2019 CLIMATE ACTION PLAN UPDATE

CHABOT COLLEGE

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2019
CLIMATE ACTION PLAN
UPDATE

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The Chabot FY2018 greenhouse gas inventory and 2019 Climate Action Plan Update report were prepared by WSP USA, with support from the Chabot-Las Positas District Office and the Chabot Facilities & Sustainability Committee.

1 INTRODUCTION

1.1 BACKGROUND

Chabot College recognizes its responsibility as a higher education provider to lead climate and sustainability action for the benefit of students and society. As a signatory to the American College and University Presidents' Climate Commitment (ACUPCC), Chabot College has pledged to move the campus towards achieving carbon neutrality by 2050. To support this commitment, the college developed a greenhouse gas (GHG) emissions inventory to quantify emissions for fiscal years 2005 to 2008. A complementary Climate Action Plan (CAP) was developed and released in 2010 to serve as a roadmap for achieving interim climate goals and lay out a longer-term strategy for climate neutrality.

Chabot has updated its GHG inventory for fiscal year 2018 (FY2018) in order to measure progress in emissions reductions, evaluate the impact of implemented mitigation strategies, and identify new opportunities where the campus can reduce its GHG emissions and plan for further, long-term reductions. The results are presented in this updated Climate Action Plan.

1.2 GHG REDUCTION GOALS & PROGRESS

The ACUPCC climate commitment sets a goal for signatories to reduce GHG emissions to 15 percent below 2008 levels by 2020. Ultimately, ACUPCC asks that signatories commit to achieving carbon neutrality by 2050.

Based on the FY2018 inventory, the college's GHG emissions have decreased by 9.4 percent compared to FY2008 levels. This reduction in GHG emissions is tracking towards ACUPCC's 2020 goal for signatories. This is a notable achievement given the increase in building square footage at Chabot over the last ten years. Note that some adjustments were made to the FY2008 base year inventory in order to make accurate comparisons. These include the addition of missing natural gas emissions not reported in the FY2008 base year, and updated student commuting emissions to use a consistent calculation methodology. Further comparisons between the FY2008 base year and FY2018 are discussed in Section 2 of this document.

Chabot College has had great success with reducing emissions from sources that it directly controls. Most notably, emissions from purchased electricity have dropped by 36 percent due to direct action taken by Chabot to fund and install on-site renewable energy. Emissions from sources that the college has less control over, such as student and staff commuting, remain the major GHG contributors.

2050 GOAL

CARBON NEUTRALITY

2020 GOAL

-15%

BELOW 2008 LEVELS

2018 PROGRESS

-9.4%

BELOW 2008 LEVELS

1.3 GHG INVENTORY OVERVIEW

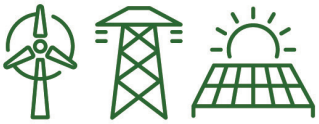
This section provides a high-level overview of the updated greenhouse gas emissions inventory for FY2018, which covers the period from July 1, 2017 through June 30, 2018. Additional details and analysis are provided in Section 2 of this document.

BUILDINGS AND ENERGY / SCOPE 1

Scope 1 emissions represent the second largest source of GHG emissions for the college. Scope 1 emissions include on-site stationary combustion (e.g. natural gas for heating), fugitive emissions from refrigerant leakage, and fuel use in district-owned vehicles. At Chabot, 20 percent of the gross total emissions in FY2018 were from scope 1 sources.

PURCHASED ELECTRICITY / SCOPE 2

Purchased electricity (scope 2) represents just 8 percent of total GHG emissions. This is a 36 percent decrease in Scope 2 emissions since FY2008. The college achieved this impressive reduction by installing more than 6,000 solar panels that produce 1.0 megawatts (MW) of on-site solar energy.



TRANSPORTATION / SCOPE 3

Transportation emissions (scope 3) are the largest source of GHG emissions at Chabot. Transportation emission sources include student and employee commuting and directly-financed rental car and airline travel. These emissions comprise 72 percent of the gross total emissions in FY2018, with student commuting representing 63 percent of total emissions. The college has implemented several strategies since 2010 to incentivize public transit use, support electric vehicle use, and reduce unnecessary trips to and from campus. Continued focus on developing new and creative programs that target emissions from transportation will be necessary to reach carbon neutrality by 2050.

