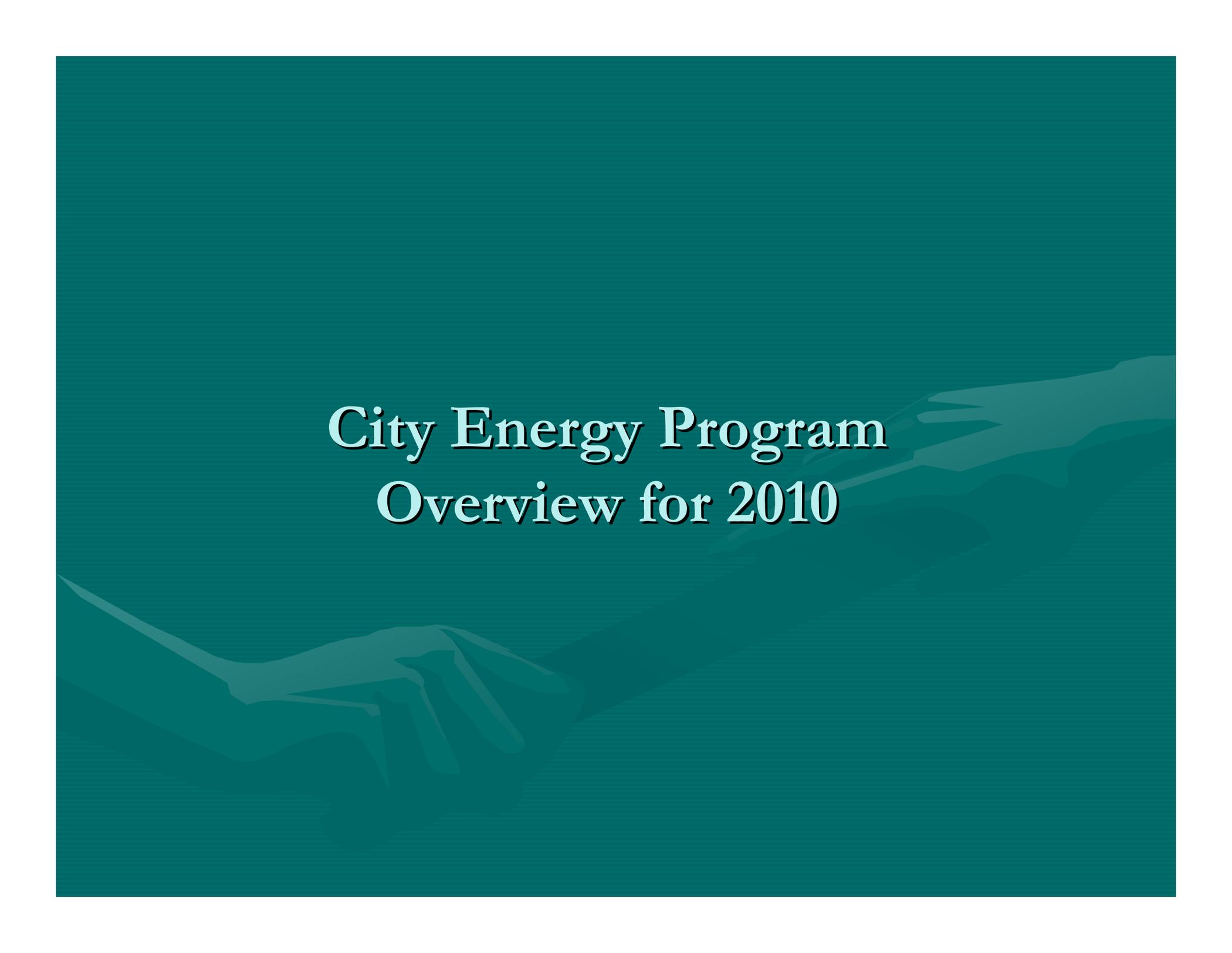


# Energy & Sustainability Task Force

December 11, 2009

## City Updates and Task Force Next Steps

*Susanna Bass & Erin Burns*



**City Energy Program  
Overview for 2010**

# Energy Savings Performance Contract



an independent energy solutions company



## First Stage: Assessment: Completed

- Investment Grade Audit: Electricity, Natural Gas, Water
- Comprehensive list of efficiency, cost-saving recommendations

## Second Stage: Implementation: Contract to City Council early 2010

- Ameresco handles sub-contracting, design of systems
- Up-front costs paid for through guaranteed savings



