CHAPTER

3 GREENHOUSE GAS REDUCTION MEASURES

The greenhouse gas (GHG) reduction measures recommended within this plan are organized under seven major strategy areas, identified below:

1. **Community Engagement and Leadership** – these measures acknowledge the power of community participation and involvement, coupled with City leadership to reduce GHGs.
2. **Land Use and Community Design** – these measures respond to the limited scope for large-scale land use changes in Citrus Heights and identify opportunities to remove barriers to completing the streets and achieving smarter growth in the community.
3. **Transportation and Connectivity** – these measures build on General Plan policies to design and re-evaluate the City street network to more efficiently accommodate all modes, users and ability levels.
4. **Energy Efficiency and Conservation** – these measures promote ways to minimize non-renewable building and public space (such as outdoor lights) energy use and maximize use of renewable energy.
5. **Water Efficiency and Conservation** – these measures respond to the need to conserve water as a limited resource while promoting ways to minimize both wastewater generation and stormwater runoff in order to enhance water quality and the aquatic environment.
6. **Waste Reduction** – these measures identify ways to reduce waste and increase reuse, recycling and composting opportunities.
7. **Green Infrastructure, Public Health and Safety** – these measures promote ways to increase urban forestry and natural open space (including wetlands) within the community to enhance carbon sequestration and reduce urban heat island effects. Some measures within this strategy also promote expansion of urban agriculture and community gardening to increase local food security and recreational activity choices.

Primary and Supporting Measures

The Greenhouse Gas Reduction Plan (GGRP) includes two types of measures: *primary* and *supporting* measures. *Primary* measures generate directly attributable GHG reductions based on current technology, empirical studies and available data. Estimated GHG reduction potential in metric tons carbon dioxide equivalent (MT CO_2e) emissions per year is provided for each *primary* measure. The *primary* measures recommended within this plan outline a path to meeting the City's reduction target of 10% to 15% below 2005 baseline emissions by 2020. Collectively, these measures offer a potential reduction of approximately 87,267 MT CO_2e/year by 2020 or 13.7% below 2005 emission levels.

A number of *supporting* measures have also been included in the GGRP. These measures are not quantifiable at this time, but they do facilitate and support the reduction potential of the *primary* measures. GHG reduction potential for these *supporting* measures were not estimated due to three reasons, (a) insufficient data exists to quantify their GHG reduction potential, (b) no reliable quantification methodology is currently available, and/or (c) the GHG reductions are not directly related to the emissions inventory and therefore, cannot be counted toward the City's 2020 GHG reduction target.

Figure 3-1 demonstrates the estimated reduction potential of the recommended *primary* measures within the various strategies.

Community Co-Benefits

Beyond reducing GHG emissions, many of the GGRP measures have the potential to provide other important benefits to the community. These co-benefits represent an improvement in the quality of life within the community beyond the intent of the particular strategy area. Community co-benefits for each recommended measure are also identified on the individual measure pages. Some of the co-benefits of the GHG reduction measures described in this plan include:

- Supporting regional smart growth principles
- Improving air quality within the community
- Restoring habitat
- Reducing urban heat island effect
- Improving public spaces
- Improving public health
- Creating connected neighborhoods with complete streets
- Creating local jobs
- Increasing energy independence
- Enhancing community awareness and education
- Saving money