1.4 PROGRESS SINCE FY2008

Chabot College has taken many steps to reduce greenhouse gas emissions since the FY2008 base year inventory was developed. Table 1 highlights key completed projects and ongoing initiatives.

TABLE 1: GHG MITIGATION STRATEGIES IMPLEMENTED SINCE FY2008

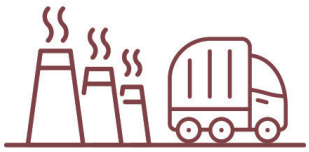
GHG MITIGATION STRATEGY	YEAR COMPLETED
ON-SITE RENEWABLE ENERGY GENERATION	
Installed solar arrays over parking lots G and J with a total capacity of 1.0 MW	2009
Installed a 30 kW photovoltaic array at Building 700	2012
LEED CERTIFICATION FOR NEW BUILDINGS	
Instructional Office Building achieved LEED NC Gold	2010
Community and Student Services Center achieved LEED NC Platinum	2012
Music Skills Center Building 1200 achieved LEED NC Silver	2014
ENERGY MANAGEMENT & EFFICIENCY	
Expanded the central utility plant to accommodate new buildings and improve energy performance	2009
Installed a 300 kW natural gas-driven co-gneration system	2014
All new buildings are connected to the campus building management system (BMS) to improve energy performance and occupant comfort	Ongoing
LED lighting retrofits are being implemented across campus	Ongoing
Retrocommissioning activities are performed to target efficiency opportunities in older buildings	Ongoing
TRANSPORTATION	
Installed 17 Level 2 electric vehicle chargers	2015 – 2019
Student parking permit fees raised for the first time in 17 years to encourage use of alternative transportation	2019
Transitioning the campus vehicle fleet to electric models	Ongoing
Increased the availability of online student services to reduce unneeded trips to campus	Ongoing
Improved on-campus dining options to reduce extra trips to/from campus	Ongoing
Expanded hybrid education courses so that both online and face-to-face learning opportunities are available	Ongoing

2 GREENHOUSE GAS EMISSIONS

2.1 METHODOLOGY

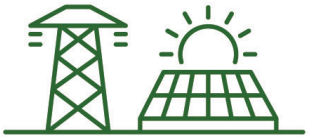
Chabot has developed an updated GHG emissions inventory for FY2018 (July 1, 2017 to June 30, 2018) in order to track and measure progress towards its emissions reduction goals. The emissions inventory covers the following sources of GHG emissions: direct sources ("scope 1 emissions"), such as stationary fuel combustion and district owned vehicles; indirect sources ("scope 2 emissions"), which includes purchased electricity and on-site solar generation; and indirect sources ("scope 3 emissions"), which includes campus commuting and travel.

SCOPE 1 EMISSIONS



Direct Sources
Stationary Fuel Sources
District-owned Vehicles

SCOPE 2 EMISSIONS



Indirect Sources
Purchased Electricity
On-site Solar Generation

SCOPE 3 EMISSIONS

Indirect Sources
Campus Commuting
Travel

Calculations were based on generally accepted principles and guidelines as provided by the ACUPCC, the Intergovernmental Panel on Climate Change (IPCC), the GHG Protocol Corporate Accounting and Reporting Standard, and United States Environmental Protection Agency (US EPA). Campus-specific data and inputs have been used when and where possible. Results are presented in metric tons of carbon dioxide equivalent (mt CO2e), using 100-year global warming potentials from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.

As defined by the GHG Protocol, the inventory addresses seven GHGs that are produced by human activity. These GHGs are carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF_3). For consistency purposes in reporting, results are expressed in carbon dioxide equivalents (CO_2e). Greenhouse gases expressed in units of CO_2e calculate the impact of other greenhouse gases by their global warming potential (GWP). GWP is the ratio of the warming that would result from the emission of one kilogram of a GHG to that from the emission of one kilogram of carbon dioxide over a fixed period of time, such as 100 years. For example, one metric ton of CH_4 is a more potent GHG and is equivalent to 25 metric tons of CO_2e.

