Santa Monica, CA

ICLEI Local Governments for Sustainability

Contribution Analysis : Understanding GHG Inventory and Employee Commute Program Trends

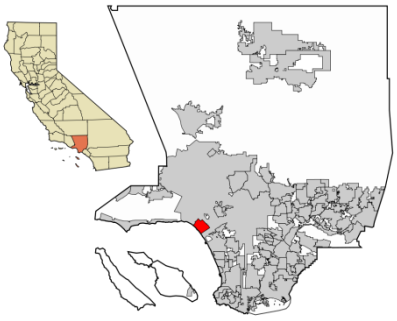
City of Santa Monica, CA was a steering committee city in the Department of Energy funded research project on the contribution analysis – a new tool to help local governments understand their greenhouse gas inventory trends. The contribution analysis found that improved vehicle fuel economy, reduced commercial natural gas and electricity usage, and a cleaner electricity grid were the major drivers for emissions reductions. As part of the project, City of Santa Monica's employee commute program trends were also analyzed. The analysis indicated that employee mode split and incentive effectiveness is less dependent on the quantity of strategies used by an employers and more about the quality of the strategy or the culture at the organization, or demographics of the employees at different businesses.

Case Study

September 2018

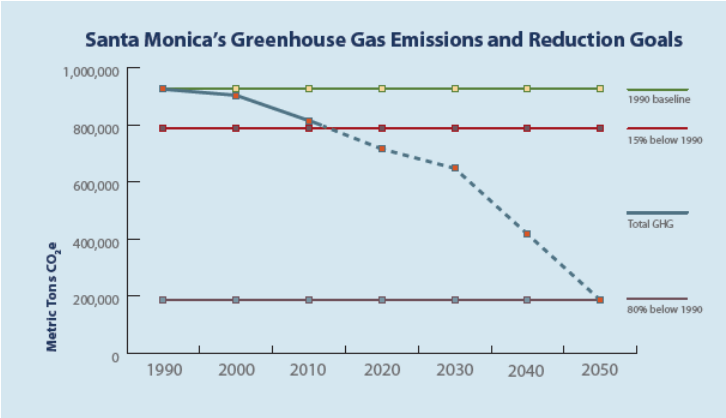
Project Context

Since the mid-1990s, local governments have engaged in periodic inventories of municipal and community greenhouse gas (GHG) emissions with the ultimate goal of achieving emission reductions. The field has matured with documented protocols for performing and reporting inventories, and many communities are now conducting inventory updates to establish trends. ICLEI - Local Governments for Sustainability and the City of Bellevue WA, with funding from the U.S. Department of Energy's Cities Leading through Energy Analysis and Planning (CLEAP) Program, are creating methods and tools to attribute changes between two inventories to the impacts of policies and programs along with other external drivers, such as economic activity and weather. Specifically, ICLEI has developed a "contribution analysis" tool. By eliminating as much uncertainty as possible through normalizing for factors like weather and economic activity that isolate out the "noise" of external factors, the impact of actions or programs can be reasonably inferred. This framework will support policy-makers in using data to better communicate about their progress and refine their climate policy approaches.



Population/land area

233,136 / 87.61 sq. mi



City of Santa Monica's Greenhouse Gas Emissions and Reduction Goals. PHOTO CREDIT: CITY OF SANTA MONICA