GHG Reduction Potential Per Strategy Area **Figure 3-1**

LOGO	STRATEGY AREA	GHG REDUCTION POTENTIAL
	Community Leadership and Engagement To expand City's role as an environmental steward and lead the community by example. **Note: This is not counted towards target. See discussion for Measure 1.1.F*	49,504* MT CO_2e/ year
	Land Use and Community Design To reinforce a land use pattern that promotes healthy neighborhoods while maintaining the City's sense of community.	NA (reductions included in bike-ped transportation measures)
	Transportation and Connectivity To provide commuting and mobility options that promote healthy neighborhoods while maintaining the City's sense of community.	19,760 MT CO_2e/ year
	Energy Efficiency and Conservation To minimize building and public realm energy consumption and transition to clean and renewable energy sources.	43,857 MT CO_2e/ year
	Water Efficiency and Conservation To ensure that surface and groundwater quality supports public use, enjoyment and a healthy aquatic environment.	4,030 MT CO_2e/ year
	Waste Reduction To create a communitywide strategy to reduce waste and encourage reuse and recycling.	18,880 MT CO_2e/ year
	Green Infrastructure, Public Health and Safety To build greener infrastructure and promote healthy lifestyles.	740 MT CO_2e/ year

Cost/Savings Analysis

Cost and savings to the City, residents, and businesses are categorized as very low, low, medium, and high. Table 3-1 summarizes the category definitions.

Table 3-1
Cost and Savings Ranges

Cost to City Range	Private Cost/Savings Range
Very low = < $10,000	Very low = < $100
Low = $10k – $50k	Low = $100 – $250
Medium = $50k – $100k	Medium = $250 – $500
High = > $100,000	High = > $500

COMMUNITY LEADERSHIP AND ENGAGEMENT

The City of Citrus Heights and its residents and businesses have never shied away from the responsibility and leadership required to create a progressive community promoting diversity and a high quality of life. Local governments can greatly influence a community's GHG emissions. However, community engagement and effective participation is instrumental for the successful implementation of the GGRP.

During the GGRP implementation period, the City will conduct outreach programs that involve residents and businesses in various GHG-reducing activities, assessments and actions. Effective public participation will increase the likelihood that the GHG reduction measures recommended in this plan achieve estimated participation rates. Higher participation rates can be achieved if the outreach and education programs are adapted over time to meet the changing needs of the community.

The City also accepts responsibility for its share of GHG emissions and is committed to take necessary actions to reduce it. Some of the City's ongoing efforts to reduce municipal GHG emissions include completion of the highly-efficient Community Center, installing photovoltaic panels on the Community Center and City Hall, installing smart-signals along Greenback Lane to reduce emissions from idling cars, and converting City traffic signals and streetlights to light-emitting diodes (LEDs). Besides supporting and abiding by state regulations, the City will take immediate actions to reduce the carbon footprint of municipal operations. Specific measures related to municipal operations are distributed among the seven strategy areas. This section describes broader overarching measures to support regional, state and federal regulations and conduct effective public outreach programs.

COMMUNITY LEADERSHIP AND ENGAGEMENT

Measure 1-1.A: Expand participation in the Sacramento area Sustainable Business program.

In partnership with the Business Environmental Resource Center (BERC), cities within Sacramento County have already been participating in the Sacramento area Sustainable Business (SSB) program. The SSB program certifies and promotes businesses that take voluntary action to prevent pollution and conserve resources. The program incorporates five aspects of sustainability: energy conservation, water conservation, pollution prevention, solid waste reduction and green building.

Of the 239 current members in the region, only the Shell Propel 85 station in Citrus Heights is part of the SSB program. To ensure increased participation and visibility of the program, the City will promote use of the Sustainable Business Resource Guide through outreach programs, website materials and workshops.

Increased participation in the free SSB certification program will afford businesses within the City access to technical resources and vendors that can help them reduce the carbon footprint of their business and achieve long term recurring savings. Recognition through the SSB program can also stimulate local businesses and improve employee attraction and retention.

GHG Reduction Potential:

Supporting measure

Community Co-Benefits:

Identify federal and state grant funding opportunities, peer networking

Cost to City

Low

(staff expense)

Cost to resident/ business owner

NA

Savings to resident/ business owner

Medium – High

(recurring savings)

Acknowledging local businesses with a reward program based on sustainability indicators can increase their business potential.

Did you know?

