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M E M O R A N D U M

Date: March 4, 2016

To: Susan Koleda

Organization: City of La Cañada Flintridge

From: Christina McAdams

Re: Provisional GHG Reduction Targets and Adjusted Forecast

SUMMARY

This memorandum describes provisional greenhouse gas (GHG) emissions reduction targets identified for the City of La Cañada Flintridge Climate Action Plan for the years 2020 (the Assembly Bill [AB] 32 target year) and 2035 (general plan horizon year). This memorandum also quantifies the reduction impact that state regulations will have on La Cañada Flintridge's business-as-usual forecast, and presents the results in an "adjusted forecast." It is important to note that target setting is an iterative process that must be informed by the reductions that can realistically be achieved through the development of feasible GHG reduction measures. As such, the targets identified herein (particularly the 2035 target) should remain provisional until the quantification and analysis of potential GHG reduction measures has been completed.

The provisional targets identified for the City of La Cañada Flintridge Climate Action Plan include:

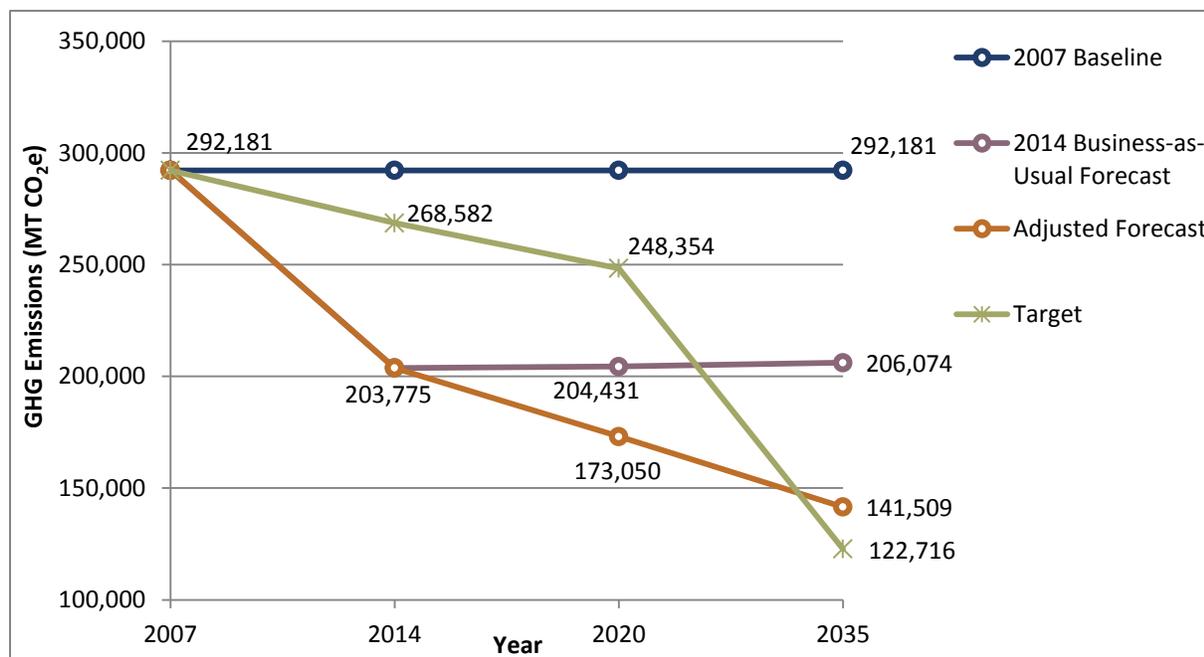
- Reduce GHG emissions 15 percent below 2007 levels by 2020, which is consistent with AB 32.
- Reduce GHG emissions 58 percent below 2007 levels by 2035, consistent with Executive Order B-15-30 and in line with the reduction trajectory to achieve the State's 2050 reduction goal (80 percent below 1990 levels) identified in Executive Order S-3-05.

