TOWN OF PORTOLA VALLEY

7:00 PM – Regular Meeting of the Town Council
Wednesday, September 13, 2017
Historic Schoolhouse
765 Portola Road, Portola Valley, CA 94028

REGULAR MEETING AGENDA

7:00 PM - CALL TO ORDER AND ROLL CALL

Councilmember Derwin, Councilmember Aalfs, Councilmember Wengert, Vice Mayor Richards and Mayor Hughes

ORAL COMMUNICATIONS

Persons wishing to address the Town Council on any subject may do so now. Please note however, that the Council is not able to undertake extended discussion or action tonight on items not on the agenda.

CONSENT AGENDA

The following items listed on the Consent Agenda are considered routine and approved by one roll call motion. The Mayor or any member of the Town Council or of the public may request that any item listed under the Consent Agenda be removed and action taken separately.

1. **Approval of Minutes** – Town Council Meeting of August 23, 2017 (3)
2. **Approval of Warrant List** – September 13, 2017 (12)
3. **Recommendation by Mayor** – Adoption of a Proclamation of the Town Council of the Town of Portola Valley (27) Declaring October 15 through October 21, 2017 "Freedom from Workplace Bullies Week"
4. **Recommendation by Planning Director –** Resolution Authorizing a Cooperation Agreement with the County of (28) San Mateo for Participation in the Urban County for Community Development Block Grant (CDBG) Funding
    (a) Adoption of a Resolution of the Town Council of the Town of Portola Valley Authorizing Execution of a Cooperative Agreement with the County of San Mateo which permits the Town's Participation in the County's Housing and Community Development Program (Resolution No. __)

REGULAR AGENDA

STAFF REPORTS AND RECOMMENDATIONS

5. **Recommendation by Planning Director** – Review of Proposed Ordinance Adding Chapter 15.22 to the Portola (46) Valley Municipal Code to Establish Expedited Permitting Procedures for Electric Vehicle Charging Systems
    (a) First Reading of Title, Waive Further Reading, and Introduce an Ordinance of the Town Council of the Town of Portola Valley Adding Chapter 15.22 to the Portola Valley Municipal Code to Establish Expedited Permitting Procedures for Electric Vehicle Charging Systems (Ordinance No. __)
6. **Study Session, Leaf Blowers** (56)
7. **COUNCIL LIAISON COMMITTEE AND REGIONAL AGENCIES REPORTS** (158)

    Report by Town Council Members – Brief announcements or reports on items of significance for the entire Town Council arising out of liaison appointments to both in-town and regional committees and initiatives. *There are no written materials and the Town Council does not take action under this agenda item.*
8. **TOWN MANAGER REPORT** (159)

WRITTEN COMMUNICATIONS

9. **Town Council Digest** – August 25, 2017 (160)
10. **Town Council Digest** – September 1, 2017 (165)
11. **Town Council Digest** – September 8, 2017 (173)

ADJOURNMENT

ASSISTANCE FOR PEOPLE WITH DISABILITIES

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Town Clerk at (650) 851-1700. Notification 48 hours prior to the meeting will enable the Town to make reasonable arrangements to ensure accessibility to this meeting.

AVAILABILITY OF INFORMATION

Copies of all agenda reports and supporting data are available for viewing and inspection at Town Hall and at the Portola Valley Library located adjacent to Town Hall. In accordance with SB343, Town Council agenda materials, released less than 72 hours prior to the meeting, are available to the public at Town Hall, 765 Portola Road, Portola Valley, CA 94028.

SUBMITTAL OF AGENDA ITEMS

The deadline for submittal of agenda items is 12:00 Noon WEDNESDAY of the week prior to the meeting. By law no action can be taken on matters not listed on the printed agenda unless the Town Council determines that emergency action is required. Non-emergency matters brought up by the public under Communications may be referred to the administrative staff for appropriate action.

PUBLIC HEARINGS

Public Hearings provide the general public and interested parties an opportunity to provide testimony on these items. If you challenge any proposed action(s) in court, you may be limited to raising only issues you or someone else raised at the Public Hearing(s) described in this agenda, or in written correspondence delivered to the Town Council at, or prior to, the Public Hearing.

PORTOLA VALLEY TOWN COUNCIL REGULAR MEETING NO. 953, AUGUST 23, 2017

CALL TO ORDER AND ROLL CALL

Mayor Hughes called the Town Council's Regular meeting to order at 7:00 p.m. and led the Pledge of Allegiance. Ms. Hanlon called the roll.

Present: Councilmembers Mary Ann Moise Derwin, Jeff Aalfs (at 7:12 p.m.), Ann Wengert; Vice Mayor John Richards, Mayor Craig Hughes.

Absent: None

Others: Jeremy Dennis, Town Manager
Bill McClure, Attorney
Arly Cassidy, Associate Planner
Keith Weiner, Deputy Building Inspector
Debbie Pedro, Planning Director
Sharon Hanlon, Town Clerk

ORAL COMMUNICATIONS

None

CONSENT AGENDA [*7:01 p.m.*]

(1) Approval of Minutes: Town Council Regular Meeting of July 26, 2017.