2.2 BOUNDARIES

ORGANIZATIONAL BOUNDARIES

The Chabot-Las Positas Community College District Office defines its organizational boundaries using the operational control approach. The district owns and controls all of its operations, therefore all GHG emission sources were accounted for under each campus location. This report discusses GHG emissions from the Chabot campus.

OPERATIONAL BOUNDARIES

GHG emission sources are quantified in terms of "scopes" as defined by the GHG Protocol, and will also be described by sector, covering transportation and buildings. The three scopes of analysis cover direct and indirect emissions as follows:

DIRECT EMISSIONS

Direct emissions, also referred to as "scope 1 emissions," are from sources directly owned or operated by the campus. These include combustion of fossil fuels in college-owned facilities like cogeneration plants, or from District-owned vehicles. Other direct sources may also include fugitive emissions from leakage of refrigeration or air conditioning equipment.

INDIRECT EMISSIONS

Indirect emission sources cover both "scope 2 emissions" and "scope 3 emissions." Scope 2 emissions are from sources that are owned or controlled by the campus. These include emissions that result from the generation of electricity, heat or steam that is purchased by the campus from a utility provider such as Pacific Gas and Electric (PG&E). Scope 3 emissions are from sources that are not owned or operated by the institution (and therefore out of the direct control of the district and campus), but are linked to and attributable to campus activities. Typical scope 3 emissions include directly-financed travel (such as airline and rental car reimbursements), and student, faculty, and staff commuting to and from campus. Other scope 3 emission sources may include solid waste (off-campus incineration or landfill), wastewater, upstream emissions from directly-financed purchases like paper production, and transportation and distribution losses from purchased energy.

The ACUPCC requires that all scope 1 and 2 emissions are reported, and scope 3 emissions from commuting and directly-financed travel are reported "to the extent that the data is available". ACUPCC recommends including other scope 3 emissions where data is available and sources are significant, at the signatory's discretion. Due to the availability and quality of data, the Chabot FY2018 inventory only includes the required scope 1, scope 2, and scope 3 emissions.

2.3 FY2018 INVENTORY RESULTS

FY2018 INVENTORY RESULTS, BY SCOPE

Activity data for Chabot was collected for the 2018 fiscal year and GHG emissions were calculated based on that information. Chabot was responsible for a total of 12,505 metric tons of carbon dioxide equivalent (mt CO_2e) for all scope 1, 2, and 3 sources. **Figure 1** presents the college's gross emissions broken down by scope. Because Chabot students live off-campus and commute to the college, the largest source of emissions are scope 3 emissions from student and employee commuting. These represent 9,036 mt CO_2e and 72 percent of gross campus emissions. The second largest emissions source are scope 1 emissions from on-site stationary combustion, primarily natural gas for heating. These account for 2,537 mt CO_2e or 20 percent of total emissions. The smallest source is scope 2 from purchased electricity, which only accounts for 932 mt CO_2e or 8 percent of total emissions.

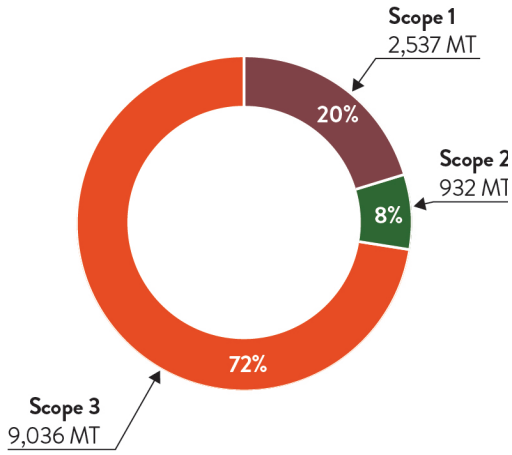


FIGURE 1: FY2018 GROSS EMISSIONS BY SCOPE

FY2018 INVENTORY RESULTS, BY EMISSION SOURCE AND SECTOR

Figure 2 presents a breakdown of gross GHG emissions by emission source. Scope 3 student commuting is by far the largest source, accounting for 63 percent of all emissions. This is followed by stationary combustion with 20 percent of total emissions, and employee commuting, which comprises 9 percent of total emissions. As discussed above, emissions from purchased electricity account for only 8 percent of gross emissions. Emissions from refrigerants, business travel, and campus-owned vehicles were collectively less than 1 percent of emissions.

