



GILEAD

Gilead Sciences, Inc.

**Foster City Campus
Sustainability Plan**

November 14, 2014

Gilead Sciences

Sustainability Plan for Foster City Campus

As the Gilead Sciences Campus grows, Gilead plans to reduce the Greenhouse Gas Emissions to meet the 4.6 metric tons of CO₂e per employee per year standard established by BAAQMD. The Campus-wide Sustainability Plan may include a combination of energy, water, solid waste and transportation measures. The measurement tool to be used is the CalEEMod Model used by LSA in the SEIR approved by the City of Foster City in 2013.

Program elements in the four areas of energy reduction, water reduction, transportation and solid waste reduction will be planned as outlined below. Because Gilead occupies 17 existing buildings, portions of these program elements involve the retrofit and operation of existing buildings. As new buildings are developed, they will be designed to meet equivalency of 2010 LEED standards: Certified for laboratory buildings and Silver for office buildings.

Transportation impacts will be reduced through the implementation of the Transportation Demand Management Plan (TDM Plan) dated April 7, 2013. This TDM Plan was reviewed by the City of Foster City and approved by CCAG during the development of the SEIR.

Energy:

The reduction of energy use is a primary focus for the Gilead facilities team. The team has been systematically updating the existing buildings as follows:

- **Lighting efficiency:** Improved indoor/outdoor lighting efficiency through light fixture and lamp upgrades. For example, outdoor lighting is in the process of being upgraded to LED.
- **Lighting controls:** Occupancy sensing controls are being implemented in all new construction and renovation. Dimmer switches are also being implemented in new construction and renovations in office areas.
- **Solar window film:** Solar window film has been installed in some south facing locations.
- **Retro commissioning:** Partnering with energy consulting firm to deploy continuous commissioning technologies in all owned buildings. Fifteen minute real-time monitoring has been installed in these buildings to evaluate opportunities for building tune-ups.
- **Building automation enhancement:** Night and weekend setbacks have been implemented in office areas.
- **Chiller and boiler plant efficiency**
- **HVAC:** Air handler upgrades for units that require replacement (either through new construction, renovations or no longer operational). Exhaust system improvements are evaluated and implemented during new construction or renovations. Example of this is the variable air volume for fume hoods in new laboratory buildings.

- Participate in PG&E load shedding demand response programs.
- New buildings will be designed to maximize energy efficiency and appliance standards and pursue additional efficiency efforts including new technologies
 1. Comply with updated Title 24 standards CALGREEN standards for building construction.
 2. Install efficient lighting and lighting controls systems.
 3. Use daylight as an integral part of lighting systems in buildings.
 4. Install light colored cool roofs
 5. Install energy efficient heating and cooling systems, appliances, and control systems.
 6. Install efficient lighting and controls for new outdoor lighting
 7. Install light colored cool pavements for pathways and plazas and sidewalks where appropriate.
 8. Incorporate ENERGY STAR or better rated appliances and electrical equipment.
 9. Design all office buildings to exceed California Building Code Title 24 Energy standards by increasing insulation, minimizing heat transfer and thermal bridging and limiting air leakage through the structure or within the heating and cooling distribution system.
 10. Design, construct and operate all newly constructed office buildings as equivalent to LEED Silver standards or higher.
 11. Design, construct and operate all newly constructed laboratory buildings as equivalent to LEED Certified or higher if such standards for laboratory buildings are in place at the time of the Specific Development Plan/Use Permit is approved.
 12. Use locally produced and/or manufactures building materials for construction of the project subject to consideration of quality, purpose, cost and availability.
 13. Incorporate sustainable building materials such as those that are resource efficient, have recycled content, and/or are manufactured in an environmentally friendly way (including low VOC materials).

Water:

Water use reduction is a major focus for the Gilead facilities team. In the past year, all the landscaping along Lakeside Drive and Reef Drive has been removed and replaced with low water use plants, grasses and trees. The outdated irrigation system has been replaced with low flow drip irrigation with moisture sensing controllers.

- Campus undergoing xeriscaping efforts. As each building is redeveloped, the landscaping and irrigation will be replaced using native and drought tolerant plants. The irrigation systems will be replaced with efficient drip systems and soil moisture based irrigation controls.
- Irrigation system control system upgrades.
- Low flow water fixtures installed for new construction and renovations.