In 2007, La Cañada Flintridge's community-wide GHG emissions (including municipal emissions) totaled 292,181 metric tons of carbon dioxide equivalent (MT CO₂e).¹ Based on the provisional targets above, La Cañada Flintridge's 2020 emissions could not exceed 248,354 MT

¹ Consistent with direction from the U.S. Community Protocol (2012), GHG Emissions resulting from high global warming potential GHGs were removed from the 2007 baseline and 2020 forecast. Therefore, the 2007 baseline total as well as the 2020 forecast totals presented herein do not match those reported in the City of La Cañada Flintridge's GHG Emissions Inventory (2010).

CO₂e and 2035 emissions could not exceed 122,716 MT CO₂e. In 2020 and 2035, La Cañada Flintridge’s “business-as-usual” GHG emissions are projected to increase to 204,431 MT CO₂e and 206,074 MT CO₂e respectively.² However, since 2014, a number of state regulations (i.e., Pavley I Clean Car Standards, Advanced Clean Cars, 2016 Title 24 Energy Efficiency Standards, Renewable Portfolio Standard, and Construction & Demolition Waste Diversion Ordinance) have been enacted that will reduce future local emissions. These regulations were incorporated into an “adjusted forecast,” which provides a more accurate picture of future emissions growth and the emission reduction the City and community will be responsible for after state regulations have been implemented. Under the adjusted forecast (see discussion on adjusted forecast below for additional information), La Cañada Flintridge’s GHG emissions are projected to total 173,050 MT CO₂e in 2020 and 141,509 MT CO₂e in 2035. Thus, as shown in **Figure 1** below, La Cañada Flintridge is on track to meet its provisional 2020 target, but to meet the provisional 2035 target would need to reduce its GHG emissions by 18,793 MT CO₂e by 2035 through the implementation of local measures that are to be identified in the La Cañada Flintridge Climate Action Plan.

FIGURE 1: SUMMARY OF LA CAÑADA FLINTRIDGE’S GHG EMISSIONS AND REDUCTION TARGET³



² The “business-as-usual scenario” provides a forecast of how GHG emissions would change in the years 2020 and 2035 if population and consumption trends and energy efficiencies continue as they did in 2014, absent any new regulations that would reduce local emissions.

³ The business-as-usual forecast was estimated starting in the year 2014 using projected growth in population, households, employment, and vehicle miles travelled between 2014 and 2020 and 2014 and 2035. Projections were obtained from the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Model. Data for the years 2014 and 2020 were estimated using straight-line interpolation between 2012 and 2035 regional forecasts.

BACKGROUND

The State of California considers GHG emissions and the impacts of global warming to be a serious threat to the public health, environment, economic well-being, and natural resources of California, and has taken an aggressive stance to mitigate the state's impact on climate change through the adoption of legislation and policies, the most relevant of which are summarized below.

- **Executive Order S-3-05**, signed by the Governor in 2005, establishes statewide GHG emission reduction goals to achieve long-term climate stabilization as follows: by 2020, reduce GHG emissions to 1990 levels and by 2050, reduce GHG emissions to 80 percent below 1990 levels.⁴
- **AB 32**, known as the Global Warming Solutions Act of 2006, requires that California's GHG emissions be reduced to 1990 levels by the year 2020 (approximately a 15 percent reduction from 2005 to 2008 levels). The AB 32 Climate Change Scoping Plan (AB 32 Scoping Plan, 2008), which identifies mandatory and voluntary measures to achieve the statewide 2020 emissions limit, encourages local governments to reduce municipal and community GHG emissions proportionate with state goals.⁵
- **SB 97**, (2007) requires lead agencies to analyze GHG emissions and mitigate significant climate change impacts under the California Environmental Quality Act (CEQA). The State CEQA Guidelines, Section 15183.5, states that a plan for the reduction of GHG emissions must, among other things, "establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable." (i.e., consistency with AB 32 and Executive Order S-3-05).
- **Executive Order B-30-15**, signed by the Governor in 2015, establishes a statewide mid-term GHG reduction target of 40 percent below 1990 levels by 2030. The California Air Resources Board (CARB) is currently working to update the Scoping Plan to incorporate the recently issued 2030 target established by Executive Order B-30-15. The updated Scoping Plan will provide a framework for achieving the 2030 target and is expected to be completed and adopted by CARB in 2016.⁶

In addition, Mitigation Measures CC-1a and CC-1b of the La Cañada Flintridge General Plan Environmental Impact Report (December 2010) direct the City to prepare a Climate Action Plan and Municipal Climate Action Plan to reduce emissions from the city to 15% below current levels.

