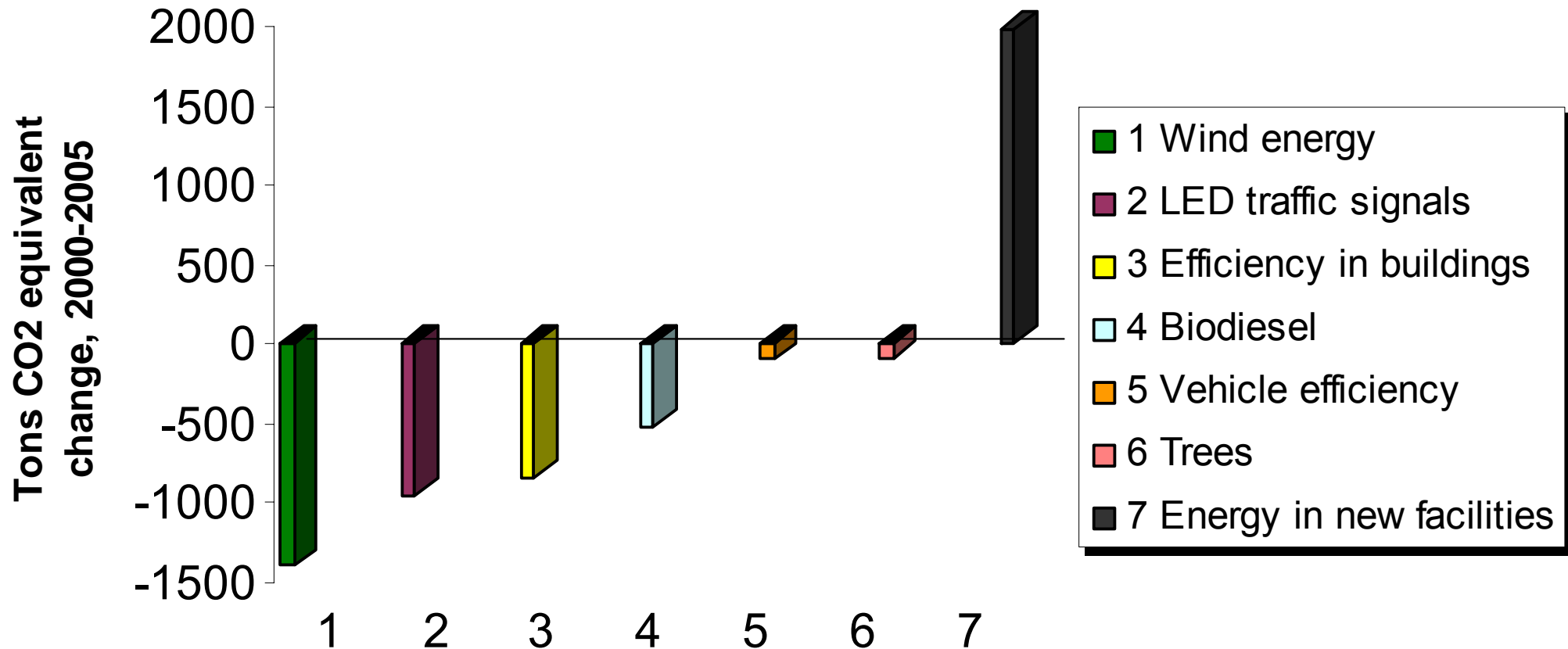
“Corporate” (county) emissions:

- Electricity from Dominion Virginia Power bills (previously compiled by energy mgr)
- Natural gas from Washington Gas bills (previously compiled by energy manager)
- Vehicle fuels (and # 2 oil) from county records
- Solid waste data from waste contracts

Community emissions:

- Electricity from Dominion Virginia Power data (residential, commercial, institutional)
- Natural gas from Washington Gas (residential and commercial)
- #2 heating oil from Census housing data
- Vehicle fuels estimated from fleet characteristics, Census data, state tax revenue, and transport dept survey data
- Solid waste flow from Arlington Solid Waste Master Plan
- We have no industry or agriculture to speak of

Existing environmental initiatives in gov't operations result in 2.6% net decline in GHG emissions from 2000 to 2005



Board-approved FY 2008 Budget: Environmental Sustainability Fund

- Funded through first-ever residential electric and gas utility taxes for Arlington.
- \$1.5 million in new revenue for climate action, institutionalizing AIRE, 4 new FTE.
- Funds upgrades in County facilities, and provides outreach & incentives to residents and the commercial sector.