Solid Waste Diversion and Minimization Efforts:

As landfills become outdated and new compostable products come to market, Gilead is focusing upon the reduction of solid waste throughout the campus.

- Gilead implemented compost collection in April 2010 and single stream recycling through Recology in August 2010. All buildings on campus offer the recycling and composting containers in all public areas (break rooms, conference rooms) as well as in offices and cubicles. Since the implementation of the three waste stream system (compost, recycle and trash), the Foster City campus has maintained a 65 to 70% diversion rate of all materials sent to the Recology municipal waste services
- All food service items used on campus, including utensils, plates, and cups are reusable, compostable or recyclable, exceeding the requirements of the Foster City Polystyrene Ordinance
- Employees in research and development facilities recycle hard-to-recycle plastics (plastic film and wrappers) and Styrofoam through a plastics recycling program started in 2011. Gilead engages the use of an additional contractor that collects and recycles the plastic and Styrofoam packaging not accepted by Recology, which results in recycling tens of thousands of pounds of plastic film and Styrofoam.
- Construction and demolition debris is recycled as per City of Foster City ordinance. Reusable materials from office moves are donated to RAFT, a local resource for low-cost craft supplies for teachers
- In office common areas, there are also collection bins for recycling of batteries, pens and toner cartridges.
- In construction projects, efforts are made to select recycled or recyclable building materials

Transportation:

Gilead has an existing and robust Transportation Demand Management Plan. Please refer to the details in the report by Kimley Horn dated April 7, 2013 that outlines the multiple facets of this program. Some of the highlights are

- Contributions to the regions' Alliance shuttle system. The Alliance runs two shuttle bus lines that serve the campus from Caltrain and BART.
- Carpool and Van pool program with a transportation coordinator
- Gilead provides a guaranteed ride home to all carpool, van pool and transit participants to encourage participation shared modes of transportation.
- Ample bicycle parking in lockers on site for those who bike to work.
- Commuter checks to encourage the use of public transit.
- On site amenities such as cafeterias, fitness center, and showers
- Automatic teller machines on campus at cafeterias.
- High quality teleconferences and video conferencing world wide.

Other Efforts to Reduce Greenhouse Gasses:

- New refrigerant systems installed at the project site shall comply with future CARB rules and regulations as these new rules and regulations are implemented by the agency.
- Gilead will periodically evaluate the latest technological advances in alternative energy sources and will implement those that make sense economically with appropriate return on the investment. Such technologies may include solar photovoltaic systems, wind energy, fuel cells or cogeneration system

Monitoring and Reporting:

As outlined in the technical analysis prepared by ENVIRON International Corp., the combination of these energy, water, solid waste and transportation measures reduce the GHG emissions below the 4.6 metric tons of CO₂e per employee per year standard established by BAAQMD. In order to ensure the standard is achieved throughout implementation of the Master Plan, the following requirements will be met:

- Energy
 - All buildings will meet 2013 Title 24 Standards.
- Mobile
 - Implement the TDM plan, as required by MM TRANS-1, to reduce project vehicle trips by at least 8 percent.
- Waste
 - Maintain existing three waste stream system, achieving a 65% diversion rate.
- Water
 - All new construction will use low-flow fixtures, xeriscaping, and efficient irrigation systems.

Additional GHG-reduction measures, such as renewable energy generation onsite, window glazing on existing buildings, providing electric vehicle parking, or installation of LED streetlights would further reduce GHG emissions below the BAAQMD standard.

For each new building developed as a part of the Integrated Development Plan, the Use Permit application will include a letter from Gilead that the building will be designed to support and be compatible with this campus wide Sustainability Plan.

Annually, Gilead will provide a written report for the Integrated Campus which will identify ongoing measures which Gilead is taking or has taken that year to meet the requirements of this Sustainability Plan and to reduce the emission of greenhouse gasses. This report may include:

- Energy efficiency measures designed into new buildings
- Energy efficiency measures retrofit into existing buildings
- Waste stream management operations
- Water efficiency measures
- Landscape revisions

- Transportation Demand Management
- Other sustainable design measures which Gilead has undertaken

The Sustainability Annual report will be per calendar year and will be submitted March 1st of the subsequent year, in connection with the other annual reports required for the campus.

At full build out of the Integrated Campus, Gilead will provide a formal evaluation of the campus to identify if the targets have been achieved or if adjustments need to be made to reduce the GHG emissions below the 4.6 metric tons of CO₂e per employee per year standard. After full build out, Gilead will provide a formal evaluation of the Integrated Campus at 5 year intervals.