⁴ Executive orders are binding only on state agencies. Accordingly, Executive Order S-03-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions.

⁵ Specifically, the AB 32 Scoping Plan states that CARB, "encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State commitment to reduce greenhouse gas emissions by approximately 15 percent from current levels by 2020" (p. 27). "Current" as it pertains to the AB 32 Scoping Plan is commonly understood as sometime between 2005 and 2008.

⁶ CARB. Frequently Asked Questions About Executive Order B-30-15. April 2015.
http://www.arb.ca.gov/newsrel/2030_carbon_target_adaptation_faq.pdf

PROVISIONAL GHG REDUCTION TARGETS

Rincon recommends the following provisional GHG reduction targets, which are consistent with AB 32 and Executive Order B-30-15, and in line with the GHG reduction trajectory necessary to achieve the State's 2050 long-term 80% reduction goal identified in Executive Order S-3-05.

- Reduce GHG emissions 15 percent below 2007 levels by 2020 (the AB 32 target year)
- Reduce GHG emissions 58 percent below 2007 levels by 2035 (general plan horizon year)

At this time, the State has identified a mid-term goal of reducing emissions to 40 percent below 1990 emissions levels by 2030 (in Executive Order B-30-15) and a long-term goal of reducing emissions to 80 percent below 1990 emissions levels by 2050 (in Executive Order S-3-05), but has not codified the target or developed a plan for meeting these goals. According to the Association of Environmental Professionals, "With statewide emissions reductions making up perhaps two-thirds to three-quarters of the reductions that most local Climate Action Plans currently rely upon to meet 2020 target, after 2020, it will be highly difficult and likely infeasible for a local jurisdiction to achieve substantial reductions on its own". As such, not all Climate Action Plans have targets for years beyond 2020, and of those that do (typically in the context of a general plan update); many include different goals for later years to reflect the lack of state or federal regulations beyond AB 32.

Based on this information, we recommend targets for the years 2020 (the AB 32 target year) and 2035 (general plan horizon year). The 2035 target is intended to align with the Executive Order S-3-05 emissions reduction trajectory. However, as noted at the beginning of this memorandum, this target is provisional and may need to be adjusted based on the reductions that can realistically be achieved from feasible GHG reduction measures that will be identified during the climate action planning process.

As shown in **Table 1**, in 2007, La Cañada Flintridge's GHG emissions totaled 292,181 MT CO₂e. Based on the provisional targets identified above, La Cañada Flintridge's emissions could not exceed 248,354 MT CO₂e in 2020 and 122,716 MT CO₂e in 2035. The following sections of this memorandum present the 2020 and 2035 GHG emissions forecasts and identify the quantity of reductions that would be needed from local measures to meet these targets.

TABLE 1: 2020 AND 2035 GHG EMISSIONS TARGETS

2007 Baseline Emissions Level	292,181 MT CO ₂ e
2020 Target (15% below 2007 levels)	248,354 MT CO ₂ e
2035 Target (58% below 2007 levels)	122,716 MT CO ₂ e