How can local governments fight global warming?

Solid Waste

Energy Use

Transportation



Local government policies affect all major sources of greenhouse gas emissions

I.C.L.E.I

Local
Governments
for Sustainability



Supporting the work of mayors and other local government leaders through climate action tools, technical and communications assistance, and peer networking

www.iclei-usa.org



Mission

Our mission is to build, serve and drive a movement of local governments to advance deep reductions in greenhouse gas emissions and achieve tangible improvements in local sustainability.



ICLEI International Offices

US – Oakland, CA

- Canada – Toronto, ON
- Europe – Freiburg, Germany
- Asia Pacific – Tokyo, Japan
- Africa – Johannesburg, South Africa
- Latin America & Caribbean – Rio de Janeiro, Brazil
- Australia – Melbourne
- India – New Delhi
- Indonesia – Jakarta
- Philippines – Quezo City
- Korea - Seoul

*Over 1,000
participating
jurisdictions
around the
world*



ICLEI - A Worldwide Movement of Local Governments

11 Offices

68 Countries

6 Continents

- **Climate Change Mitigation**
- **Climate Adaptation / Resilience**
- **Sustainability Performance**

ICLEI USA Network

More than **350 member local governments**
Representing more than **25% of the population**

A map of the United States showing the distribution of member local governments. The map is rendered in shades of green and blue, with numerous small white dots scattered across the landmass, indicating the locations of these governments. The dots are densely packed in the eastern half of the country and more sparsely distributed in the western half.

Maryland

Annapolis
Baltimore
Chevy Chase
College Park
Gaithersburg
Howard County
Hyattsville
Montgomery County
Mount Rainier
Prince George's County
Queen Anne's County
Rockville
Takoma Park

Virginia

Albemarle County
Arlington County
Blacksburg
Charlottesville
Harrisonburg
Norfolk
Roanoke
Roanoke County
Warrenton

ICLEI USA Offices

Regional Capacity Centers Across the Nation

Western States

Denver, CO

Midwest

Chicago, IL

Pacific Northwest

Seattle, WA

Northeast and Mid Atlantic

Boston, MA

Southeast RCC
(Coming in 2008)

