



SUSTAINABILITY & CLIMATE ACTION PLAN

November 4, 2021

Sustainability and Climate Action Plan Ad Hoc Committee Meeting Focus: Electrifying Vehicle Travel

Questions and Answers

1. How can the city possibly control or influence what visitors or commuters drive?
 - A. For commuters, the city is already impacting how employees arrive in Palo Alto, as many businesses are required by the City (and regional legislation) to offer commuter benefits that support transit use, ride-sharing, and bicycling. Employers can also provide incentives for driving electric vehicles (EVs) or using non-vehicle travel modes.

Policy and infrastructure investments can influence the decisions people make when traveling to Palo Alto. For example, the City can make certain choices on how we manage parking and parking pricing, how fast and easy it is to travel here by bus or train, how safe and fast it is to travel here by bike, making scooters/bikeshare available to those who arrive here without a car, etc. Of course, this work will also require regional efforts to improve transit and bicycling, but there is much that the City can do to adjust the transportation ecosystem.
2. Are the VMT (vehicle miles traveled) reduction goals for 2030 broken out by residents, commuters and visitors based on post-pandemic or pre-pandemic figures?
 - A. The base year (2020) VMT, which the reduction goals are based on, is pre-pandemic. Any post-pandemic behavioral changes (e.g., increased telework) will help achieve that goal.
3. When will it be possible to adjust these targets as the fraction of pre-pandemic commuters into Palo Alto is unlikely to return anytime soon?
 - A. This is limited by the availability of updated VMT data that reflects pandemic-induced behavioral changes. Also, the long-term impact of these changes is still uncertain and will take some time to stabilize. Regardless, the targets will not need to be adjusted based on these changes. The updated data will only indicate our progress towards those targets.
4. It seems to me that the return on investment (ROI) would be profound if large numbers of inbound commuters were shifted to mass transit - privately and publicly sponsored. Double whammy impact with reduction of parking spaces to highest, best use? These impacts and ROIs seem out of context...just as placeholders.

- A. Realizing increased transit use will require regional coordination, infrastructure investments, and policy changes to make transit a competitive mode compared to driving. This is a heavy lift, but regional efforts are starting to take shape to move us in this direction. For examples, see the Seamless Bay Area initiative and VTA's Express Bus program that partners with local employers to subsidize commuter buses.
5. What is the vehicle lifetime being used to estimate the savings from EV ownership, and how many years of ownership are being used?
- A. We used 200,000 miles and roughly 15 years of ownership for vehicle lifetime estimates. The Consumer Reports study, "[EVs Offer Big Savings Over Traditional Gas-Powered Cars](#)" also reports total cost of ownership savings over 3, 5, and 7 years, as well as for used vehicles.
6. Impressive progress! What's happening with not just replacing ICE (internal combustion engine) vehicles, but also reducing/replacing the need for private vehicle ownership?
- A. Our December Ad Hoc meeting will focus on mobility. Part of the discussion will include the City's efforts to provide more transportation options citywide, including on-demand transit, bike- and scooter-share, improved bicycle infrastructure, and programs to encourage the use of these options.
7. It warmed my heart to see some pictures from one of our past EV classes at Mitchell Park Community Center. Forbes identified education as one of most important contributors to EV adoption. Do you have a hunch of when you may provide classes again, either on-line or in-person?
- A. We are in contract negotiations to offer a robust calendar of online events beginning in January 2022 and hopefully in-person events shortly after - including monthly EV education classes which will lead to group buy discount opportunities as well as financial incentives clinics and one on one case management for income qualified customers. We also hope to launch a series of in-the-neighborhood, EV block party type events, building upon the Cool Blocks model.
8. In calculating the environmental benefits of EVs, what are our assumptions and calculations of energy inputs / GHG outputs for EV vs. ICE beyond operation: In manufacturing, end of life, and charging infrastructure?
- A. These life cycle phases are outside of the scope of the 80 x 30 framework. However, by 2030, it is reasonable to expect that EVs will have reached parity with ICE vehicles for manufacturing and end of life. This includes Lithium battery recycling.
9. What fraction of City vehicles are diesel?
- A. Including vehicles only (not including equipment), approximately 20% of City vehicles are diesel. The City converted 100% of its diesel vehicles and diesel equipment to renewable diesel in November 2021.
10. What are the City's plans to encourage Fuel cell electric vehicles (FCEVs), particularly Hydrogen stations? Many believe Hydrogen as a fuel is more (carbon-free) effective than Battery EVs.
- A. We currently have not actively facilitated FCEVs but will be evaluating them in the coming years. The hydrogen fuel cell vehicle is an intriguing technology that promises environmental benefits over gasoline cars. To date however, the bottom line is that fuel cells are highly inefficient.