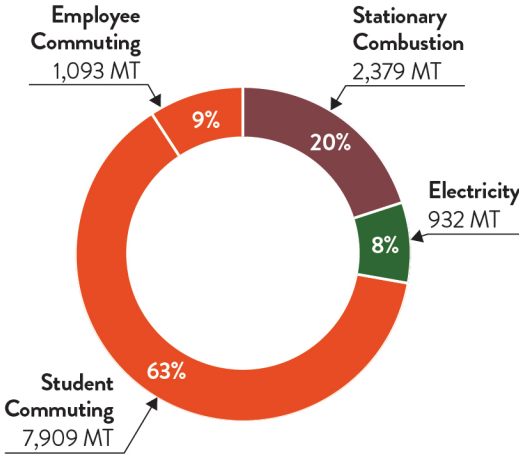


FIGURE 2: FY2018 PERCENT EMISSIONS BY SOURCE

The campus emissions sources can be divided into two main sectors: transportation and buildings. The transportation footprint includes fuel consumption from campus-owned vehicles, conference reimbursements for rental car and airline travel, and student and employee commuting emissions based on a survey and analysis of commuting patterns . The buildings carbon footprint encompasses purchased electricity, on-site fuels for heating, and refrigerant emissions related to building cooling systems. **Figure 3** shows the percent of total emissions attributable to these two sectors. Transportation contributes to 72 percent of emissions while buildings only account for 28 percent. This presents a challenge for the college because reducing emissions from transportation that is outside the district's direct control will require innovative initiatives and actions to influence behaviors that drive emissions reductions. The following sections discuss progress and challenges within each of these sectors.

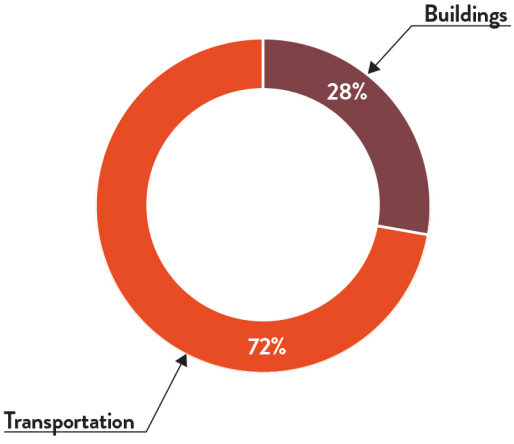
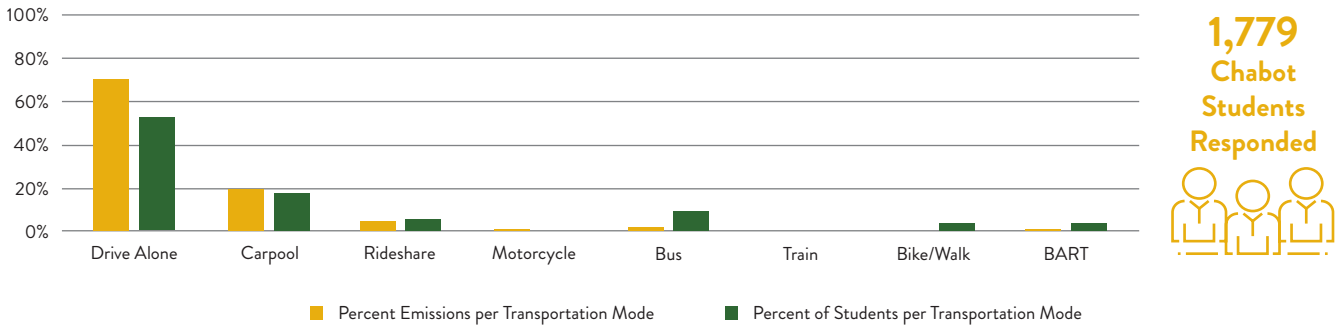


