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City of North Little Rock, Arkansas Greenhouse Gas Benchmark

As Recommended by Nokose Inc. and Accepted by the
Green Action Committee on March 11, 2011

Greenhouse Gas Benchmark

The North Little Rock Green Action Committee (GAC) has been working for a year to develop greenhouse gas (GHG) reduction strategies and targets for the City of North Little Rock, Arkansas (City). This project has involved multiple stakeholder meetings and a collaborative effort with ICLEI to develop a benchmark assessment for the City. The goal was to develop a greenhouse gas reduction strategy, in carbon dioxide equivalents (CO₂e), for the City to implement over the next five years.

The ICLEI benchmark assessment included greenhouse gas emissions from traffic that was moving through the City but not originating or stopping in the City as Scope 1 emissions (those under the direct control of the City). The GAC believed this method was not entirely representative of the conditions and controls that the City could exercise, and thus this traffic was subtracted from the ICLEI benchmark, resulting in a modified benchmark (Table 1). The GAC met on March 11, 2011 to review the proposed benchmark. The GAC voted to accept the benchmark as described in Table 1.

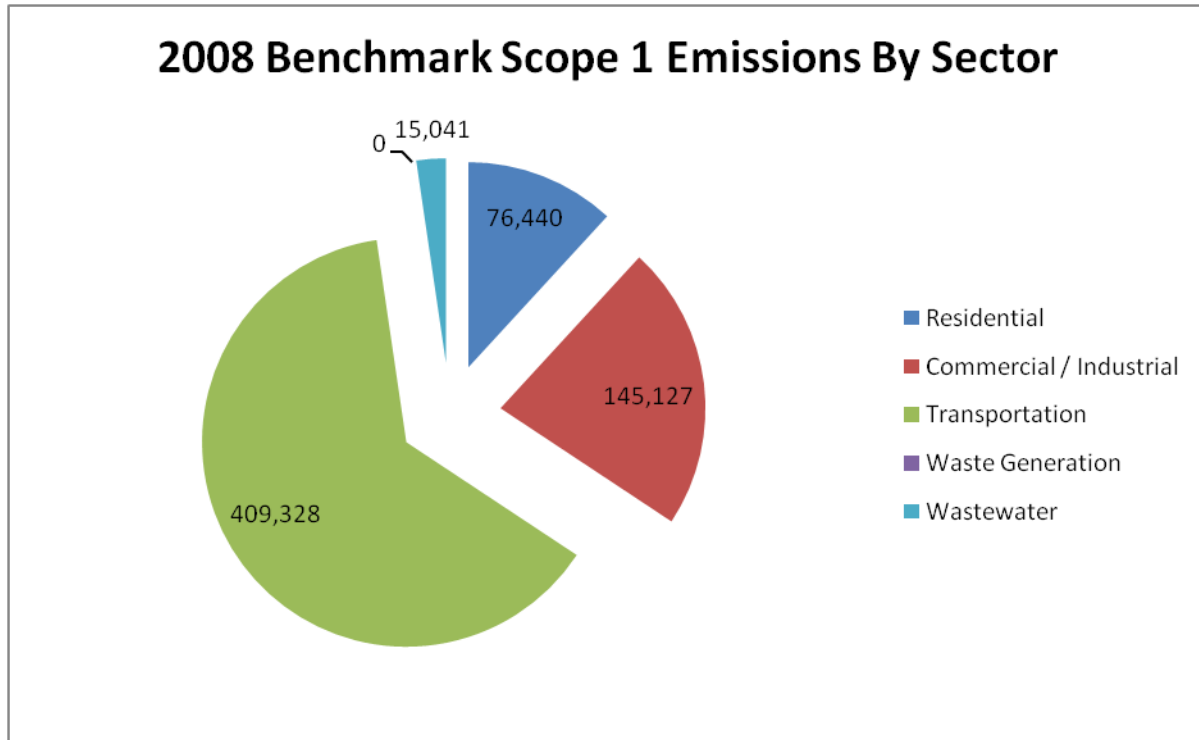
Table 1: GAC Benchmark Assessment for North Little Rock, 2008

| Sector | Scope 1 | Scope 2 | Scope 3 | TOTAL |
|--|----------------|----------------|----------------|------------------|
| Residential | 76,440 | 125,542 | 0 | 201,982 |
| Commercial / Industrial | 145,127 | 267,359 | 0 | 412,486 |
| Transportation | 409,238 | 0 | 388,083 | 797,321 |
| Waste | 0 | 0 | 4,578 | 4,578 |
| Wastewater | 15,041 | 0 | 0 | 15,041 |
| TOTAL | 645,846 | 392,901 | 392,661 | 1,431,408 |
| Percentage of Total CO₂e | 31.76% | 19.32% | 19.31% | 100% |