# Energy Savings Performance Contract



an independent energy solutions company



## Proposed Retrofits:

- Lighting Retrofits
- Lighting Controls
- EMS (Electrical Management System): software allows remote control
- HVAC Upgrades
- New Air Handling Units
- New transformer at the Coliseum
- New Boiler at the Convention Center
- 4 Solar hot water heaters and a TBD number of solar panels
- New Irrigation Systems and other water conservation
- Building envelopes, insulation, garage doors at the Pension Board
- Pool covers

# Energy Savings Performance Contract



an independent energy solutions company 



## Anticipated Savings:

- 46 billion BTUs annually, which is the equivalent of removing 1,650 cars from the streets
- \$1,100,000 annual utility savings
- 49,000,000 gallons of Water saved per year
- 18,000,000 lbs / year Carbon Dioxide removed
- 79,000 lbs / year Sulfur Dioxide
- 30,000 lbs / year Nitrogen Dioxide removed

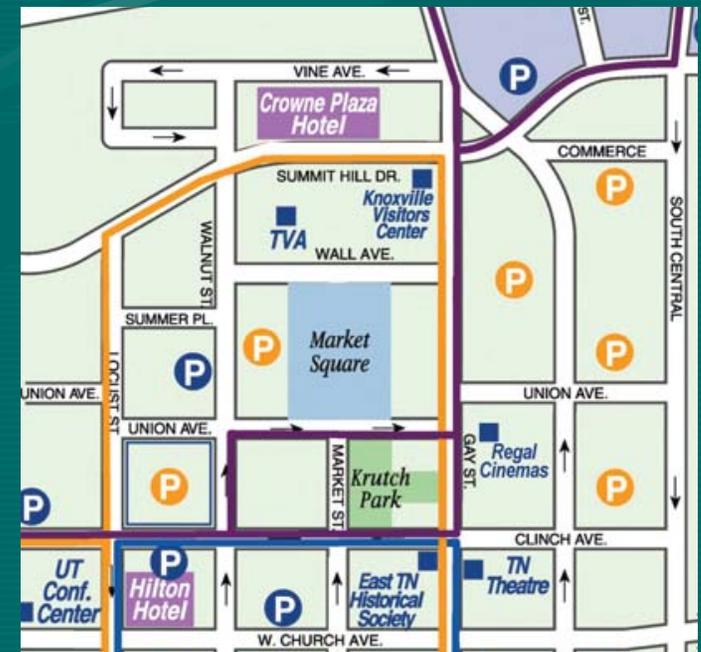
# LED Streetlight Test Case: Wall Ave.

## Streetlight LED Pilot:

- EPRI, TVA, KUB, COK project
- Installed 12 downtown LED streetlights
- Wall Ave. (10 – 2 Left, 8 Right) and Market Square (2)
- Greater upfront costs: \$289 more per unit
- Initial energy reduction: 69%, or less 2,190 watts or 2.54 kwh used
- LED claims 5 times HPS lifespan
- EPRI to monitor
- Joint press release the week of Dec. 14

## Traffic Signal Update:

- Realizing a 90% energy savings
- Realizing reduced maintenance
- Realizing \$280,000 in savings annually



# Energy Efficiency & Conservation Block Grant: DOE Goals

- To deploy the cheapest, cleanest, and most reliable energy technologies for energy efficiency and conservation across the country.
- Intended to assist national development of energy efficiency and conservation projects and programs designed to:
  - Reduce fossil fuel emissions;
  - Reduce the total energy use of the eligible entities;
  - Improve energy efficiency in the transportation, building, and other appropriate sectors; and
  - Create and retain jobs.
- Program empowers local communities to make strategic investments to meet the nation's long-term goals for energy independence and leadership on climate change.

# Energy Efficiency & Conservation Block Grant: COK Development

- The following were identified as priorities:
  - What needs do we have that we don't have funding sources for?
  - Giving back to the Community rather than putting the entire amount into the Energy Savings Contract
  - Internal and External Balance
- The City of Knoxville worked closely with many parties to target strategies for the formula grant application:
  - SACE, TVA, KUB, Community Development, Knox County, Knox Housing Partnership, CAC, & others