GHG EMISSIONS FORECASTS

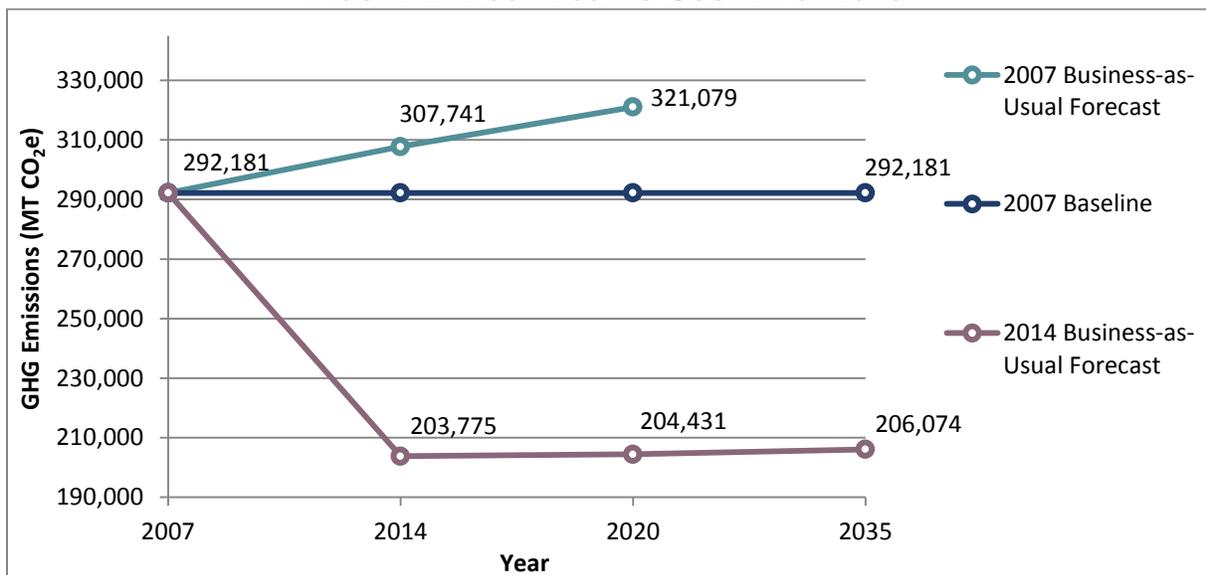
In 2015, the 2007 baseline inventory was updated to reflect 2014 existing conditions. Because annual emissions change over time due to external factors such as population and job growth,

the relative reference of an emissions forecast that accounts for projected growth is needed to estimate the level of GHG reductions needed in a future year. Calculating the difference between the forecasted GHG emissions and the reduction target determines the gap to be closed through local Climate Action Plan policies.

BUSINESS-AS-USUAL FORECAST

The City of La Cañada Flintridge “business-as-usual” forecast provides an estimate of how GHG emissions would change in the years 2020 and 2035 if consumption trends and efficiencies continue as they did in 2014, absent any new regulations that would reduce local emissions.⁷ The City’s 2007 GHG Inventory included a business-as-usual forecast out to the year 2020, but did not include a forecast for the year 2035. As shown in **Figure 2**, under the 2007 business-as-usual forecast La Cañada Flintridge’s GHG emissions were projected to grow approximately 10 percent above 2007 GHG emissions levels by the year 2020 (from 292,181 MT CO₂e to 321,079 MT CO₂e). The 2007 baseline inventory was updated in 2015 to reflect 2014 existing conditions, and as such, the 2020 business-as-usual forecast was also updated to reflect current population, household, employment, and vehicle miles travelled projections. The 2007 business-as-usual forecast was abandoned in favor of the more current 2014 data. A 2035 business-as-usual forecast was also calculated as part of the 2015 effort. As shown in **Figure 2**, under the current (2014) business-as-usual forecast scenario, La Cañada Flintridge’s GHG emissions are projected to grow approximately 0.3 percent above 2014 GHG emissions levels by the year 2020 (from 203,775 MT CO₂e to 204,431 MT CO₂e) and approximately 0.8 percent above 2014 GHG emissions levels by the year 2035 (from 203,775 MT CO₂e to 206,074 MT CO₂e).