Technical Appendix A
Quantifying GHG Emissions

Technical Appendix A

Quantifying GHG Emissions

ENVIRON International Corporation (ENVIRON) quantified the Master Plan's GHG emissions using the California Emissions Estimator Model (CalEEMod™).¹ This was done for comparison to the 4.6 metric tons of CO₂e per employee per year standard established by the Bay Area Air Quality Management District (BAAQMD).

CalEEMod™ is a statewide program designed to calculate both criteria and GHG emissions from development projects in California. CalEEMod™ utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the United States Environmental Protection Agency (USEPA) AP-42 emission factors, California Air Resources Board's (ARB's) on-road and off-road equipment emission models such as the EMFAC and the Offroad Emissions Inventory Program model (OFFROAD), and studies commissioned by California agencies such as the California Energy Commission (CEC) and CalRecycle. It uses vehicle emission factors that incorporate recent regulations such as Pavley I and the Low Carbon Fuel Standard (LCFS), and incorporates state-of-the-science methods for quantifying mitigation and project design features.

Proposed Project (unmitigated):

ENVIRON modeled the Master Plan in CalEEMod™ using the following Plan-specific inputs:

- **Project Characteristics**
 - **Name:** Gilead Master Plan
 - **Location:** BAAQMD (Climate Zone 5)
 - **Land Use Setting:** Urban
 - **Operational Year²:** 2015
 - **Utility Company:** Pacific Gas and Electric Company (PG&E)

¹ The CalEEMod™ model (v 2013.2), User Guide, and supporting technical appendices are available at: www.caleemod.com

² 2015 is the anticipated operational year for the first building in the Master Plan. This analysis evaluates the entire Master Plan operating in 2015. This is conservative because buildings beginning operation in later years will have to meet more stringent Title-24 standards, will be using electricity from a cleaner grid, and will be generating traffic with cleaner vehicle fleets.

✦ **CO2 Intensity Factor³**: 525.78 lb/MWh

- **Land Use**
 - 2,500,600 ft² of General Office Building⁴
- **Operational**
 - **Mobile – Weekday Trip Rate^{5,6}**: 9.84 trips/1000sf/day (from 24,615 trips/day)
- **Mitigation**
 - **Energy - Exceeds Title-24 [BE-1]⁶**: by 30%

Annual GHG emissions from the Master Plan (unmitigated) are 31,273 metric tons CO2e per year (MT CO2e/yr), as shown in Table A1.

Existing Use:

As the Project is replacing an existing campus, where applicable, emissions associated with the existing land use were subtracted from the Project emissions to permit for evaluation of the Project increment against the BAAQMD thresholds of significance. ENVIRON modeled the existing infrastructure that will be replaced by the Master Plan in CalEEMod™ using the following inputs:

- **Project Characteristics**

³ The intensity factor for total energy delivered is estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO2 emissions per total non-renewable energy, based on information in PG&E's Power/Utility Protocol (PUP) Reports available at: <https://www.climateregistry.org/CARROT/public/reports.aspx>. Calculated assuming 20% RPS, California's 2010 RPS target.

⁴ This is consistent with the EIR CalEEMod™ analysis.

⁵ Trip estimates for both Existing Use and Proposed Project were developed by applying site specific trip generation rates, as calculated by Kimley-Horn and Associates, Inc., based on surveys (Kimley-Horn and Associates, Inc., *Analysis of Gilead Sciences General Development Plan Traffic Impacts*, May 2008.).

⁶ Inputs into CalEEMod are rounded to the nearest hundredths place, therefore when using the daily trip rate per 1,000 square foot (sf) of landuse, CalEEMod truncates the input to 9.84 trips/1000 sf/day. As such, in the output files, CalEEMod reports an unmitigated weekday trips/day of 24,606.