# Energy Efficiency & Conservation Block Grant: DOE Approved Projects

## Energy Efficiency & Conservation Strategy



- \$261,182 to hire Sustainability Program Manager for EECBG management

## Single Stream Curbside Recycling Program

- \$700,000 in bins for potential curbside program



## Contractor Education

- \$40,000 for workshops to educate contractors in LEED/Earthcraft



# Energy Efficiency & Conservation Block Grant: Pending Projects

## Green Building Incentives



- \$300,000 for providing homeowner incentives for energy efficiency upgrades

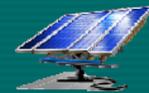
## AMERESCO

- \$261,518 to supplement energy efficiency in public buildings



## Large-scale solar on City property

- \$250,000 for a solar PV system on a public building



## CAC Weatherization Subgrant

- \$200,000 to CAC for weatherization in low income homes



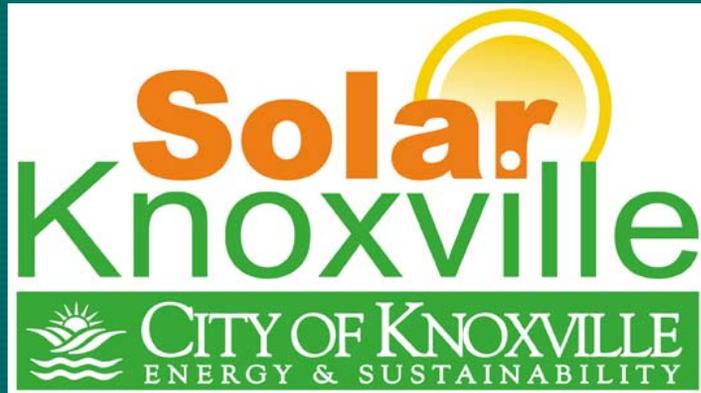
# Energy Efficiency & Conservation Block Grant: COK Process

- Set up Financial System Reporting
- Obtain NEPA approval for Pending Projects
- Develop Request for Qualifications for Approved Projects
- Bid and comply with Davis Bacon and other DOE reporting requirements
- Monthly and Quarterly Progress Reports to DOE

The background is a solid teal color. In the lower half, there is a faint, semi-transparent graphic of two hands shaking, symbolizing agreement or partnership. The text is centered horizontally and vertically in the upper half of the image.

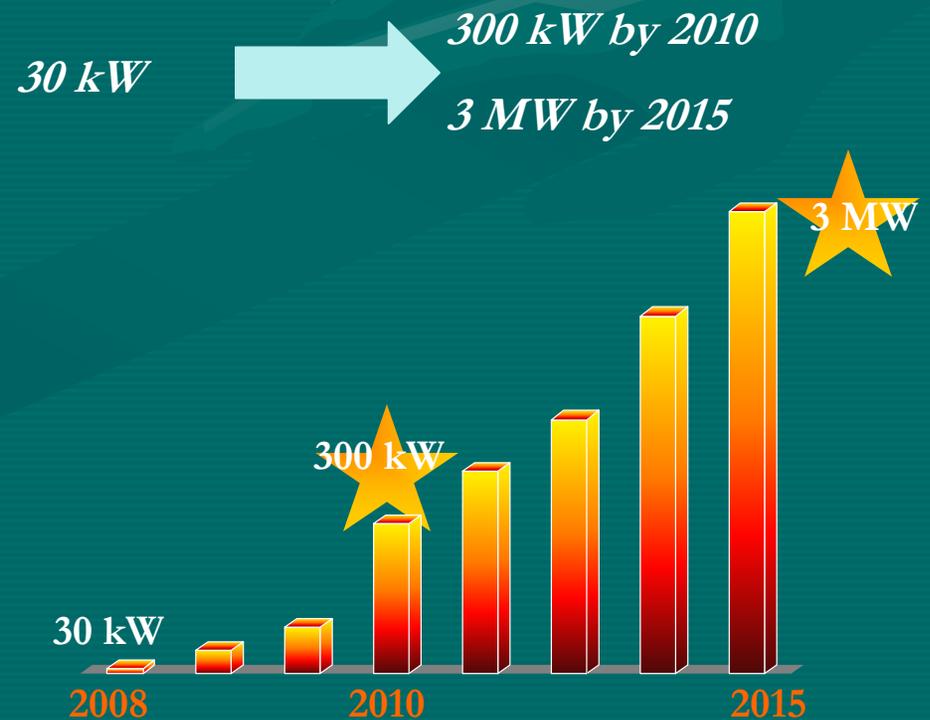
# Solar America Cities Update

# Promote Clean and Renewable Energy



## Goals

- Build public understanding;
- Increase visibility;
- Strengthen local market capacity and expertise;
- Reduce red tape;
- Serve as a model the region.



# Solar Installer Training

- Full Solar PV installer training curriculum available at PSTCC.
- Working towards training for Solar Hot Water



# Workshops and Training

- Educational workshops for the Public
- Training workshops for specific target groups.



# Ijams Nature Center Exhibit

- Expected to be open by New Years.