FIGURE 2: BUSINESS-AS-USUAL FORECAST



⁷ As noted above, consistent with direction from the U.S. Community Protocol (2012), GHG Emissions resulting from high global warming potential GHGs were removed from the 2007 baseline and 2020 forecast. Therefore, the 2007 baseline total as well as the 2020 forecast totals presented herein do not match those reported in the City of La Cañada Flintridge’s GHG Emissions Inventory (2010).

ADJUSTED FORECAST

Since 2014, a number of federal and state regulations have been enacted that would reduce La Cañada Flintridge's GHG emissions in 2020 and 2035. The impact of these regulations was quantified and incorporated into an "adjusted forecast" to provide a more accurate picture of future emissions growth and the responsibility of the City and community once state regulations to reduce GHG emissions have been implemented. **Table 2** summarizes the local reduction that will result from and be quantified for each state regulation that will reduce local emissions in 2020 and 2035, and is followed by a brief description of each of each regulation. As shown in the table below, these state regulations will reduce La Cañada Flintridge's business-as-usual GHG emissions by approximately 31,381 MT CO₂e in 2020 and 64,565 MT CO₂e in 2035.

**TABLE 2: SUMMARY OF GHG EMISSIONS
REDUCTIONS FROM STATE REGULATIONS IN 2020 AND 2035**

State Measure	2020 Reduction (MT CO ₂ e)	2035 Reduction (MT CO ₂ e)
Pavley I Clean Car Standards (AB 1493) & Advanced Clean Car Standards	-23,731	-47,704
Title 24 (2016)	-47	-286
Renewable Portfolio Standard	-7,110	-16,073
Construction & Demolition Waste Diversion Ordinance	-493	-502
Total Reduction from State Regulations	-31,381	-64,565

Pavley I Clean Car Standards (AB 1493) and Advanced Clean Cars

Signed into law in 2002, AB 1493 (Pavley I standard) requires vehicle manufactures to reduce GHG emissions from new passenger vehicles and light trucks from 2009 through 2016. Regulations were adopted by the California Air Resources Board (CARB) in 2004 and took effect in 2009 when the U.S. Environmental Protection Agency (EPA) issued a waiver confirming California's right to implement the bill. CARB anticipates that the Pavley I standard will reduce GHG emissions from new California passenger vehicles by about 22 percent in 2012 and about 30 percent in 2016, while simultaneously improving fuel efficiency and reducing motorists' costs.⁸

In January 2012, CARB approved a new emissions-control program combining the control of smog, soot causing pollutants and GHG emissions into a single coordinated package of requirements for passenger cars and light trucks model years 2017 through 2025. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles, Zero Emissions Vehicles, and Clean Fuels Outlet programs combining the control of smog, soot causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 to 2025. The new standards will reduce GHG emissions by 34% in 2025.⁹

⁸ CARB. Clean Car Standards – Pavley, Assembly Bill 1493. May 2013.

<http://www.arb.ca.gov/cc/ccms/ccms.htm>

⁹ http://www.arb.ca.gov/msprog/zevprog/factsheets/advanced_clean_cars_eng.pdf

Reductions in GHG emissions from the above referenced standards were calculated using CARB's EMFAC2014 model for Los Angeles County. The newly updated EMFAC2014 model integrates the estimated reductions into the mobile source emissions portion of the model.¹⁰ As shown in **Table 2**, the combined efficiency gains resulting from California's suite of mobile efficiency measures would reduce vehicle related emissions by 23,731 MT CO₂e in 2020 and 47,704 MT CO₂e in 2035.

Title 24

Although it was not originally intended specifically to reduce GHG emissions, California Code of Regulations Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption, which in turn reduces fossil fuel consumption and associated GHG emissions. The standards are updated periodically to allow consideration and possible incorporation of new energy-efficient technologies and methods. The updates that have occurred since the 2007 baseline year include the 2008, 2013, and 2016 Title 24 Energy Efficiency Standards. The 2008 and 2013 Title 24 updates are captured in the 2014 business-as-usual forecast; however, the 2016 Title 24 will go into effect in 2017 and is not included in the 2014 business-as-usual forecast. The California Energy Commission estimates that the 2016 standards will reduce consumption by 28 percent for residential buildings and 5 percent for commercial buildings, relative to the previous standards.¹¹ These percentage savings relate to heating, cooling, lighting, and water heating only and do not include other appliances, outdoor lighting that is not attached to buildings, plug loads, or other energy uses. Therefore, these percentage savings were applied to the percentage of energy use covered by Title 24.¹²