COOL FACT

SSB benefits:

- Free assistance in making changes to your business
- Free advertising and promotion
- Cost savings through improved efficiency, energy and water conservation, and waste reduction
- Community recognition of your voluntary efforts to improve our environment
- Opportunity to gain recognition in the SSB quarterly newsletter and SSB annual awards ceremony.

Actions	Implementation Target	Responsible Party
A. Conduct an SSB outreach program in collaboration with BERC.	Before July 31, 2012	Community and Economic Development

Notes and References

Fort Collins, Colorado has a similar program called Climate-wise. Since 2008, the 180 participating businesses in Fort Collins have reduced GHG emissions by over 100,000 tons of CO_2 per year. Despite a 5% growth in the City's population, communitywide emissions have not increased since 2005.

Related General Plan policies: Policy 14.2, Policy 18.2, Policy 18.3

COMMUNITY LEADERSHIP AND ENGAGEMENT

Measure 1-1.B: Identify a Sustainability Coordinator within City staff responsible for implementing and coordinating GGRP actions among City departments.

To ensure quality and efficiency in implementing the measures recommended in the GGRP, it is important that the City identifies an internal resource person with dedicated job-hours to carry out the plan.

As science and technology progress, the GGRP needs on-going review to adapt to changing conditions. Outreach programs are needed to communicate the intent of the measures within the community and provide technical assistance in completing the actions. Without dedicating a staff person to this task (either part-time or full-time), it will be challenging for the City to keep the plan on track and monitor its progress toward achieving the community's GHG reduction goals. The Sustainability Coordinator can also help manage inter-departmental coordination to prioritize and implement various reduction measures.

GHG Reduction Potential:

Supporting measure

Community Co-Benefits:

More focused collaboration and coordination among various City departments, regional agencies and the larger community

Cost to City

Low

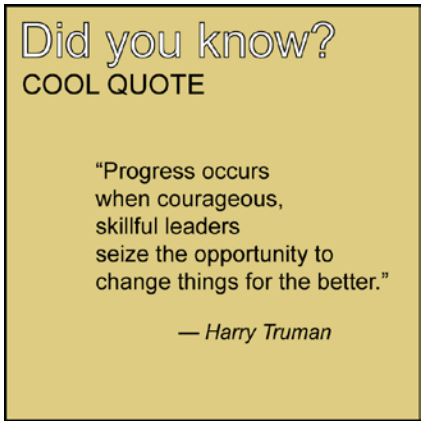
Cost to resident/ business owner

NA

Savings to resident/ business owner

NA

A Sustainability Coordinator can help keep implementation of the GGRP measures on-track.



Actions	Implementation Target	Responsible Party
A. Designate a staff person as the City's Sustainability Coordinator. Seek grant funding to support Sustainability Coordinator position and activities.	Before July 31, 2011	Community and Economic Development

Related General Plan policies: Policy 55.1, Policy 55.2

COMMUNITY LEADERSHIP AND ENGAGEMENT

Measure 1-1.C: Commit to adopting Leadership in Energy and Environmental Design (LEED) Silver criteria or an appropriate alternative green building standard for all new buildings to be used or funded by the City.

Leadership in Energy and Environmental Design (LEED) is a voluntary green building rating system created by the U.S. Green Building Council. LEED began in 1993, but has gained momentum over the last few years as a benchmarking tool for assessing a building's performance in relation to energy and water consumption, materials selection, indoor air quality and response to site selection. The rating system certifies buildings based on the number of points they achieve in meeting LEED requirements. There are four levels of certification under LEED in ascending order of points gained: certified, silver, gold, and platinum.

Though jurisdictions all over the country have been adopting or adapting LEED to achieve high-quality, efficient buildings, since 2004, LEED has gained particular attention in California. In 2004, the governor mandated that all new State buildings must achieve at least a LEED Silver rating, with a goal to reduce their energy use by 20% by 2015. Following this mandate, many Californian cities have established LEED as their green building policy.