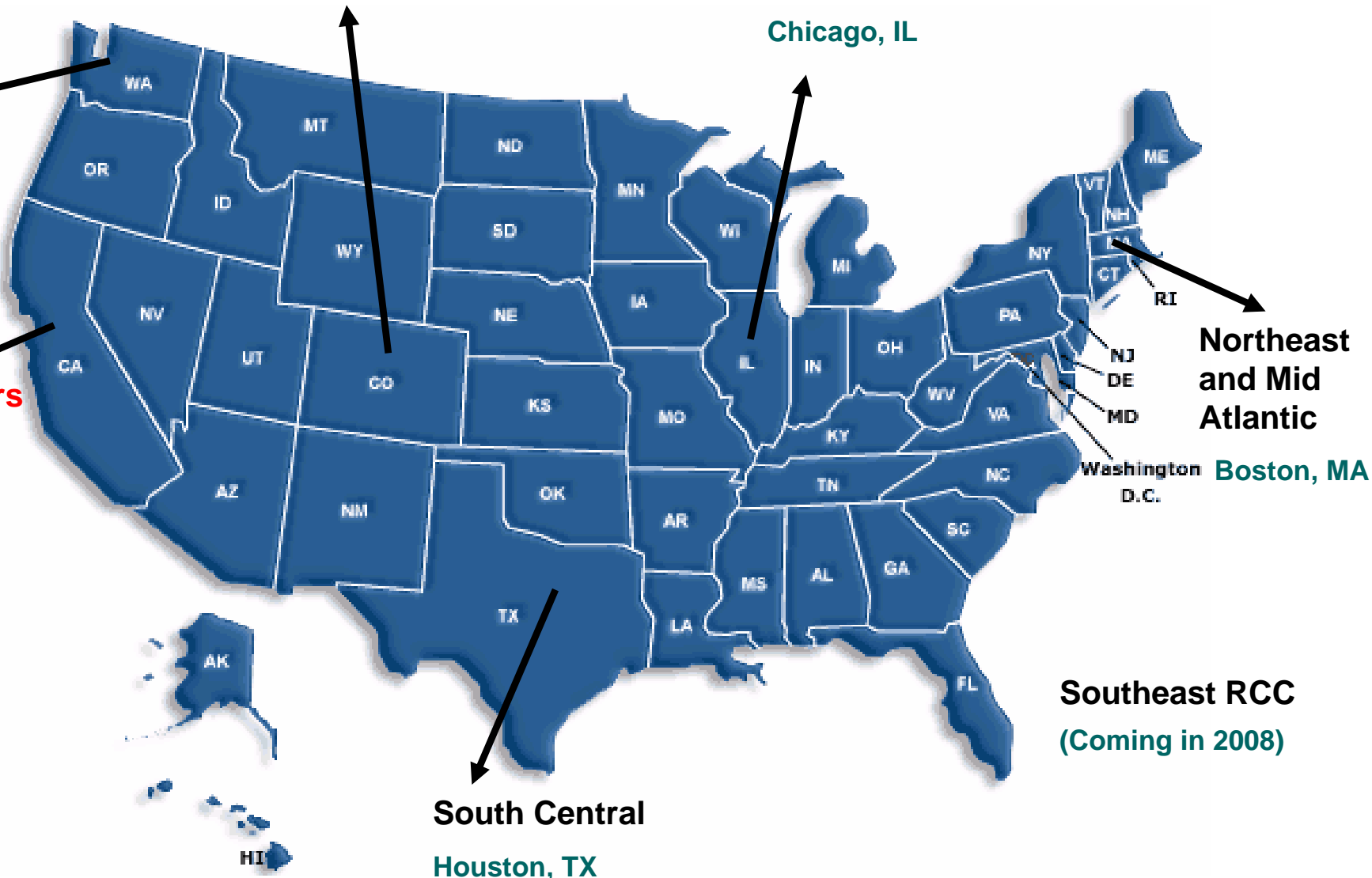
South Central

Houston, TX

USA Headquarters

California

Oakland, CA



ICLEI and the U.S. Mayors Climate Protection Agreement (MCPA)

- As of February, 2008, over 750 U.S. cities have signed the MCPA
- Mayors strive to meet or beat the Kyoto Protocol targets: 7% reduction from 1990 levels by 2012
- Mayors urge the state and federal government to adopt environmentally sustainable policies and programs
- ICLEI members are often also MCPA signatories



Multiple Benefits of Local Climate Protection

- Improve air quality
- Reduce municipal operating costs
- Save money
- Reduce traffic congestion
- Create local jobs
- Improve the quality of urban life



How do you benefit from working with ICLEI?

- National and international network of peers
- Emissions Analysis Software and Decision Support Tool
- ICLEI Trainings and Events
- Technical, policy and communications assistance

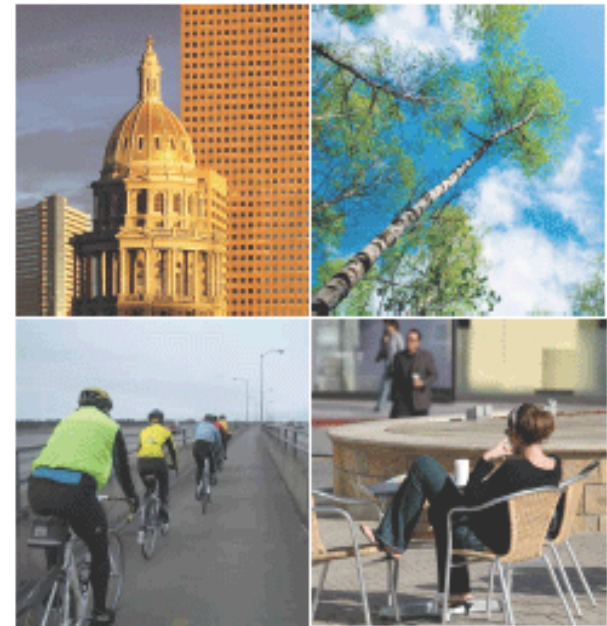


ICLEI Toolkits, Publications, Templates

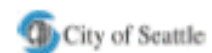
- Climate Action Handbook
- Adaptation Guidebook
- Milestone Guide
- Transportation and Land Use Toolkit
- Urban Forestry Toolkit
- Green Fleets Guide
- Local Climate Programs
- Example Ordinances
- Resolution, Inventory and Action Plan Templates