## Others:

- Zoning Revisions
- LEED Certified Historic Home Installation
- Streamlined Permitting Process for Solar
- Transit Center Installation/ Exhibit
- Tapping in to Volunteer Solar Initiative and Economic Development



# Progress!

- Increasing Deployment
- Increasing Interest
- Changing Perceptions

*~ 100%  
increase in  
Solar PV  
Capacity;  
More on the  
way!*





**Knoxville Energy Inventory**  
**Next Steps:**

**Working Group Review**

# Past Working Groups for the Energy Inventory

- Buildings Group
- Transportation Group
- Waste/Recycling Group
- ESCO RFP Group

# Working Group Accomplishments: City Government Goals

- Reduce energy / water consumption in city facilities
- Improve efficiency of traffic signals / streetlights
- Insure new facilities are energy efficient & cost less to operate
- Reduce municipal waste & purchase responsibly
- Reduce City fleet fuel consumption/emissions/maintenance
- Support KAT's environmental efforts
- Reduce commute vehicle-miles-traveled by city employees

# Working Group Accomplishments: City Government Next Steps

- Ameresco: Publicize progress / share lessons-learned
- LED: Evaluate options for streetlight upgrades and implement
- Municipal Structures: Adopt green building policies
- Recycling: Responsible purchasing, education, recycling initiative
- Fleet: Determine fuel reduction target & examine vehicle / infrastructure options
- KAT: Apply for grants to speed retrofits and replacements
- Smart Trips: Determine alt-commute target / develop incentives

# Working Group Accomplishments: Community Goals

- Reduce transportation-related fuel consumption and emissions
- Improve the energy efficiency of local homes and buildings
- Grow proportion of renewable energy powering the electricity grid
- Ensure the quality and quantity of local water supplies
- Reduce the amount of waste sent to the landfill; recycle wherever possible
- Integrate sustainability into development / job creation
- Encourage community engagement in sustainability efforts

# Working Group Accomplishments: Community Next Steps

- Market development for alt-vehicles / promote alt-commutes
- Energy efficiency for residential, commercial, industrial sectors
- Tie LEED or EnergyStar certification to development incentives
- Market / educate about the importance of renewable energy
- Apply BMPs through code changes and development incentives
- Set waste diversion target and implementation strategy
- Formalize clean energy business, job development strategy
- Develop other targeted community engagement strategies



**Knoxville Energy Inventory**  
**Next Steps:**

**Working Group Strategy**

# City Research Needs

- Developed from the next steps identified in the Energy Inventory
- Targeted to address those issues the City is best positioned to address

# City Research Needs

- **City Goods and Services: Public Service & Purchasing**
  - *David Brace*
  - *Boyce Evans*
- **Community Involvement: Policy & Communications**
  - *Susanna Bass*
  - *Erin Burns*
- **Infrastructure: Public Works**
  - *Steve King*
- **Sustainable Growth : MPC & Building Inspections**
  - *Mark Donaldson*
  - *Gary Norman*
- **Transportation: Fleet & Commuter Services**
  - *Mark Kolander*
  - *KAT / MPC*

# City Goods and Services Group

- Responsible Purchasing:

- Reduce, reuse, recycle into purchasing practices
- Employee education

- Recycling Issues:

- Set waste diversion target and implementation strategy

- Landscaping:

- Edible plants becoming a local topic
- Native species to gradually replace typical landscaping plants



# Community Involvement Group

- Marketing: How can we reach the community?
  - Ameresco: Publicize progress / share lessons-learned
  - EECBG: Progress Reporting / community involvement
- Incentives / Program Participation Drivers:
  - Market / educate about the importance of renewable energy
  - Formalize clean energy business, job development strategy
- Leveraging: How can we sustain sustainability?
  - Develop other targeted community engagement strategies

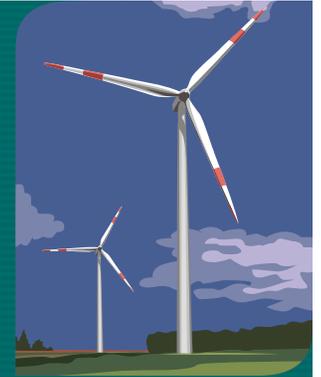


# Infrastructure Group



- Stormwater: Preparation for new regulations
  - Streetscapes that make sense for Knoxville
- Energy Efficient Lighting: Effecting a mindset
  - LED: Evaluate options for streetlight upgrades and implement
- Green Space & the competing needs of right of way utilization

# Sustainable Growth Group



- Develop Guidelines:
  - Municipal Structures: Adopt green building policies
  - Apply BMPs through code changes and development incentives
- Address and encourage in Special Districts:
  - Energy efficiency for residential, commercial, industrial sectors
  - Tie LEED or EnergyStar certification to development incentives
- Aid Community Development's responsible rehab & growth goals:
  - Support attachment of LEED / EnergyStar certifications to grant dollars

# Transportation Group



- Commuter Options

- KAT: Apply for grants to speed retrofits and replacements
- Smart Trips: Determine alt-commute target / develop incentives

- Fleet Development

- Determine fuel reduction target & examine vehicle / infrastructure options
- Market development for alt-vehicles / promote alt-commutes

# Creation of Groups

- What are your interests and strengths?
- What are your personal goals for participation?
- What time can you commit?
- Who's in your network that would bring value to the group but may not be on the Task Force?