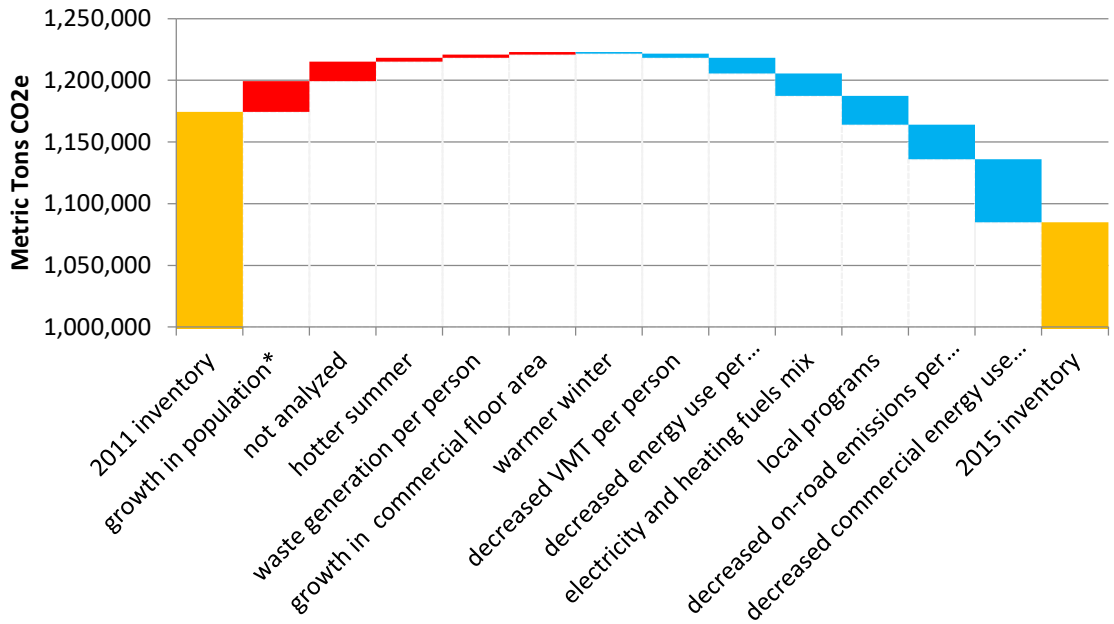
City Context

City of Santa Monica, CA is one of the five steering committee members for the CLEAP Project. Their short-term action-oriented 15x15 Climate Action Plan aimed to reduce their baseline GHG emissions by 15% by 2015. As the City closed out implementation of the 15x15 plan, they wanted to investigate the impact of the various actions that were taken and better understand what contributed to the emissions reductions from this plan so that best practices can be incorporated into the next iteration of the Climate Action Plan.

Contribution Analysis

An overall drivers of change analysis was run on the 2011 and 2015 GHG community inventories. The inventory years were selected based on data source availability, quality, and consistency, as well as inventory methodology. The inventories were analyzed for the impact of drivers like population, weather, residential and commercial growth, and vehicle fuel economy. Local zero waste, solar, energy efficiency, and vehicle fleet programs were included as well.

The main drivers for emissions reduction came from improved vehicle fuel economy, reduced commercial natural gas and electricity usage, and a cleaner electricity grid. Despite growth in commercial square footage, Santa Monica experienced reductions in commercial energy usage beyond what was attributable to warmer winters and select energy efficiency programs. Similarly, despite a growth in population, people are overall driving less with a reduced per capita VMT and when they do, their vehicles have better mileage. These local energy efficiency and waste programs were effective, but proportionally a smaller impact on the overall emissions reduction than state or regional policies such as the electricity grid or vehicle fuel economy. Such trends were seen in other analyses as well.