(2) Approval of Warrant List: August 23, 2017, in the amount of $225,771.58.

Councilmembers approved 4-0, by roll call vote.

REGULAR AGENDA

STAFF REPORTS AND RECOMMENDATIONS

(3) Recommendation by Planning Director – Removal of Deed Restriction for 245 Grove Drive.

(a) Adoption of a Resolution of the Town Council of the Town of Portola Valley Terminating a 2010 Deed Restriction Regarding Accessory Structure at 245 Grove Drive (Resolution No. 2738-2017)

Planning Director Pedro presented the staff report detailing the history of a 999-square-foot detached structure at 245 Grove Drive built in 2009. The structure had a deed restriction to ensure it was not used as an ADU because, at that time, the maximum size allowed for an ADU was 750 square feet. With the amended ADU ordinance now allowing 1,000 square feet, the property owners requested the removal of the deed restriction. Planning Director Pedro said while the owners have no current plans to convert the unit to an ADU, they would like the flexibility to do so in the future.

Mayor Hughes invited questions from Council. Hearing none, he invited public comment. Hearing none, he brought the item back to the Council for discussion.

Councilmember Wengert moved to approve the Adoption of a Resolution of the Town Council of the Town of Portola Valley Terminating a 2010 Deed Restriction Regarding Accessory Structure at 245 Grove Drive. Seconded by Vice Mayor Richards, the motion carried 4-0.

(4) Staff Presentation – One Concern Earthquake Software

Associate Planner Arly Cassidy and Deputy Building Inspector Keith Weiner led a presentation of new software, One Concern that the Town co-purchased with the Woodside Fire Protection District and the Town of Woodside. The web-based software is for earthquake prediction and also provides functions during an actual earthquake event.

Deputy Building Inspector Weiner shared how the software helps the Town determine the best place to situate emergency shelters and plans of action based on hyper-realistic representations of what could happen in the event of an earthquake.

Town Manager Dennis thanked Associate Planner Cassidy and Deputy Building Inspector Weiner for taking on this task. He said they are working closely with One Concern, the Town of Woodside, and the Woodside Fire Protection District, and get together regularly to run different simulations to see what they find.

Mayor Hughes invited questions from the Council.

In response to Councilmember Derwin's request, staff showed a simulation of a large earthquake on the San Andreas Fault.

Vice Mayor Richards asked what level of the software is accessible to the public. Deputy Building Inspector Weiner said it would not be available to the general public.

Councilmember Wengert said the software's use as a simulation and exercise in informing the community of where the vulnerabilities are is incredible. She wondered if, in the event of a disaster, people would be reliant on something that may or may not function if the Internet is not available. She said this software, in combination with what the Town has already been doing, is probably terrifically powerful, but said that at the time of an emergency a whole different mindset is required in order to deal with it, rather than focusing on screens that are not likely to be functioning in a major emergency. Deputy Building Inspector Weiner said this software will not be used in lieu of standard practices and the standardized EOC training, but it is a valuable training tool and if available during an incident will be even more valuable. Councilmember Wengert said all of the preparation and training being done is terrific and thinks it is great if these simulations help with that. The software representative said they are also looking at a satellite internet connection specifically for this tool.

Mayor Hughes asked regarding the accuracy of the model, if it would actually mesh with reality when the earthquake comes. The software representative said they are 85 percent accurate. He said when they receive feedback from the first responders with any corrections, the prediction is redone, which takes the accuracy up to 94 percent. He said aftershocks are also taken into account and the predictions are adjusted.

With no other questions from the Council, Mayor Hughes invited public comment.

In response to a question from an unidentified female, Deputy Building Inspector Weiner said in the event of an emergency, he will need to bring in volunteers from other Towns to do assessments throughout the Town. He said they will be able to show them on street view what to look at.

An unidentified person asked if the software also predicted utility viability, such as how many breaks will happen to underground gas and water. The software representative said those things can be marked as critical infrastructure.

The Council thanked staff for the presentation.

(5) Oral Report from Town Manager – Update on Rodenticides

Town Manager Dennis presented an update regarding the rodent control pilot program, which has been ongoing for the past approximately eight weeks. He described the history of rodenticide use in Town and the actions that have led up to today's procedures and regulations. He explained the methods used for the different types of rodents.

Mayor Hughes invited questions from the Council.

Councilmember Derwin asked if anyone in the Conservation Committee ever looked at having the Town phase out its use of rodenticides. Town Manager Dennis said the initial conversations were solely on urging residents to end their use. He said it was staff's suggestion to take the additional step of trying a pilot program on Town properties to assess the impacts.

Councilmember Derwin asked when the pilot program would end. Town Manager Dennis said it will end June 30, 2018.

Councilmember Derwin asked who is on the subcommittee. Town Manager Dennis said it will be Marianne Plunder, Paul Heiple, Nona Chiariello, and Marge deStaebler.