Hydrogen sounds clean, but energy is required to make the hydrogen (most commonly using natural gas) and then converted into electricity. Even if clean electricity from renewables is used, a battery electric vehicle can go about 2.5 times farther than a hydrogen vehicle on the same amount of renewable electricity. Hydrogen vehicles have a lot in common with battery electric vehicles. Just like electricity, hydrogen must be produced from another energy source (sometimes even from electricity), which can be renewable, or fossil based.

When driving, the hydrogen is converted to electricity, which is stored in a battery and drives an electric powertrain. Even if sustainable hydrogen is used (produced from clean electricity), the process of using electricity to produce hydrogen and then converting it back to electricity creates about 65% energy loss even at the starting point. Then there is the challenge of transporting hydrogen to fueling stations.

Also, building a hydrogen station is complex and expensive – therefore hydrogen fueling stations are very limited in number. (There is a hydrogen fueling station in Palo Alto, with avid adopters of this technology.) In previous years, discounts on fuel cell vehicles such as the Toyota Mirai have been offered through the City’s annual participation in the SunShares - solar and ZEV bulk buy discount program. Ultimately, it will be up to the consumer to decide - which provides the better way to deliver electricity to your car?

11. California will stop selling new fossil fuel powered vehicles within 15 years. When will Palo Alto require EV charging potential in all new parking spaces built?
 - A. This is a question that will be considered during the California Building Code Updates process in the coming years. However, in recent years, staff has worked to address issues that hinder the deployment of Electric Vehicle Supply Equipment (EVSE) across the city, including: ensuring local laws and practice comply with state law; ensuring that an owner’s efforts to comply with the Americans with Disabilities Act are consistent with State law and do not discourage adoption of ESVE; and ensuring that sites are not discouraged from adding ESVE to parking lots nor from bringing parking lots into compliance with modern standards when adding ESVE.

12. When will Palo Alto require EV charging facilities in existing garages?
 - A. This is a policy question that the City Council will have to decide on in the next few years.

13. To reach your goal of 33,000 EV chargers you will need to install about 4,000 per year or about 11 per day! How will this be done?
 - A. The 33,000 goal is for the number of EV charging ports, not EV charging stations, and typically many ports are installed simultaneously at the same site. Also, this includes private residential and commercial installations, which have already been happening at a reasonable pace. This is the target in order to support a given EV population, and the installations may not occur at a linear pace.

But the point is well taken that this is a huge undertaking to support an equally aggressive EV adoption goal. It is very possible that this rate of EV charging port installation may not be achieved, which will limit the rate of EV adoption. All of this highlights that reaching the 80 x 30 target requires a high level of commitment.

14. I'm sure there are difficulties I'm not aware of, but is there:
- 1) A way to create electric charging stations at major intersections the way that gas stations are currently located? Perhaps at local businesses, who would get a credit for the installation?
 - 2) A map based on traffic patterns to determine the best place to locate chargers?
 - 3) Are there better locations to place chargers based on proximity to high-tension power lines or other infrastructure?
 - A. EV charging stations are frequently installed in commercial areas (malls, shopping centers) to attract customers while their vehicles are charging and are generally welcomed by businesses. Any high traffic location where people typically spend 15 minutes or more is a good candidate for charging infrastructure.