www.iclei-usa.org

U.S. MAYORS' CLIMATE PROTECTION AGREEMENT



CLIMATE ACTION HANDBOOK



ICLEI Local Action Summit

Albuquerque, NM

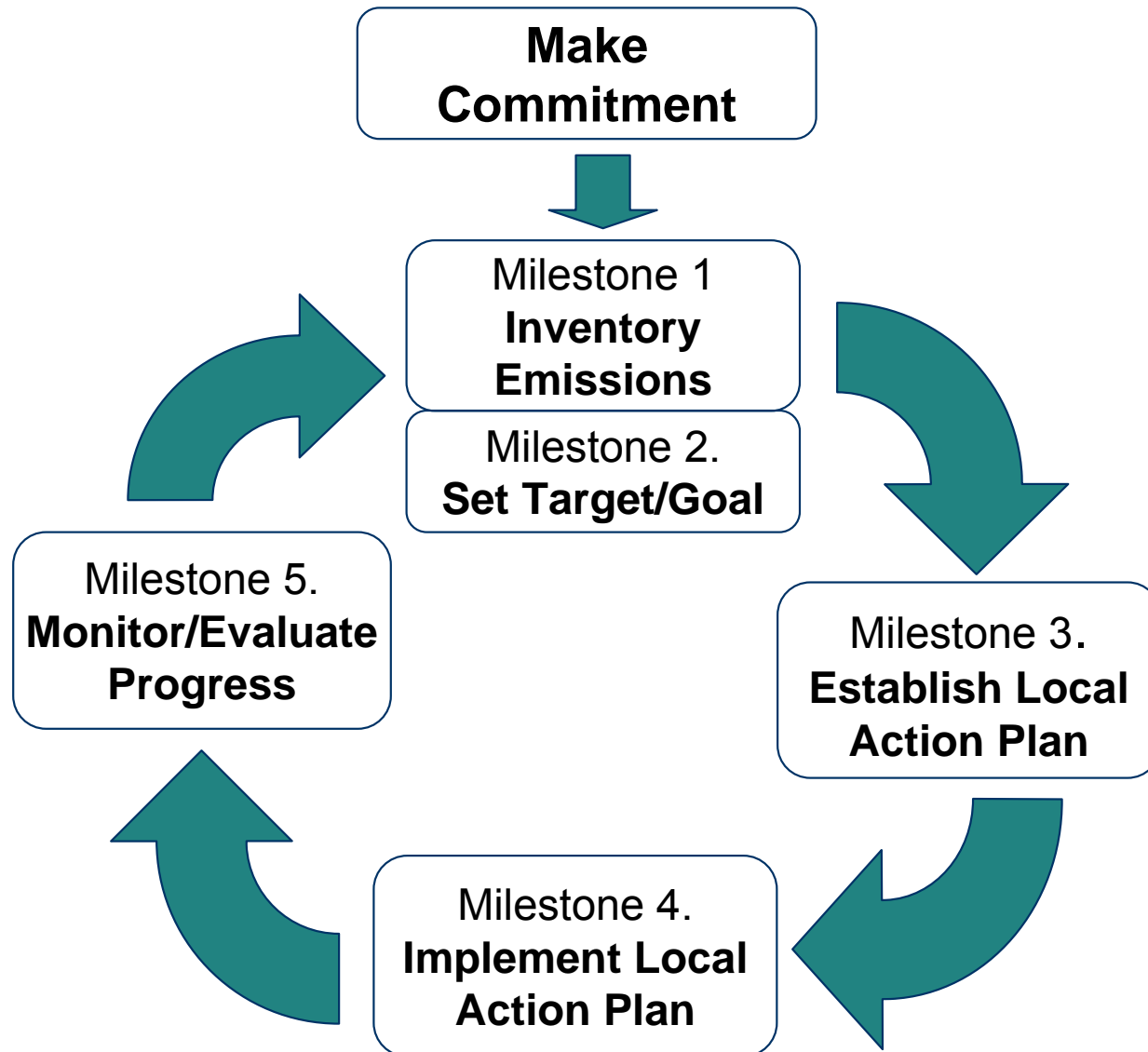
May 14-16, 2008

www.icleiclimateactionsummit.org



- Networking with staff and elected officials from around the country
- Green Exhibition
- Guest speakers...
- Skills training sessions
- Climate Innovation Invitational

The 5 Milestone Process



Community Analysis

Community Measures

Government Analysis

Government Measures

STAPPA/ALAPCO and ICLEI's

Clean Air and Climate Protection Software

State and Territorial Air Pollution Program Administrators and
Association of Local Air Pollution Control Officials

International Council for Local Environmental Initiatives

The Community-Scale Greenhouse Gas Emissions Inventory