FIGURE 3: FY2018 PERCENT EMISSIONS BY SECTOR

TRANSPORTATION

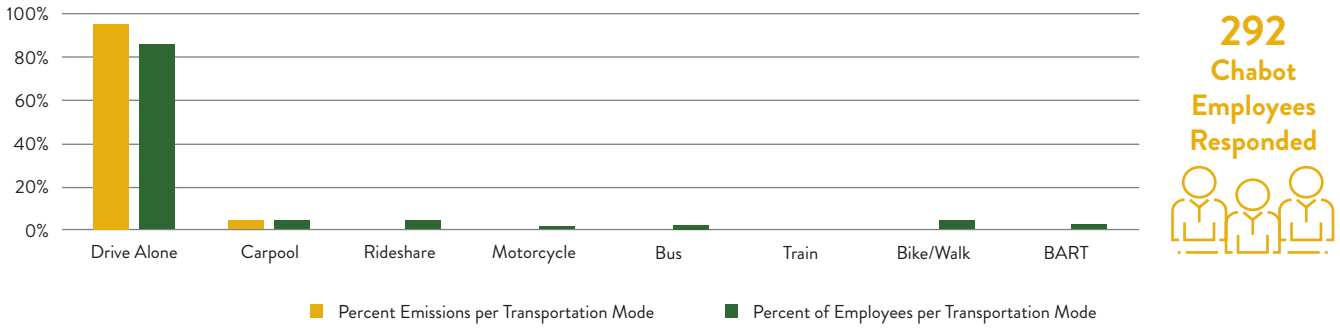
All Chabot students live off-campus, so it is not surprising that student commuting emissions are the single largest source of emissions for the college. Emissions were developed based on a student commuting survey that analyzed responses from 1,779 Chabot students to understand their commuting habits and travel distances. Responses provided on the distance travelled, the number of commute days per week, and type of transport (driving alone, carpool, rideshare, motorcycle, bus, train, bike/walk, or BART) were used to derive an average mt CO_2e per student for full-time and part-time students. This figure was then extrapolated to the entire student population. The survey response indicated that 56 percent of students drive a car by themselves, which accounts for 72 percent of student commuting emissions (**Figure 4**). 18 percent of students carpool, 12 percent ride the bus, 5 percent rideshare, 4 percent bike/walk, and 4 percent use BART.

FIGURE 4: PERCENT OF STUDENTS AND EMISSIONS PER TRANSPORT MODE



A similar survey was provided to faculty and staff to determine the impacts of employee commuting emissions. 292 responses were received and analyzed following the same process as the student commuting analysis. Similar to the student data, the survey indicated that 85 percent of employees commute alone in a car. This accounts for 96 percent of all employee commuting emissions (**Figure 5**) .

FIGURE 5: PERCENT OF EMPLOYEES AND EMISSIONS PER TRANSPORT MODE



BUILDINGS

Emissions from the buildings sector represent a much smaller portion of the total emissions for Chabot. In the FY2018 inventory, 28 percent of the college's total GHG emissions were due to purchased electricity and natural gas. Electricity emissions have decreased by 36 percent while natural gas emissions have increased 15 percent since FY2008. The significant decrease in electricity is due to the installation of 1.0 MW of on-site solar since 2008. The increase in natural gas emissions aligns with the increase in campus square footage of 15 percent.

Chabot obtains energy from both on-site sources and PG&E, the utility provider. The campus has 1.0 MW of solar and 300 KW of natural gas-driven co-generation engines which together generate roughly 30 percent of the campus electrical energy usage. The co-generation system operates continuously, providing electricity as well as heat from the engine exhaust. The exhaust heat is used to heat the Olympic-sized outdoor swimming pool, and excess heat is used in the campus hot water heating loop. Emissions from natural gas are relatively high due to the presence of co-generation on-site.