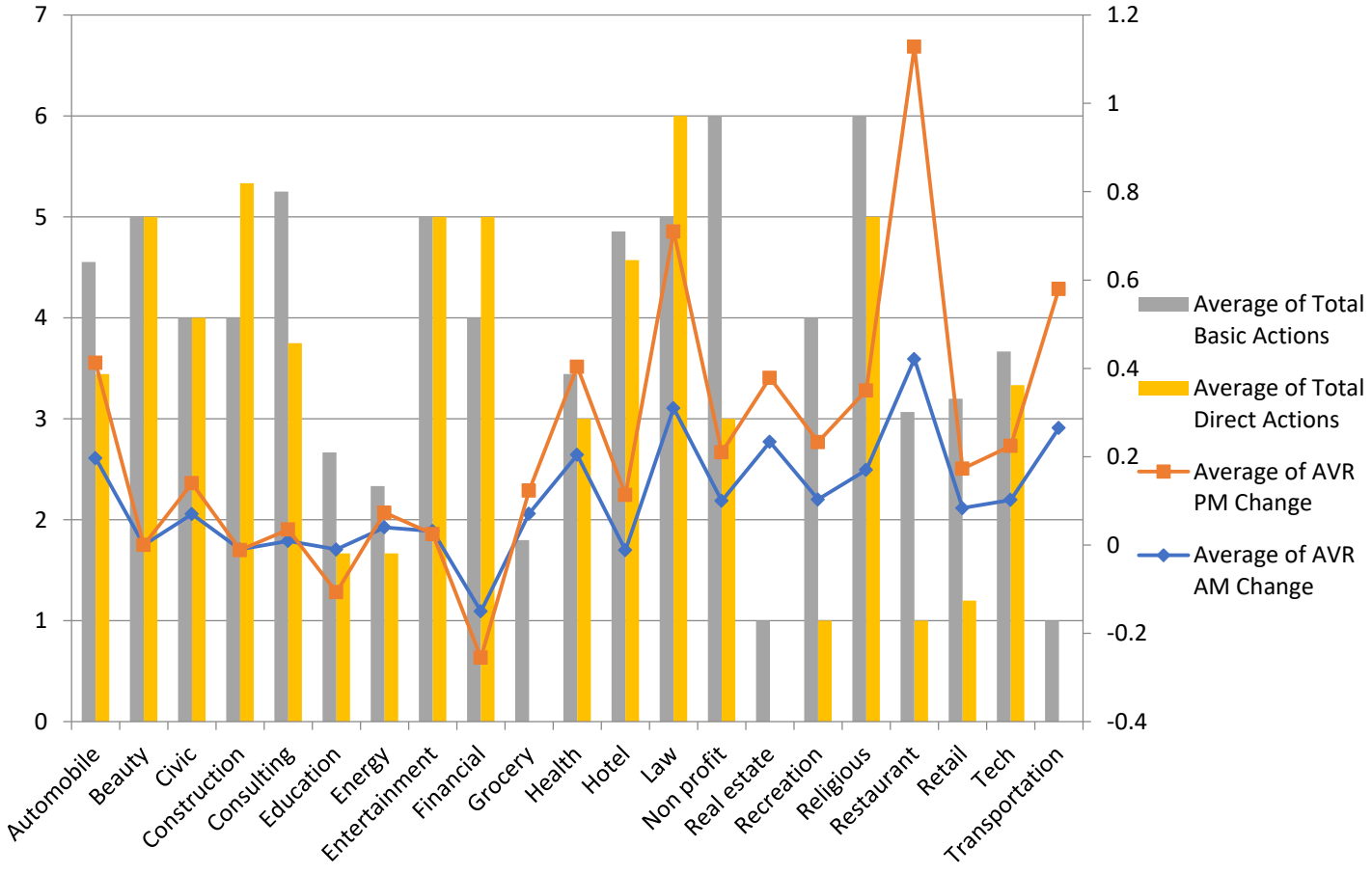
City of Santa Monica's Contribution Analysis for 2011-2015

Program Evaluation

Activities for the City of Santa Monica were aimed at reviewing available data generated by reporting though the TDMO for its applicability in demonstrating program-attributable reductions in vehicle trips and related on-road miles that could be applied in the broader analysis. Co-benefits of the investigation provide some insight into how TDMO incentives might be best targeted to achieve their intended result and thereby advancing the overall goals of CLEAP program to encourage more data-driven decision making.

As part of the CLEAP project, ICLEI did an in-depth program evaluation for City of Santa Monica, one of the steering committee cities. This program evaluation focused on the employee commute ordinance and possible impacts of different employee commute programs. The ICLEI team corresponded with Transportation and Sustainability department staff as well as Fehr and Peers in 2017 for data collection and completed analysis in spring 2018.