Standard Methodology: The Emissions Analysis Protocol



- Community-scale analysis
- Developing key partners
- Government operations analysis
- Key vs. secondary components

$$1 \text{ kWh} = \underline{\quad ? \quad} \text{ lbs CO}_2\text{e}$$

Selecting a Base Year

2005?

1995?

1990?

2007?

2000?

- Most available and reliable data
- Comparable to future analysis
- Capturing already-active GHG reduction projects
- Coordinate with peers
- Interim year?
- Community and municipal/ "corporate" can be different
- Fiscal or Calendar years O.K.



Categories of Emissions Data – 3 Sectors

1. Building, facilities and operations
2. Municipal vehicle fleet
3. Waste from local and government operations



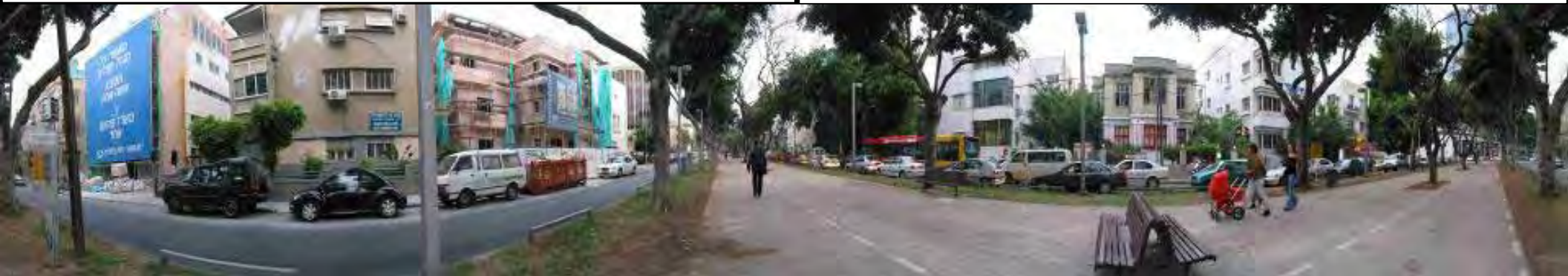
Who provides the data?