The calculations and GHG emissions forecast assume that all growth in the residential and commercial sectors is from new construction. As shown in **Table 2**, the 2016 Title 24 requirements would reduce emissions by approximately 47 MT CO₂e in 2020 and 286 MT CO₂e in 2035.

The AB 32 Scoping Plan calls for the continuation of ongoing triennial updates to Title 24 that will yield regular increases in the mandatory energy and water savings for new construction. Future updates to Title 24 standards for residential and non-residential alterations are not taken into consideration due to lack of data and certainty about the magnitude of energy savings that will be realized with each subsequent update.

¹⁰ Additional details are provided in CARB's EMFAC2014 Technical Documentation, May 2015 (<http://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>). Note that the Low Carbon Fuel Standard (LCFS) regulation is excluded from EMFAC2014 because most of the emissions benefits due to the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe). As a result, LCFS is assumed to not have a significant impact on CO₂ emissions from EMFAC's tailpipe emission estimates.

¹¹ Reductions for the 2016 standards are provided in the "2016 Building Energy Efficiency Standards Adoption Hearing (June 2015), accessed at http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2015-06-10_hearing/2015-06-10_Adoption_Hearing_Presentation.pdf.

¹² This calculation follows the methodology detailed in the Statewide Energy Efficiency Collaborative's report, Greenhouse Gas Forecasting Assistant (October 2011).

Renewable Portfolio Standard

The State of California Renewable Portfolio Standard requires investor-owned utilities, electric service providers, and community choice aggregators to increase the portion of energy that comes from renewable sources to 20 percent by 2010, 33 percent by 2020, and 50 percent by 2030. Southern California Edison (SCE) is the electricity provider in La Cañada Flintridge. In order to calculate future emissions that take into account the Renewable Portfolio Standard, the SCE emissions factor for the years 2020 and 2035 were projected using SCE's 2012 emissions factor and renewable energy percentage and the 2020 and 2035 mandated Renewable Portfolio Standard commitments. As shown in **Table 2**, the Renewable Portfolio Standard would reduce La Cañada Flintridge's GHG emissions by approximately 7,110 MT CO₂e in 2020 and 16,073 MT CO₂e in 2035.

Construction and Demolition Waste Diversion Ordinance

Effective July 1, 2012, CALGreen, the state's Green Building Standards Code, requires jurisdictions to divert a minimum of 50% of their nonhazardous construction and demolition waste from landfills. Recycling construction and demolition materials reduces GHG emissions by removing material from landfills that would otherwise generate methane and may also reduce the need to harvest and transport new raw construction materials, as recycled materials can be locally repurposed and reused. According to the California Department of Resources and Recycling, Construction and Demolition debris made up 10 percent of the state's waste stream in 2014.¹³ Reductions in GHG emissions from construction and demolition waste diversion were calculated by taking a 50 percent reduction in La Cañada Flintridge's construction and demolition waste. As shown in **Table 2**, the Construction and Demolition Waste Diversion Ordinance would reduce La Cañada Flintridge's GHG emissions by approximately 493 MT CO₂e in 2020 and 502 MT CO₂e in 2035.

Water Conservation Act of 2009 – SB X7-7

California Senate Bill X7-7 (2009) requires all water suppliers to reduce urban per capita water consumption by 2020 – either through the “standard target”, a 20 percent reduction from the average water demand between 1994 and 2004, or the “alternative minimum”, a 5 percent reduction from the average water demand between 2003 and 2007. Four water companies serve the city: the Mesa Crest Water Company, La Cañada Irrigation District, Valley Water Company, and Crescenta Valley Water District. All the water purveyors obtain imported water supplies through the Foothill Municipal Water District (FMWD), a member agency of the Metropolitan Water District of Southern California. Wholesale water suppliers, like FMWD, are not subjected to the requirements of SBX7-7.¹⁴ Therefore, reductions associated with SBX7-7 were not incorporated into the adjusted forecast. Reductions in GHG emissions associated with water conservation will be quantified with existing and newly identified GHG reduction measures that will be included in the Climate Action Plan.