⁷ CalEEMod™ uses the 2008 Title-24 standards. Built after 1/1/2014, the Master Plan will be required to meet the 2013 Title-24 standards. Non-residential buildings that meet the 2013 Title-24 standards will be a 30% improvement over 2008 Title-24. Documentation available at: http://www.energy.ca.gov/releases/2012_releases/2012-05-31_energy_commission_approves_more_efficient_buildings_nr.html

- **Name:** Gilead Existing
- **Location:** BAAQMD (Climate Zone 5)
- **Land Use Setting:** Urban
- **Operational Year**⁴: 2012
- **Utility Company:** Pacific Gas and Electric Company (PG&E)
 - ✦ **CO2 Intensity Factor**³: 525.78 lb/MWh
- **Land Use**
 - 926,740 ft² of Office Park⁴
- **Operational**
 - **Mobile – Weekday Trip Rate**⁵: 9.55 trips/1000sf/day

Annual GHG emissions from the existing site are 12,665 MT CO₂e/yr, as shown in Table A1.

Comparison to BAAQMD Threshold of Significance (unmitigated):

Net new GHG emissions (proposed minus existing) are divided by net new service population for comparison against the BAAQMD threshold. Service populations (SP) for the existing and proposed land uses were provided by Gilead, and represent the sum of the employees at each building. As shown in Table A1, the Master Plan’s net new emissions are 5.03 MT CO₂e/yr/SP. This exceeds the BAAQMD threshold of significance. As documented below, the mitigation measures in Gilead’s Sustainability Plan reduce the Master Plan GHG emissions to below the BAAQMD threshold of significance.

Proposed Project (mitigated):

The mitigation measures in Gilead’s Sustainability Plan are shown in Table A2. ENVIRON modeled the mitigated Master Plan in CalEEModTM using the following inputs:

- **Project Characteristics**
 - **Name:** Gilead Master Plan - Mitigated
 - **Location:** BAAQMD (Climate Zone 5)
 - **Land Use Setting:** Urban
 - **Operational Year:** 2015
 - **Utility Company:** Pacific Gas and Electric Company (PG&E)

✦ **CO2 Intensity Factor:** 525.78 lb/MWh

- **Land Use**
 - 2,500,600 ft² of General Office Building
- **Operational**
 - **Mobile – Weekday Trip Rate**^{5,8,9}: 9.06 trips/1000sf/day (from 22,646 trips/day)
 - **Waste – Institute Recycling and Composting Services [SW-1]**¹⁰: 65% waste diversion
- **Mitigation**
 - **Energy - Exceeds Title-24 [BE-1]**¹¹: by 30%

Comparison to BAAQMD Threshold of Significance (unmitigated):

Net new GHG emissions (mitigated project minus existing) are divided by net new service population for comparison against the BAAQMD threshold. As shown in Table A1, the Master Plan’s net new emissions are 4.45 MT CO₂e/yr/SP. This is below the BAAQMD threshold of significance. As documented here, the mitigation measures in Gilead’s Sustainability Plan reduce the Master Plan GHG emissions to below the BAAQMD threshold of significance.

⁸ As documented in the EIR, the Transportation Demand Management program (MM-TRANS 1) will reduce vehicle trips by 8 percent (assuming a transit mode share of at least 15.3%).

⁹ Inputs into CalEEMod are rounded to the nearest hundredths place, therefore when using the daily trip rate per 1,000 square foot of landuse, CalEEMod truncates the input to 9.06 trips/1000 sf/day. As such, in the output files, CalEEMod reports a mitigated weekday trips/day of 22,655.

¹⁰ Gilead’s existing three waste stream system achieves a 65% diversion rate.

¹¹ CalEEMod™ uses the 2008 Title-24 standards. Built after 1/1/2014, the Master Plan will be required to meet the 2013 Title-24 standards. Non-residential buildings that meet the 2013 Title-24 standards will be a 30% improvement over 2008 Title-24. Documentation available at:
http://www.energy.ca.gov/releases/2012_releases/2012-05-31_energy_commission_approves_more_efficient_buildings_nr.html

Table A1
Greenhouse Gas Emissions with Mitigation
Gilead Sciences Integrated Corporate Campus Master Plan
Gilead Sciences, Inc.
Foster City, CA

Greenhouse Gas Emissions ¹		Existing ^{2,4}	Proposed Project ^{3,4}	
			Unmitigated - 2015	Mitigated - 2015
GHG Emissions (MT CO2e/yr)	Energy ⁵	4,076	9,363	9,363
	Mobile ⁶	7,695	19,495	18,048
	Waste ⁷	392	1,058	370
	Water	502	1,356	1,356
	Total	12,665	31,273	29,137
Service Population		1,800	5,500	
Net New GHG Emissions (MT CO2e/yr/SP)		-	5.03	4.45
BAAQMD Significance Threshold (MT CO2e/yr/SP)		-	4.6	
Below Threshold?		-	NO	YES