2.4 PROGRESS FROM FY2008 BASE YEAR

In order to make accurate comparisons between the base year and current year GHG inventories, several key adjustments were made to the FY2008 inventory. First, emissions were updated to include missing natural gas emissions not originally reported. This was completed by backcasting known natural gas usage from FY2018 to the building square footage present in FY2008. Second, scope 3 emissions were adjusted to include only the scope 3 sources that are required by ACUPCC (directly-financed travel and commuting by students and employees). Finally, student commuting emissions in the base year were updated to use a consistent calculation methodology. These changes enable a more precise comparison and progress assessment between data from FY2008 and FY2018. **Table 2** presents the adjusted FY2008 gross emissions by scope alongside the gross emissions from FY2018.

TABLE 2: COMPARISON OF CHABOT FY2008 AND FY2018 GHG EMISSIONS

SCOPE	FY2008 (Metric Tons CO2e)	FY2008 (% Total of Emissions)	FY2018 (Metric Tons CO2e)	FY2018 (% Total of Emissions)
Scope 1	2,192	16%	2,537	20%
Scope 2	1,462	10%	932	8%
Scope 3	10,150	74%	9,036	72%
Total	**13,804**	**100%**	**12,505**	**100%**

In FY2008, the college was responsible for a total of 13,804 mt CO_2e. This decreased to 12,505 mt CO_2e in FY2018. This represents a 9.4 percent reduction in emissions over the ten-year period. The primary drivers of this decrease were the installation on-site solar photovoltaic and a decrease in student population. The solar installation resulted in a 13 percent decrease in purchased electricity from FY2008 to FY2018 while a 9 percent decrease in student commuting is directly attrutable to a 9 percent reduction in student population. Tempering this decrease was an increase in natural gas emissions of 15 percent which aligns directly with a campus square footage increase of 15 percent.

Scope 2 emissions from purchased electricity typically encompass a larger proportion of an organization's emissions than scope 1 sources. However, as a result of early sustainability initiatives developed at Chabot, 1.0 megawatts of solar panels have been installed on-site to reduce purchased electricity demand and GHG emissions. As a result, scope 2 emissions have seen a drastic decrease from 1,462 mt CO_2e in FY2008 to 932 mt CO_2e in FY2018, representing a 36 percent decrease in scope 2 emissions from the base year.

Transportation—including daily commuting by students and employees, air travel, and car rental—accounted for 74 percent of all emissions in FY2008, whereas transportation accounted for 72 percent in FY2018. Scope 2 electricity accounted for 10 percent in FY2008, while it accounted for 8 percent in FY2018. Scope 1 stationary combustion and direct mobile emissions accounted for 16 percent in FY2008 while these sources represented 20 percent in FY2018.

In both FY2008 and FY2018, student commuting represented 63 percent of total emissions. Although student commuting accounts for the same percentage of overall emissions in FY2018, emissions from this source actually decreased 9 percent from 8,725 mt CO_2e in FY2008 to 7,909 mt CO_2e in FY2018.

Table 3 below shows that fewer students report driving alone and more report carpooling in FY2018 compared to FY2008. This can be attributed in part to work the college has done to encourage alternative transportation and increasing fees for student parking.

TABLE 3: PERCENT OF STUDENTS PER TRANSPORT MODE

TRANSPORT MODE	2008	2018
Driving Alone	74 percent	56 percent
Carpooling	9 percent	18 percent

3 GREENHOUSE GAS REDUCTION STRATEGIES

3.1 GHG REDUCTION GOALS

Chabot College has adopted the climate goals outlined by the ACUPCC. These goals are to reduce GHG emissions to 15 percent below 2008 levels by 2020, and achieve carbon neutrality by 2050. Based on the FY2018 inventory, Chabot's GHG emissions have decreased by 9.4 percent compared to 2008 levels. Chabot must continue to implement a variety of climate mitigation strategies and projects, particularly as campus square footage and student population increases over the next 30 years. This section outlines specific initiatives that are designed to continue moving the campus towards carbon neutrality.