Primary data providers

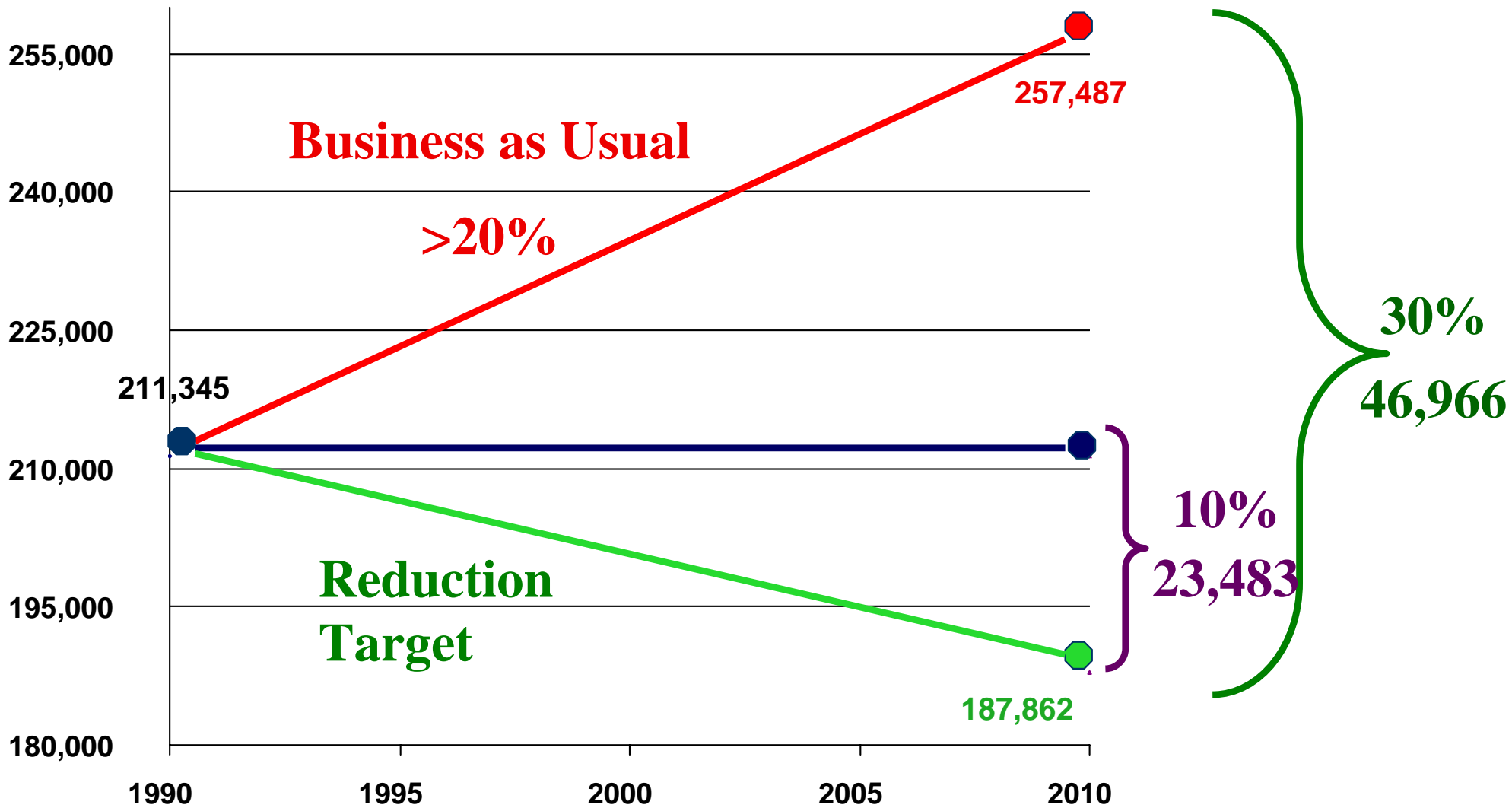
- Electric and gas utilities
- Planning and transportation agencies
- Solid waste management agencies

Additional data providers

- Private industry
- Treatment plant operators
- Ports
- Households



Setting a Target



Milestones 1 - 3: Baseline; Target; Action Plan



30%
Commercial /
Industrial

25%
Residential

4%
Waste

41%
Transportation

Milestone 1: Baseline = 2,300,400 tons of GHGs

Milestone 2: 20% Reduction Target = 460,080 tons

Milestone 3: Develop Action Plan

What Actions are Local Governments Taking?



Trip Reduction Programs



Car share programs have debuted across the country in the past few years and are now in over 70 cities.

Programs range from small non-profits like **Austin** CarShare and **Boulder** CarShare, to bigger companies like FlexCar and Zipcar, to various small car co-ops.

Telecommuting cuts down on vehicle miles traveled and helps to curb pollution from cars.

Sacramento County, CA provides cash incentives for establishing employee home-based telecommuting for businesses and local government agencies. Participating employers receive up to \$1,000 per new telecommuter with a maximum of \$5,000 per employer or agency. The cash incentives can be used for the purchase and/or installation of equipment at home or work to facilitate telecommuting.



shared wheels

Transit Oriented Development



Transit Oriented Planning increases use of public transportation and encourages walking and biking.