Criteria for siting City-owned chargers are:

1. Safely accessible to the public
2. High traffic areas
3. Can be utilized by as many people as possible

As a result, the majority of City-owned chargers are located in parking garages near the University Ave. and California Ave. downtown areas.

As for privately-owned EV chargers, it is ultimately up to the site host to determine whether or not their property would attract EV charging customers. To date, a large majority of ports being installed are in high traffic commercial areas, such as Stanford Shopping Center, as well as many large corporate parking lots and school parking lots. CPAU rebates are also facilitating the installation of charging ports at non-profits, such as places of worship and multi-family properties.

As for accessibility to power, there are sites with extra electric capacity as well as sites that require a larger transformer to bring more electricity to the site.

At this point, there needs to be a steep increase in every type of charging infrastructure in a variety of locations - including at-home charging, curbside charging, chargers where we shop, play, work and dine and hopefully at those gas stations where they have excess electricity.

15. It doesn't seem like you're paying enough attention to the role of commercial and residential property owners who control the availability of EV chargers. Renters have very little ability to influence.
- A. Our multi-family building outreach is primarily to property owners/managers, and through them to the occupants. We have programs such as the EV Charging Technical Assistance program which provides personalized technical assistance, free of charge, to support owners and managers of multi-family properties, schools, and nonprofits. More information about this program, as well as rebates and incentives for multi-family buildings can be found on our [EV Chargers for Organizations](#) webpage.
16. Sacramento Municipal Utility District (SMUD) has a much more strategic charging approach to reaching renters. Perhaps Palo Alto can learn from them.
- A. Thank you for your comment, we welcome any information on other programs you would like to share. We realize that there is a huge potential to increase EV adoption among

renters, who generally have less access to charging options. Through City of Palo Alto Utilities' EV Technical Assistance Program (EVTAP) we are also focused on facilitating charger installations at multi-family homes, 80% of whom are renters. We are targeting to reach a large percentage of the 800+ multi-family properties in Palo Alto by 2025, to enable the installation of 1,800 charging ports by 2025 (an optimistic scenario).

17. Thank you for the question on multi-family property owners, and what the city pays vs the property owners for upgrades for electric vehicles. If I understand the answer correctly. The city pays 75% of the cost (via rebates?) and the multi-family homeowners would pay 25%. Is that right? Thanks for pursuing this. It is critical information for our HOA, and other HOAs to understand.

A. For multi-family properties, the City pays a rebate up to 75% of the cost of EVSE (Electric vehicle supply equipment) installation up to \$80,000 or \$8,000/port - full program eligibility requirements: [Eligibility Requirements FINAL \(cityofpaloalto.org\)](https://www.cityofpaloalto.org/DocumentCenter/View/11111/Eligibility-Requirements-FINAL).

18. The City should embrace all zero emission, vehicle solutions... not just the ones which are Utilities driven.

A. The November 4, 2021 presentation was focused specifically on EVs, but we know our climate response will require a broader effort across all modes of transportation. The December 9, 2021 meeting's focus is on mobility. The City is working to provide more transportation options citywide, including on-demand transit, bike- and scooter-share, improved bicycle infrastructure, and programs to encourage the use of these options.

19. What are Palo Alto's goals for VTA and Caltrain ridership?

A. We don't have specific targets for VTA/Caltrain ridership, but increased use of public transit options would be captured by a decrease in VMT. The Caltrain Business Plan estimates significant ridership growth with electrification due to shorter travel times along the corridor.

20. Many of the Palo Alto Unified School District (PAUSD) sites are approaching end of life. Palo Verde and Hoover Elementary schools are likely to relocate to Cubberley and Greendell for multiple years during their reconstruction. How is this being factored into emission reduction targets?