Scope 1 greenhouse emissions (carbon footprint) from the City for 2008 were estimated to be 645,900 metric tons CO₂-equivalents. More than 63 percent of total Scope 1 emissions were from transportation (Figure 1). The 2008 benchmark per capita emission rate was 11 metric tons CO₂e for Scope 1 and 24 metric tons per capita for all scopes, using the expanded analysis of the GAC.

The GAC also explored potential GHG reduction strategies based on the NLR GAC benchmark assessment. The next task for the GAC will be to establish goals for GHG reduction by sector, and then to review and adopt strategies for achieving those goals. The goals must be based upon economically viable and technologically sound techniques.

Figure 1: Greenhouse Gas Emissions for North Little Rock, 2008



Preliminary GHG Reduction Strategies by Sector

The strategies presented here represent the preliminary discussions of options being considered by the GAC. The formal strategy for reduction of GHG will eventually be developed by emissions sector. The largest benchmark greenhouse gas footprint by sector was from Transportation (63 percent), with Commercial (22 percent) and Residential (12 percent) comprising most of the remaining footprint (Figure 1). Wastewater represented only 2 percent of the footprint, and Waste was considered outside of scope (0 percent).

Transportation Sector

Options the GAC considered for reducing the GHG footprint of transportation included optimizing signal light configuration, decreasing road miles traveled through public transit and ride-share programs, and converting vehicles to alternative fuels such as electrical, biofuel, and compressed natural gas (CNG). There are other strategies that could be employed that could have significant impact on the City's carbon footprint such as rezoning to encourage work-live communities, work-at-home flex time to reduce employee transit miles, and other. Those strategies should be considered as they are developed. As fuel prices continue to rise these and other options may become more viable.

The GAC recommended considering the impact of converting public parking lot lights to electrodeless induction fixtures and installing motion sensors to control light operations. The GAC recommended considering the impact of re-urbanization on GHG emissions based on in-town transportation patterns. The GAC also recommended considering the impact of roundabouts, reduction of peak traffic hours, and other traffic pattern adjustments on GHG emissions.

Commercial/Industrial Sector

The Commercial/Industrial Sector of the City contribute to the greenhouse gas footprint predominantly through energy consumption. Most of that energy is electricity. The three main sources of energy demand are for manufacturing, heating, ventilation and air conditioning (HVAC), and lighting. The strategy the GAC focused on was reducing energy use for HVAC and lighting, since manufacturing power demands were considered the purview of each industry.

The GAC recommended that the impacts of carpooling be considered, and the subsequent impact of reduction of parking lot size, including heat island and asphalt off-gassing. The GAC also recommended tracking commercial implementation of Manufacturing Efficiency Programs to capture reduction credits. The GAC supported incorporating expansion of urban forest cover in commercial sites into the GHG reduction strategy. The GAC recommended consideration of energy efficiency in all public buildings, including schools. Finally, the GAC recommended consideration of cogeneration for GHG emission reductions.

Residential

Residential energy use accounts for 12 percent of the City's greenhouse gas footprint. The predominant source of energy use is in heating, ventilation and air conditioning (HVAC) of the home. Reducing energy use by 50 percent could reduce the overall City greenhouse gas footprint by as much as six percent.

Based upon the 2010 land use images of the City, the urban forest had a tree population of over 1.1 million trees. These trees were estimated to sequester over 76,000 metric tons CO₂e per year. This is almost the same emission rate for the Residential Scope 1 sector, or almost 12 percent of the total Scope 1 footprint. Accounting for sequestration in a greenhouse gas reduction strategy means that any loss of urban forest through development or other land use change must be accounted for as increased emissions. Clearly the urban forest of the City is among its most important assets for reducing greenhouse gas emissions.

The GAC recommended considering the potential impact of home insulation programs and adoption of programmable thermostats to control home HVAC systems. The GAC also recommended considering further expansion of the urban forest in new developments and potential conversion of City lands to urban forests.