¹³ California Department of Resources Recycling and Recovery. 2014 Disposal-Facility-Based Characterization of Solid Waste in California. October 2015.

<http://www.calrecycle.ca.gov/Publications/Documents/1546/20151546.pdf>

¹⁴ FMWD. 2010 Urban Water Management Plan. June 2011.

Sustainable Communities and Climate Protection Act – Senate Bill 375

Senate Bill (SB) 375, the Sustainable Communities and Climate Protection Action of 2008, enhances California’s ability to reach its AB 32 target by aligning regional transportation planning efforts with land use and housing allocations to reduce transportation-related GHG emissions. SB 375 requires CARB to set regional GHG emissions targets for passenger vehicles and light trucks for the years 2020 and 2035 for each of California’s 18 metropolitan planning organizations (MPOs). Each MPO is required to prepare a Sustainable Communities Strategy (SCS) as part of its next Regional Transportation Plan (RTP) that demonstrates how the region will meet its GHG reduction target.

SCAG’s 2012 RTP/SCS is a regional growth-management strategy that targets per capita GHG reduction from passenger vehicles and light-duty trucks in the Southern California region. The 2012 RTP/SCS incorporates local land-use projections and circulation networks in city and county general plans. The projected regional development pattern, including locations of land uses and residential densities included in local general plans, when integrated with the proposed regional transportation network identified in the 2012 RTP/SCS, would reduce per capita vehicular travel-related GHG emissions and achieve the GHG reduction per capita targets for the SCAG region of 8 percent per capita from 2005 GHG emission levels by 2020 and 13 percent per capita from 2005 GHG emission levels by 2035. Projected vehicle miles travelled estimates provided by Iteris to update the La Cañada Flintridge GHG Emissions Inventory for 2014 were calculated using the most currently available SCAG model and account for GHG emissions reductions resulting from the RTP/SCS.

ADJUSTED FORECAST AND RECOMMENDED REDUCTION TARGET

As shown in **Table 3**, state regulations will reduce GHG emissions in La Cañada Flintridge by approximately 15 percent (or 31,381 MT CO₂e) in 2020 and 31 percent (or 64,565 MT CO₂e) in 2035. As such, under the adjusted forecast GHG emissions are estimated to total 173,050 MT CO₂e in 2020 and 141,509 MT CO₂e in 2035.