A. Staff incorporates major developmental shifts into its long-term forecasting as staff becomes aware of them. Partnerships with the school district will be important for achieving sustainability goals. The City and PAUSD are working together to support active transportation commutes to the Cubberley/Greendell site so that congestion and emissions are minimized as much as possible. In addition, construction emissions are a topic for later discussions with the S/CAP Ad Hoc Committee.

21. While I think these programs are great, I'm perplexed -- CARB (the California Air Resources Board) has shown that gas leaf blowers and similar small engines account for MORE pollution contributing to climate change than all passenger cars in CA. Also, gas leaf blowers have been illegal in Palo Alto for over 16 years (but law is not enforced). Wouldn't it be a larger return on investment (more impact for less cost) to help gardeners switch over to electric gardening equipment and to enforce the law that's already on our books? Why aren't we putting any efforts or funding toward this?

A. Gas-powered two-stroke leaf blowers and other two-stroke engines create significant air pollution (such as hydrocarbons, oxides of nitrogen, carbon monoxide, and fine particulate matter), but *far fewer GHG emissions*, the focus of our current sustainability efforts. To clarify, CARB reported that using a gas-powered two-stroke leaf blower for one hour emits

as much *smog-forming pollution* (but not GHG emissions) as a 2016 Toyota Camry does driving for 1100 miles. This has a negative impact on air pollution but is less of a concern with regards to carbon dioxide emissions.

The numbers vary widely, but a leaf blower uses significantly less gasoline per hour than a car, and they spend far less time in use. As a carbon reduction measure, eliminating two-stroke engines does not provide a large return on investment, but it could provide other significant benefits if electrified. In Palo Alto, Portable Equipment, which includes gas-powered two-stroke leaf blowers, accounts for approximately 3,050 MT CO₂e or 0.6% of Palo Alto's overall GHG emissions.

Palo Alto currently has an [ordinance](#) in place that bans the use of gas-powered leaf blowers in residential neighborhoods. At the state level, in October 2021, Governor Newsom signed into law [Assembly Bill 1346](#), which directs the California Air Resources Board (CARB) to phase out the sale of small internal combustion engines predominately used in lawn and garden equipment, starting as soon as 2024 and supports the transition to zero-emission small off-road equipment operations.

The new law, authored by Assemblyman Marc Berman from Menlo Park, will offer rebates for consumers to purchase electric replacements, and it builds on previous rulemaking already underway. The phaseout will begin as soon as is feasible or by January 1, 2024, whichever comes later. The law also requires CARB to adopt cost-effective and technologically feasible regulations to prohibit engine exhaust and evaporative emissions from new small off-road engines by July 1, 2022 and directs the state board to implement strategies to achieve 100 percent zero emissions from off-road equipment in California by 2035, where feasible and cost-effective.

While Palo Alto's ordinance remains in effect, there have been staffing reductions in the Planning and Police Departments over the last several years that impact our ability to enforce the ordinance. Our Planning Code Enforcement staffing was previously budgeted at three officers, which enabled Planning Officers to assist the Police Department in educating people to not use gas leaf blowers. We currently have only one Planning Enforcement Officer. Given the reduced staffing, Planning Enforcement staff are prioritizing enforcement of unpermitted construction. However, we do still want to know about any residential gas leaf blower use. To report use in a residential neighborhood, you may call the non-emergency 23-hour dispatch center at 650-329-2413. You may also choose to submit a complaint via Palo Alto's issue-reporting webpage: <https://www.cityofpaloalto.org/Residents/Services/Report-an-Issue>.

22. Make the case for closing University Ave. The Council missed a great opportunity here. We can't afford to keep promoting cars when there was clearly support for moving away from cars and setting a great example of bike/ped friendly infrastructure.
 - A. While Council decided to reopen University Avenue, they did direct staff to look into the steps to make the current Ramona Avenue and California Avenue closures permanent. Look for an upcoming item at Council that reflects this research.