By committing to establish LEED Silver criteria or an appropriate alternative green building standard for all new public buildings, the City of Citrus Heights will lead by example within the community and support the state's GHG emission reduction goals.

GHG Reduction Potential:

Supporting measure

Community Co-Benefits:

Public buildings with low operating and maintenance costs will help in prioritizing funds for other community projects

Cost to City

Low
(staff expense)

Cost to resident/ business owner

NA

Savings to resident/ business owner

NA

The new Community Center recently received LEED Gold certification.

Did you know?
COOL TIP

The Citrus Heights Community Center has generated 87,956 kilo-watt-hours of power since January 2010. This is equivalent to the power required to run 700 computers for one year, power one residential home for 3.5 years and operate a TV for 633,853 hours.

- City of Citrus Heights, January 2011

Actions	Implementation Target	Responsible Party
A. Prepare and submit to City Council a policy requiring all new public buildings and publicly funded buildings to meet LEED Silver (or an appropriate alternative green building standard) criteria.	Before December 31, 2011	Community and Economic Development; General Services
B. Train City staff to assist the public to understand, implement, and monitor LEED requirements.	Before June 30, 2012	Community and Economic Development; General Services

Related General Plan Policies: Policy 55.1, Policy 55.2, Policy 57.4

COMMUNITY LEADERSHIP AND ENGAGEMENT

Measure 1-1.D: Conduct regular community workshops and education programs to increase community participation and understanding of various transit, energy, water, waste and green infrastructure efficiency strategies and technologies.

A robust community outreach program in Citrus Heights can increase the level of community awareness regarding sustainability issues and can have a ripple effect on community acceptance and implementation of many other measures described in the GGRP. This is the most critical *supporting* measure for facilitating the full potential of all the recommended *primary* measures in the GGRP that rely on community participation.

The City will actively partner with other non-profit organizations in the community, such as the Citrus Heights Collaborative (CHC), Residents Empowerment Association of Citrus Heights (REACH), and other community-wide associations to devise a community workshop and education program schedule. This is a necessary near term effort to ensure that residents and businesses understand the urgency of implementing the actions described in the plan to achieve the community's reduction target by 2020.

GHG Reduction Potential:

Supporting measure (see note below)

Community Co-Benefits:

Increase community social interaction

Cost to City

Medium

Cost to resident/ business owner

NA

Savings to resident/ business owner

NA

Regular community workshops will help to raise awareness of sustainability issues.

Did you know?
COOL FACT

Because addressing all aspects of climate change can be overwhelming, breaking into small working groups to address specific topics makes the job more manageable.

- California Air Resouces Board

Actions	Implementation Target	Responsible Party
A. Conduct "how-to" workshops regarding various sustainability related themes.	Ongoing	Community and Economic Development; General Services
B. Create annual / biennial surveys to monitor effectiveness of public workshops and education programs.	Before December 31, 2012	Community and Economic Development; General Services
C. Partner with local non-profit organizations and/or adjacent cities to hold at least one community event or promotion based on a sustainable theme.	Before December 31, 2012	Community and Economic Development; General Services

Notes and References

While there are many low-cost ways of increasing public knowledge regarding any given subject, the cost assumption for this measure is based on implementation of a high-tech, integrated public outreach program using various media including digital presentations, video clips, website surveys, phone surveys and other means to reach the community. This supporting measure may be quantified and reported individually with a reduction potential of 49,504 MT CO_2e/ year based on available data regarding effectiveness of public outreach to modify behavior. However, the GHG reduction capacity is distributed among other primary measures throughout the document that rely heavily on public outreach and involvement. For this reason, GHG reductions achieved through this measure are not counted toward the reduction target to avoid double-counting. The GHG reduction calculation is reported here to affirm the critical importance of an integrated, community-based outreach and social marketing program to the success of the GGRP. Assumptions employed to quantify this measure are described in Appendix B.

Related General Plan Policies: Policy 53.1, Policy 55.1, Policy 55.2

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