3.2 TRANSPORTATION INITIATIVES

Transportation represents the largest source of GHG emissions at Chabot. These emissions are generated by student and employee commuting, as well as directly-financed rental car and airline travel. Transportation emissions are 72 percent of the gross total emissions in FY2018, with student commuting representing 63 percent of total emissions. Achieving climate neutrality by 2050 will require Chabot College to pursue a variety of mitigation strategies that address emissions from transportation.

3.2.1 PARTNERSHIPS WITH REGIONAL TRANSIT AGENCIES

Chabot College has partnered with the region's major transit agencies to develop successful programs that increase use of public transit. Continuing to build and expand on these relationships to target specific opportunities will help the college generate further reductions in emissions from transportation.

- Work with BART to determine if a reduced fare for students can be established through the BART Higher Education Discount Program (HEDP).
- Work with relevant agencies to expand public transit options, including additional bus routes and bus or shuttle service between the campus and nearby BART stations.

3.2.2 ON-CAMPUS HOUSING AND FOOD SERVICE

Student and employee commuting emissions are driven by a combination of factors. At the top of the list in many cases is the Bay Area housing crisis, which severely limits access to affordable, nearby housing options. While providing student housing would be an enormous challenge—only about 25 percent of community colleges offer on-campus housing, according to the American Association of Community Colleges—it is worth considering in the context of a long-term plan for the college. Developing housing and other amenities close to campus can be an important strategy for producing long-term reductions in GHG emissions.

- Investigate whether on-campus housing can be included in the college's long range development plans. Affordable student housing is in short supply in the area, which means that many students must commute long distances, and these commutes contribute significantly to the college's total GHG emissions. While it is rare for community colleges to offer dormitory-style housing, Santa Rosa Junior College provides a regional model for funding and developing this type of amenity.
- Continue to expand and improve meal options on campus so that students and employees leave campus less frequently to eat.

3.2.3 SCHEDULE OPTIMIZATION

Commuting survey respondents identified schedule flexibility as the most popular strategy for reducing GHG emissions from transportation. Chabot has made significant progress implementing sustainable scheduling programs since 2010, particularly for student services and remote learning.

- Continue expanding and improving online student systems, including remote course offerings and student services.
- Continue to grow alternative participation opportunities, such as video conferencing and online courses, where appropriate.
- Revisit sustainable scheduling efforts to better coordinate class and work schedules with public transit schedules and options.
- Consider opportunities to offer employees a compressed workweek option to reduce trips to and from campus (such as four 10-hour days).
- Consider opportunities for employee telecommuting, where appropriate, to reduce trips to and from campus.

3.2.4 ELECTRIC VEHICLE CHARGING

Electric vehicle charging is a popular amenity among the respondents to the employee commuting survey. Many respondents expressed appreciation for the college for its investment in this infrastructure, and cited the presence of charge points as influential in their personal vehicle purchasing decisions. Chabot can build on its existing charging infrastructure and help ensure smooth operations in the long-term by considering the following initiatives:

- Continue to install new electric vehicle (EV) charging stations to keep up with demand.
- Consider strategies for encouraging electric vehicle drivers to move cars when fully charged, to ensure EV stations are available for other drivers. Sending an electronic notification when charging is complete, such as e-mail or text message, may be possible. If drivers continue to leave fully charged cars at stations, consider implementing a fee that would be applied after charging is complete.

3.2.5 BICYCLING INFRASTRUCTURE AND SUPPORT

Many survey respondents expressed interest in bicycling to campus at least a few days per week. However, respondents also noted that bicycle path improvements and additional on-campus support for cyclists would help them feel safer and better prepared to commute by bike.

- Complete the bicycle path improvements included in the 2018 Facilities Master Plan to help ensure the bicycle circulation network is better connected and safer for riders.
- Provide support for bicycle commuting, including amenities like secure lockers and storage areas, showers and changing facilities, and bicycle repair stations with supplies (such as tools and pumps).