Portland, OR's Transportation Options Program is coupled with continued improvements to transit, bicycling and walking infrastructure. From 1990 to 2005 there was a 75% increase in public transportation use.

Fare Free Transit encourages high rates of mass transportation use.

In 2002 *Chapel Hill* and *Carrboro, NC* switched to a fare-free system. As a result, the system's total ridership increased by approximately 45 percent in one year, and 108.6 percent over five years. This represents an annual ridership increase of 14.7%.

Renewable Energy (solar, wind, grid purchases)

Renewable Energy generates electricity off the grid, providing an independent energy source to homes, businesses and municipal buildings/operations.

Santa Monica, CA offers professional energy teams who will visit a home or business and first implement energy conservation measures, then offer a set of standardized solar system designs developed with installers, which reduces costs. The city works with banks to provide solar system financing.

Aspen, CO offers PV system purchasers a choice of either a \$2.00/watt rebate or zero-interest financing

Sacramento, CA provides a \$2.50/watt incentive and partners with new home developers to build solar homes.

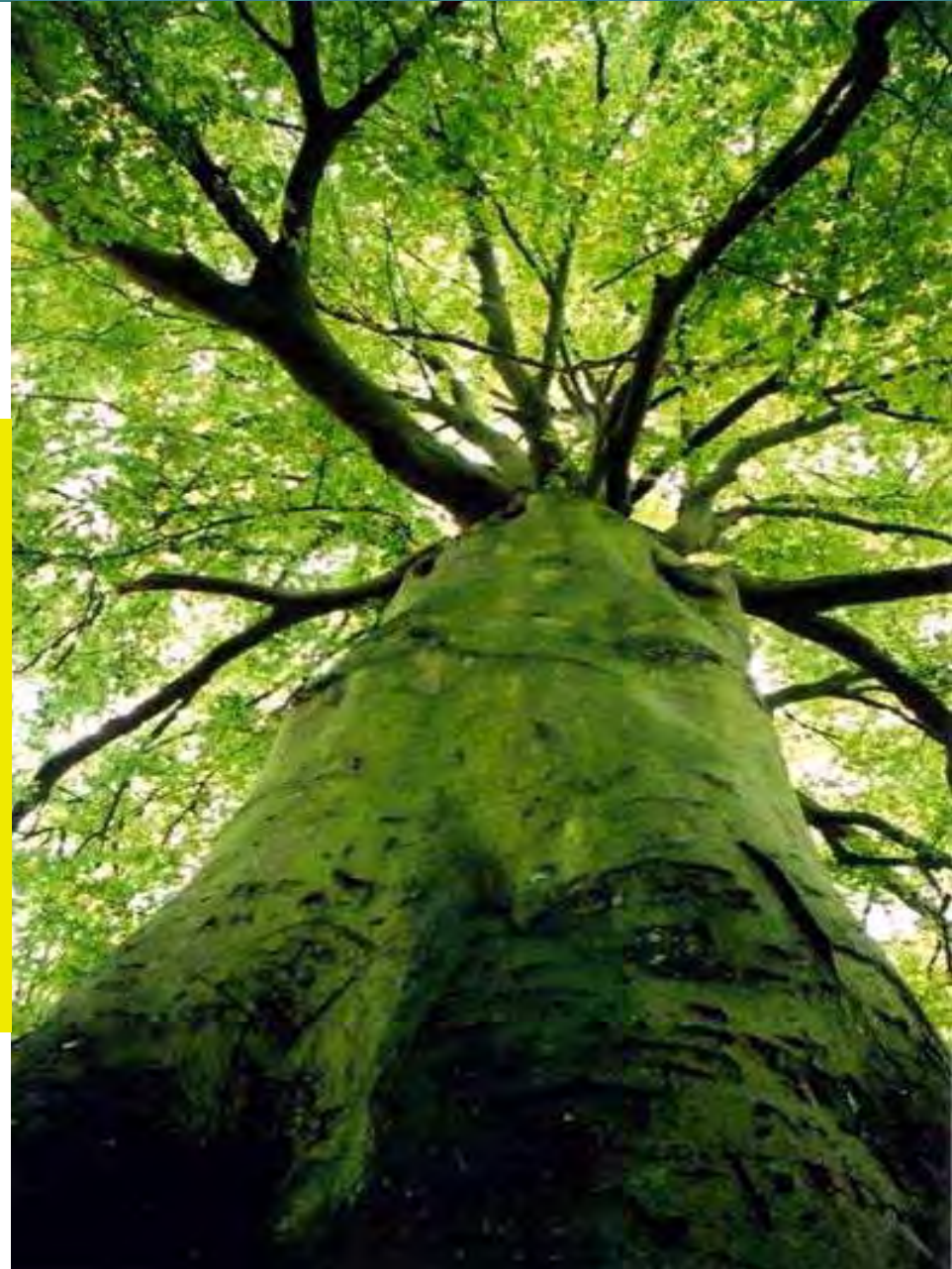


Urban Forestry (planting, management)

Urban Forestry increases air quality, decreases the urban heat island effect and makes our neighborhoods more beautiful.

In ***Saint Paul, MN*** more than 12,000 native trees and 10,000 native grasses were planted from 2005 – 2007.

Sacramento, CA's Sustainability Master Plan calls the City to plant 5 to 6 million trees in the region, which would increase the urban canopy coverage to 35 percent.



Energy Efficiency

Ordinances shape municipal policy and provide guidelines for how to save energy.



In 2003 **Fort Collins, Colorado** adopted an aggressive renewable energy and energy efficiency policy for their municipal electric utility. EE goals are to reduce per capita electric consumption 10 percent and per capita peak day electric demand 15 percent by the year 2012. Renewable energy use is targeted to increase to 2 percent in 2004 and 15 percent by 2017.

Retrofits can help save on costs and dramatically reduce emissions.