Notes

1. GHG emissions are calculated using CalEEMod v 2013.2.
2. Existing GHGs are calculated using an operational year of 2012. Land use is 926,735 sf Office Park.
3. Proposed project GHGs are calculated using an operational year of 2015 or 2020. Land use is 2,500,600 sf General Office Building.
4. GHGs are calculated accounting for California Renewable Portfolio Standards (RPS). PG&E's CO2 intensity is reduced to account for 20% renewables (California's 2010 target). Based on data available in PG&E's Power/Utility Protocol (PUP) Reports available at: <https://www.climate registry.org/CARROT/public/reports.aspx> is reduced to account for 20% renewables.
5. The Proposed Project is modeled as a 30% improvement over Title-24 (CalEEMod v 2013.2 uses the 2008 Title-24 standards). Built after 1/1/2014, the Master Plan will be required to meet the 2013 Title-24 standards. Non-residential buildings that meet the 2013 Title-24 standards should be modeled as a 30% improvement over 2008 Title-24. Documentation available at: http://www.energy.ca.gov/releases/2012_releases/2012-05-31_energy_commission_approves_more_efficient_buildings_nr.html
6. As documented in the EIR, the Transportation Demand Management program (MM-TRANS 1) will reduce vehicle trips by 8 percent (assuming a transit mode share of at least 15.3%). This reduces trips from 24,615 trips/day to 22,646 trips/day.
7. Gilead's existing three waste stream system achieves a 65% diversion rate.
8. Gilead will install low-flow fixtures for new construction and renovations, and will reduce its outdoor water usage with xeriscaping and updating the irrigation system. The water savings from these measures has not yet been quantified. This measure is not required to meet the 4.6 MT CO2e/yr/SP standard.

Table A2
Mitigation Summary
Gilead Sciences Integrated Corporate Campus Master Plan
Gilead Sciences, Inc.
Foster City, CA

Category	Unmitigated Project	Mitigated Project	Mitigation Target	Unmitigated Value ¹	Units
Energy	30	30	% Improvement over 2008 Title-24 ²	34,708,300	kWh/yr electricity
				50,737,200	kBTU/yr natural gas
Mobile	0	8	% Trip reduction ^{4,5}	24,615	weekday trips/day
Waste	0	65	% Waste Diversion ⁶	2,326	tons/yr
Water	0	0	% Water Reduction - Indoor ⁶	444,441,000	gal/yr
	0	0	% Water Reduction - Outdoor ⁷	272,399,000	gal/yr

Notes

1. These usage quantities are CalEEMod estimates for the unmitigated scenario. These are based on CalEEMod v 2013.2 and an operational year of 2015.
2. The Proposed Project (unmitigated and mitigated) is modeled as a 30% improvement over Title-24 (CalEEMod v 2013.2 uses the 2008 Title-24 standards). Built after 1/1/2014, the Master Plan will be required to meet the 2013 Title-24 standards. Non-residential buildings that meet the 2013 Title-24 standards should be modeled as a 30% improvement over 2008 Title-24. Documentation available at: http://www.energy.ca.gov/releases/2012_releases/2012-05-31_energy_commission_approves_more_efficient_buildings_nr.html
3. MM TRANS-1 achieves a 8% reduction in weekday trips.
4. Gilead's existing three waste stream system achieves a 65% solid waste diversion rate.
5. Reduction of vehicle trips by 8 percent (assuming a transit mode share of at least 15.3%), results in a trip reduction of 24,615 trips/day to 22,646 trips/day. However, inputs into CalEEMod are rounded to the nearest hundredths place, therefore when using the daily trip rate per 1,000 square foot (sf) of landuse, CalEEMod truncates the input of 9/84 and 9.06 trips/1,000sf/day for unmitigated and mitigated, respectively. As such, in the output fields, CalEEMod reports an unmitigated weekday trips/day of 24,606 and a mitigated weekday trips/day of 22,655.
6. Gilead will install low-flow fixtures for new construction and renovations. The water savings from this measure has not yet been quantified. This measure is not required to meet the 4.6 MT CO₂e/yr/SP standard.
7. Gilead will reduce its outdoor water usage with xeriscaping and updating the irrigation system. The water savings from this measure has not yet been quantified. This measure is not required to meet the 4.6 MT CO₂e/yr/SP standard.