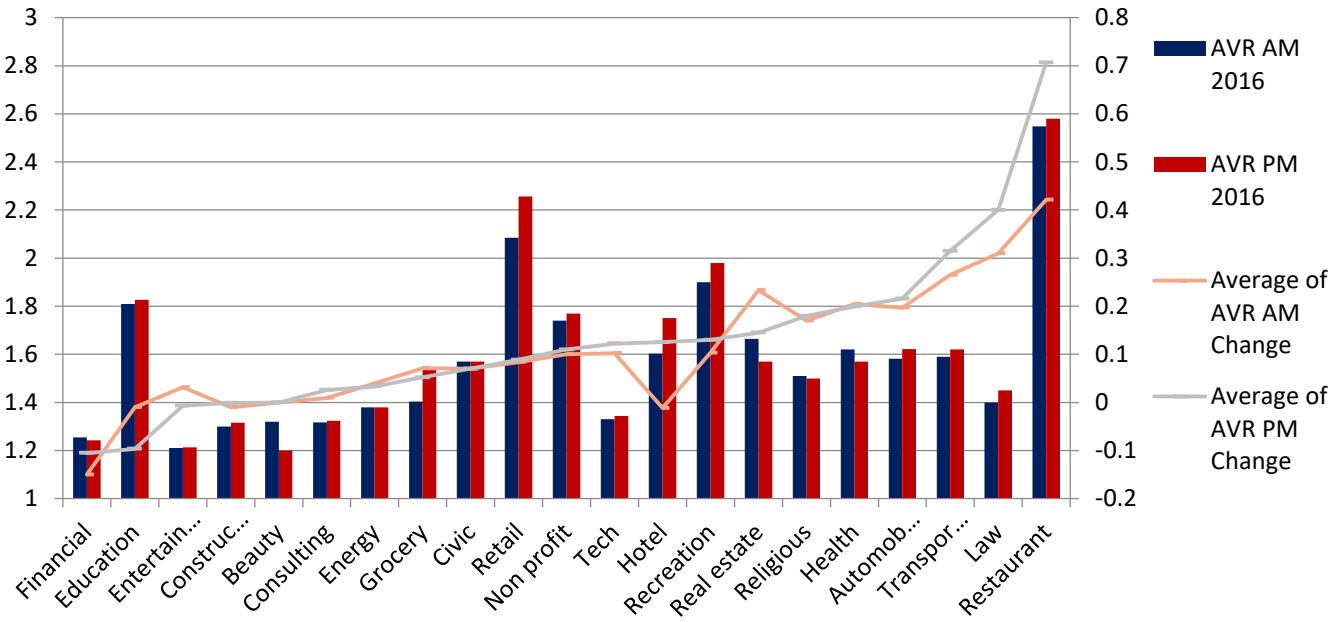
The original scope of the larger project was to evaluate changes between the 2011 and 2015 inventories. As data has improved in more recent years, the analysis was extended to 2016 in order to provide recommendations on how the approach to analysis could be applied to understanding program results going forward. Therefore, the program evaluation only analyzed impacts within the data set of employee commute plans from businesses in 2011, 2015, and 2016. Changes in total strategies, average vehicle ridership (AVR), and trip differences were examined. The 2016 dataset was selected in particular to examine the impact of the new Metro rail station opening.



AVR Change and Total Actions

Program Evaluation Results

Overall, the analysis showed that the PM time slot had more mode shifts than the AM time slot, resulting in higher AVR. While more people rode the rail in 2016 than before, there was no significant correlation with higher AVR. Generally, businesses with smaller number of employees below 100 tended to have higher AVR. Employers that were doing better in 2015 continue to have high AVR, but increasing the number of strategies did not necessarily result in improvements for other businesses. These results indicate that employee mode split and incentive effectiveness is less dependent on the quantity of strategies used by an employers and more about the quality of the strategy or the culture at the organization, or demographics of the employees at different businesses. For example, service industries tended to have higher AVR, which may be a reflection of life-stage, vehicle ownership, distance to work and other factors that make them distinct from other professional workers.



Total AVR and AVR Change by Sector

Summary

- More mode shifts occur during PM trips than AM trips
- More people are using rail, but they are not a significant contribution to AVR change
- Smaller employers have better AVR
- Employers that are doing well, continue to do well, but increasing strategies doesn't necessarily result in improvements for others
- Service industries have higher AVR, likely due to employee demographics

Key Contacts

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"The CLEAP memo prepared by ICLEI is a valuable resource for the City of Santa Monica as we continue developing our transportation demand management program. The statistical expertise used in generating these findings is the exact type of analysis that ought to inform all government procedures and will be used to determine our ongoing drive to improve the delivery of services to local constituents. The findings in this research are further made more valuable by the replicability of the research techniques that allow us to consistently produce the same metrics, thus tracking our change over time. We're thankful for ICLEI and the City of Santa Monica's Office of Sustainability for including the Planning and Community Development department in this project and connecting our practices into the larger narrative of greenhouse gas reductions occurring throughout the country."

— Jack Moreau, Transportation Management Specialist, City of Santa Monica

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