TABLE 3: SUMMARY OF REDUCTIONS FROM STATE AND LOCAL MEASURES

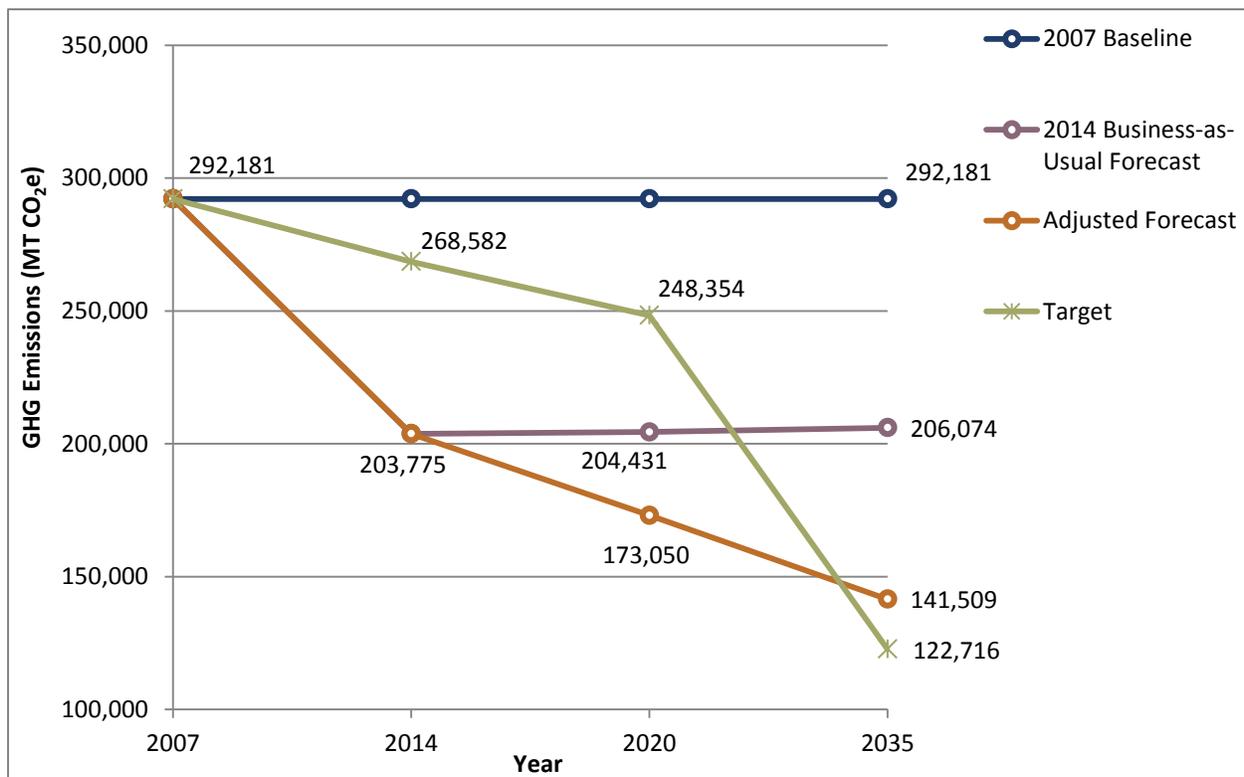
	2020 GHG Emissions (MT CO ₂ e)	2035 GHG Emissions (MT CO ₂ e)
Business-as-Usual Forecast	204,431	206,074
Reduction from State Measures	-31,381	-64,565
Adjusted Forecast	173,050	141,509

Table 4 and **Figure 3** show the reductions that will be needed to meet the provisional targets. These reductions will come from existing and newly identified GHG reduction measures that will be included in the Climate Action Plan. As shown in **Table 4**, La Cañada Flintridge would exceed its provisional 2020 target by 75,304 MT CO₂e, but to meet the provisional 2035 target would need to reduce its GHG emissions by 18,793 MT CO₂e.

TABLE 4: LA CAÑADA FLINTRIDGE'S GHG EMISSIONS, TARGET, AND REDUCTION NECESSARY TO MEET TARGET

	2020 GHG Emissions (MT CO ₂ e)	2035 GHG Emissions (MT CO ₂ e)
2007 Baseline Emissions	292,181	292,181
Adjusted Forecast	173,050	141,509
Target	248,354	122,716
Remaining Gap Necessary to Meet Target	-75,304	18,793

FIGURE 3: SUMMARY OF LA CAÑADA FLINTRIDGE'S GHG EMISSIONS AND REDUCTION TARGET



MEETING THE TARGETS

The targets identified above will be achieved through the implementation of local measures that will be identified in the La Cañada Flintridge Climate Action Plan. Local measures will be identified through a comprehensive assessment of existing local and regional policies, programs, and actions and by assessing any gaps and identifying additional opportunities. Additional measures will be developed from best practices of other similar and neighboring jurisdictions, as well as those recommended by organizations and agencies, such as the California Air Pollution Control Officers Association (CAPCOA), the Attorney General's office, and the Air Resources Board. Measures will be vetted by City staff and the community and will be quantified to identify their overall contribution to meeting the city's 2020 and 2035 GHG reduction targets.