23. What is the income range you consider as qualified Palo Alto low-income residences?

- A. Every year, the State's Department of Housing and Community Development posts [State Income Limits](#). We use the Very Low Income levels for Santa Clara County. For 2021, for a household of four, \$82,850 is the annual limit. In comparison, the Median Income for a household of four is \$151,300.
24. Will impacts from the Palo Alto airport be discussed in future meetings? I am also concerned about health impacts from lead after reading about Santa Clara deciding to close Reid.
- A. The impacts from the Palo Alto Airport are not currently on the agenda for future S/CAP Ad Hoc Meetings, however, Council does periodically discuss the Palo Alto Airport at their meetings. This recent [informational staff report](#) describes efforts to address the use of leaded fuel at Palo Alto Airport. The Palo Alto Airport currently accounts for approximately 2,192 CO₂e or 0.5% Palo Alto's overall GHG emissions.
25. There was an article recently in the New York Times about utilities not being ready to support all the electric projects (i.e. electric vehicles). Are Palo Alto Utilities really ready with upgraded systems able to support our vision? What is the plan? Here is the article:
<https://www.nytimes.com/2021/10/28/business/energy-environment/electric-grid-overload-solar-ev.html>
- A. This is a very important question and one we are actively discussing internally. We have done some prior high-level analysis that was shared with our Utilities Advisory Commission.
26. Why does the city claim carbon neutrality for electricity when that is on an annual basis but not hourly and NOT for the gas portfolio which is essentially doing the same thing? It is confusing.
- A. We evaluate carbon neutrality of the electric portfolio on an annual basis, but because we regularly buy electricity from the grid and sell electricity back to the grid, and because the carbon intensity of the grid's electricity varies quite a bit over the course of the year, we have to weight these purchases/sales of electricity by the grid's carbon intensity in order to get an accurate measure of our overall electric portfolio's carbon intensity. On the other hand, the carbon intensity of our gas portfolio doesn't vary by hour. The carbon emissions of an MMBTU of gas don't vary whether it's burned at noon or midnight, so simply adding up the total amount of gas consumed in a year is an accurate way of accounting for the gas portfolio's emissions.

Suggestions from Participants

- Can we *please* magnify Danitra's 1st slide (Slide 24, showing the various types of all-electric refuse collection trucks) and share it with every kindergarten class in PAUSD. What a great way to generate excitement!!
- Santa Clara has adopted requiring electrical outlets in all secure bike rooms in its latest Reach code.
- We need not wait for state mandates to implement a mandate for all new parking spaces to be EV capable. After all, we had our own mandate in 2014 before the state even thought about it.

- Palo Alto had an EV Task Force that wrote the first-in-the-nation EV charging mandate that Palo Alto adopted in 2014. Maybe it's time to reconvene the task force to draft new regulations.
- For people who aren't ready to make extensive changes to their electrical systems or buy an EV vehicle/install a charger, this might be a feel-good step. I do think there will need to be a laundry list of where these funds will go.
- We need sidewalk, neighborhood EV chargers.
- Fine the property owner if the gardener uses an offending leaf blower or lawn mower. The property owner will get the gardeners to change.
- Property owners can mandate their gardeners to use electrical leaf blowers and lawn mowers. If we fined property owners, it would be easier to implement and much quicker.
- Leaf blowers produce a lot of pollution, but this is not the same as CO2 reductions. This could also be done by neighborhoods and residents by handing out flyers to gardeners and homeowners.
- Perhaps the City should consider requiring gardener-accessible outlets in all buildings.
- There is direct bang-for-the-buck and there is indirect bang-for-the-buck drawing attention to code enforcement, publicizing community focus, and galvanizing change to achieve related GHG reductions.
- Can we please move away from the focus on Carbon offsets, which are frankly not well regulated? Not saying quit completely. Let's please address our individual, community, and city contributions to this climate problem.
- If these Palo Alto Green funds were used to fund on-bill financing, then as the income ramped up so would the on-bill financing. In the end, the City would get its money back for other programs.