3.2.6 PROMOTING CARPOOLING

Carpooling both reduces GHG emissions and helps the campus meet the demand for parking spaces with its current infrastructure. Chabot can consider a combination of strategies that stimulate carpooling and dissuade single-occupant vehicle commuting.

- Create an online resource for connecting carpool drivers and riders.
- Consider designating a pickup location where drivers and riders can offer and accept carpool rides, similar to the SF Casual Carpool model.
- Implement a program that guarantees parking and/or reduces parking fees for carpool vehicles.
- Consider establishing a new parking permit for employees. Charging a fee for employee parking can potentially help fund other alternative transportation programs, such as adding new EV charging stations or allowing EV charging stations to remain free to use.

3.3 BUILDING ENERGY INITIATIVES

Purchased electricity and natural gas together represent 28 percent of the college's total GHG emissions (or 8 percent and 20 percent, respectively). The greatest opportunities for reducing emissions associated with building energy consumption are from energy efficiency measures, expanded on-site renewable energy, and building electrification.

3.3.1 ENERGY EFFICIENCY

Energy efficiency is one of the most important strategies for reducing building energy use and the associated greenhouse gases. Chabot College has implemented several successful energy management and efficiency programs since 2010. The campus can continue to build on these efforts through the following activities:

- Continue certifying new buildings as LEED Silver or better and focus on achieving credits related to energy performance.
- Continue to connect all new buildings to the campus building management system (BMS) and use data trending and occupant feedback to adjust temperature setpoints and optimize lighting controls.
- Continue implementing lighting retrofits across campus to convert existing building lighting to more efficient LEDs and T-8 fluorescent lamps.
- Continue implementing "smart" building technologies such as occupancy sensors, daylight sensors, and carbon dioxide sensors to help optimize energy consumption and occupant experience.
- Continue retrocommissioning activities to tune building systems and target efficiency opportunities in older buildings.
- Investigate opportunities to reduce natural gas use through efficiency opportunities in space heating and water heating systems.

3.3.2 ON-SITE RENEWABLE ENERGY

Chabot College has made very good progress with installing on-site solar photovoltaic systems, which was a key mitigation strategy identified in the 2010 Climate Action Plan. As the college continues to strive for the ACUPCC's goal of carbon neutrality by 2050, it can consider the following on-site renewable energy strategies:

- Install additional ground-mounted solar photovoltaic arrays on-site.
- Include roof-mounted photovoltaic systems on newly-constructed and existing buildings.
- Explore additional sources of renewable energy including wind power and biogas technology.

3.3.3 BUILDING ELECTRIFICATION

Emissions from natural gas comprise 19 percent of the college's total emissions. Building electrification involves substituting electric technologies for building systems that would otherwise use fossil fuels like natural gas (such as space heating and hot water). Electric technologies that are powered by on-site renewable energy systems or a cleaner electric grid can play a significant role in meeting climate targets. High-efficiency technologies such as heat pumps will have lower operating costs than electric resistance heating. At Chabot, electrification of future new buildings can help keep the current level of natural gas use steady, and enable the campus to avoid generating added scope 1 emissions as new buildings are constructed. Retrofitting existing buildings as systems and equipment reach the end of their useful life can also make a large impact over time. The following strategies may be addressed by campus design standards and capital expenditure programs:

- Require new buildings to be designed as electric-only, whenever possible.
- Investigate opportunities in existing buildings to replace fossil fuel-based equipment with electric technologies, when end-of-life is reached and replacement is required.

4 TRACKING AND MEASURING PROGRESS

4.1 REPORTING SCHEDULE

As part of the American College and University President's Climate Commitment, Chabot College will update its GHG emissions inventory annually, and provide an update to its Climate Action Plan every five years. The timetable below illustrates the various checkpoints to fulfill ACUPCC requirements.

TABLE 4: ACUPCC PROGRESS REPORTING SCHEDULE

ACUPCC REQUIREMENTS	2020	2021	2022	2023	2024
GHG Emissions Inventory	■	■	■	■	■
Climate Action Plan Update					■
Progress Report	■	■	■	■	■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