The city coliseum in **Greensboro, NC** received energy-efficient lighting system retrofits, water conserving plumbing fixtures and major upgrades to its HVAC system. These measures will reduce electricity consumption by a quarter, cut natural gas use in half and cut emissions by more than 1,700 tons a year. The cost of these changes will be paid for by the net energy savings of the facility.

Alternative Fuel Vehicles



Biodiesel powers cars more cleanly than gasoline by using plant oils and can be derived from many sources.

At the close of 2007, **San Francisco, CA** launched SFGreasecycle, a free program in which the city picks up used cooking oil and grease from local restaurants, hotels and other commercial food preparation establishments.

Compressed Natural Gas (CNG) is an environmentally friendly alternative to diesel, petrol or propane fuel.

Cities in Action: Energy Efficiency in Oakland, CA

Project

Cost Savings

Emissions Cut

Energy Efficient Offices:
City Administration Bldg.

\$180,000/ yr

750 tons/ yr

Energy Retrofits:
Oakland Museum

\$160,000/ yr

500 tons of CO₂e/ yr

Lighting:
LED traffic lights

\$400,000/ yr

1,700 tons/ yr

PV array on an Oakland ice rink

City Administration Bldg.

Oakland City Museum



You can't be everywhere at once.

But working with hundreds of local governments means we are.

One city – or one county – can't do it alone.

That's why ICLEI — Local Governments for Sustainability has brought together governments from red states and blue states, on the coasts and in the heartland, to make a collective impact on climate change.



· I · C · L · E · I ·
Local
Governments
for Sustainability

- Energy/climate analyses
 - Update emissions inventory, forecasts
 - County gov't energy plan
 - County climate action plan



- Continue and accelerate in-house efficiency improvements (lighting, HVAC, controls, motors, solar, etc.)

- Business and community outreach
 - AIRE Business Champion awards
 - Energy Star buildings
 - LEED-certified buildings
 - ATP commuter services leaders
 - Exemplary recycling partners
 - Certified DineGreen® restaurants
 - High-scoring business partners
 - Business partners for all-around effort



- Community-wide climate action plan
 - Meaningful public process
 - Cool Counties, MWCOCG activity already provides targets
 - Meetings April – October
 - Report by end of year



Arlington Initiative to Reduce Emissions

www.arlingtonva.us/climate

www.arlingtonclimateblog.com

General inquiries:
climate@arlingtonva.us

John Morrill, Energy Manager: jmorrill@arlingtonva.us
703.228.4426