# Feedback

- What are your thoughts on the Task Force to date?
- What in your opinion has been the most successful effort and why?
- What has been the most frustrating and why?
- Where do you see the Group being the most effective?

# Updated Web & Contact Information



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[www.cityofknoxville.org/policy/solar](http://www.cityofknoxville.org/policy/solar)

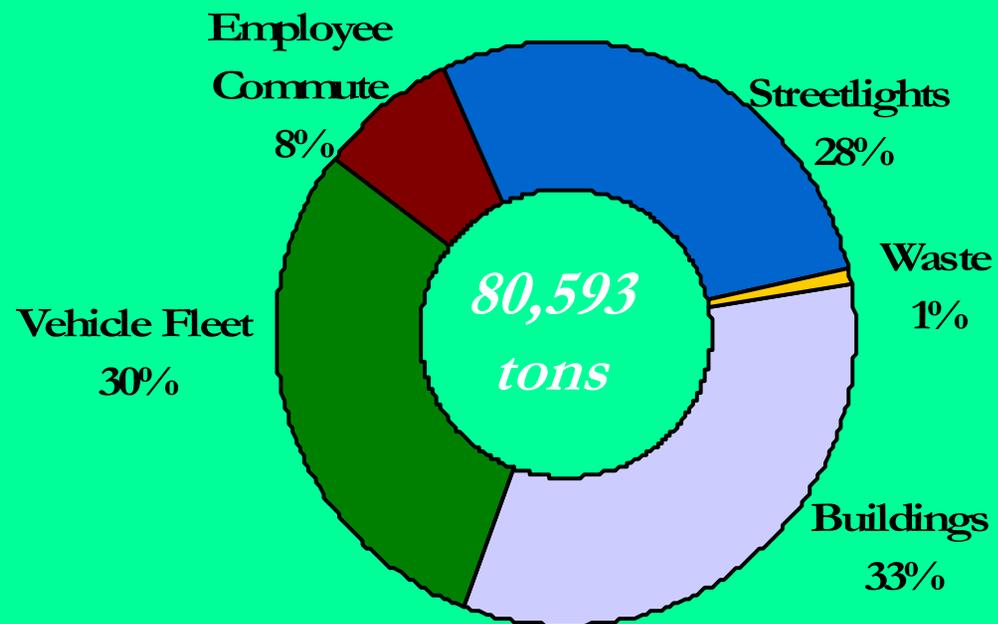




**Knoxville's Energy Inventory  
Discussion Data**

# Energy Inventory

## Government eCO<sub>2</sub> Emissions by Sector



# Energy Inventory

These entities are responsible for **80%** of City Government's total eCO<sub>2</sub> emissions from energy consumption and **70%** of its energy costs.

City Government eCO <sub>2</sub> - Top Ten				
Total City GHG Emissions from Energy = 79,889 tons eCO <sub>2</sub>				
Total City Energy Costs = \$7.9 Million				
Source	eCO <sub>2</sub>	% of Total CO <sub>2</sub>	Cost	% of Total Energy Cost
Street & Traffic Lights	22,771	28.5%	\$1,511,508	19.2%
Police Fleet	11,345	14.2%	\$896,085	11.4%
KAT Fleet	6,985	8.7%	\$1,198,686	15.2%
Employee Commute	6,314	7.9%	\$0	0%
Convention Center	5,335	6.7%	\$618,822	7.9%
City County Building	3,619	4.5%	\$331,340	4.2%
Public Services Fleet	2,600	3.3%	\$472,434	6.0%
World's Fair Park	1,973	2.5%	\$189,552	2.4%
Safety Building	1,912	2.4%	\$178,690	2.3%
Civic Coliseum	1,572	2%	\$171,704	2.2%

# Energy Inventory

## Community Emissions

Total GHG Emissions:  
4,214,985 tons eCO<sub>2</sub>

Per Capita GHG Emissions:  
23.3 tons eCO<sub>2</sub>