Councilmember Wengert asked how long the grounds had been without rodenticides before the tunneling began. Town Manager Dennis said they stopped using the rodenticides on July 1. He said they placed traps on Monday and remove them on Friday. He said they think that frequency will have to be increased.

Mayor Hughes asked if the poisoning or trapping is being done reactively upon seeing evidence of infestation. Town Manager Dennis said for voles it's very reactive. For the gophers and moles, it's less reactive but there needs to be understanding that they're placing rodenticides out for them is a fairly regular activity. He said it is also seasonal. He said because trapping will take longer, there will be more tunneling.

Mayor Hughes asked if there had been any feedback as to the field conditions. Town Manager Dennis said there has not.

Jon Myers, 4540 Alpine Road. He said the fields are only now starting to be used. He said he represents Parks and Rec and their number one issue is safety of their users, which are mostly children running full speed out on the fields while looking up in the air. He said there have been serious accidents and injuries associated with these holes. He said it is a critical issue for them and they are constantly discussing the condition of the field. He said it is extremely important that there be no holes. He said he plays soccer out there on Sundays and their season starts in a couple of weeks. He also plays softball, which is ending this weekend, and he is constantly looking around to check for the holes. He said it is a critical issue for the field users.

Town Manager Dennis said the pilot program is only on the softball field, not on the soccer field. He said any of the other playing fields or particular landscaped areas are treated with rodenticides.

Councilmember Aalfs said they just finished their softball season and he hasn't heard anyone complain about tunneling.

Councilmember Wengert asked if the schools have gone back to using rodenticides, because their fields have been in relatively poor shape compared to the Towns. Town Manager Dennis said he understands that they have recently gone back to using rodenticides because of the condition of their fields, both at Ormendale and Corte Madera.

Councilmember Aalfs said the Corte Madera field does not appear to be in use right now. Mr. Myers said it is in very bad shape and the soccer community complained mostly about the Corte Madera field.

Vice Mayor Richards asked if contractors who do mechanical trapping have been consulted and, if so, what is their opinion? Town Manager Dennis said they have been consulted and the message they've received is that trapping can work but will not likely be 100 percent as effective as the use of rodenticides. Town Manager Dennis said it seems to be more of a resource allocation issue than anything else. They can ramp up the trapping, but there would have to be some acceptable level of change on the fields. He said they did speak to a number of neighboring jurisdictions. He said Redwood City is an urban environment and their access to critters is different. He said they have some ability that once they rid their fields of those critters, they don't return. He said many neighbors use artificial turf where it is not an issue. He said East Palo Alto doesn't do much of anything and their fields are in very bad shape.

Councilmember Wengert asked if, in the trapping scenario, there is an effort made to repair the damage from the tunneling. Town Manager Dennis said they could do some patching, but more significant repairs would be done at the end of the playing season. He said it would be hoped the repairs did not require sod replacement, which is a whole other level of expenditure.

In response to Councilmember Aalfs' question, Town Manager Dennis said seven traps were placed in July, catching five gophers. He said three additional traps were placed in August and two gophers have been caught so far. He said gophers typically breed in late winter and early spring so they will have to plan accordingly.

Councilmember Derwin said she has fought gophers for two decades. She has never used rodenticides because she lost a dog who ate rat poison which is similar to the gopher poison. She said she's had four different trappers, two that were successful and two that were not. She said in order to tell the full story, it depends on who is doing the trapping. She said the Town should discuss this with the really good gopher trappers. Town Manager Dennis said he and Ray Williams recently met with Mosquito and Vector Control. They offer, free of charge, for their staff to come out to any property and assess for internal and external issues. They do not make recommendations for particular trappers, but they do have a detailed questionnaire of the things you should ask for related to the quality of services. He said the subcommittee, who cannot make specific recommendations, have had positive communications in that community to understand what they offer.

With no further questions, Mayor Hughes invited public comment.

Jon Silver, 355 Portola Road. Mr. Silver said he noticed that the minutes indicate he was opposed to the use of rodenticides, but his view is far more nuanced than that. He said he is concerned about the potential harm from their use and is much less concerned about the technique that's been used for many years for the gophers and moles, where the poison is a lower concentration and very deeply buried. He said he was shocked a few weeks ago to see a vole poison, at 20x the concentration used for gophers, placed in a manner that he could reach down and pull it out of the holes with an adult-sized hand. He said it was colorful and would have been attractive to a toddler and had an aroma attractive to dogs and would presume it would be attractive to coyotes, cats, bobcats, or perhaps raptors and great blue heron. He said safety is the number one concern, both for people playing on the fields and also for the people and beneficial animals that use the fields in any way. He said it is not clear to him that the pilot program would have any way to find out if there are any instances of secondary poisoning of wild animals. He said if one coyote or blue heron or owl is killed, he would expect that liberates a lot of gophers. He said the natural predators take a fair toll on the existing rodent population and we should not use poisons and shoot ourselves in the foot. He said if that data could be gathered, it would be critical to the evaluation of the use of the poisons. He said the evaluation shouldn't just be between poisons and trapping. He said there can also be things that encourage beneficial predators, such as owl boxes. He said it is important to keep the fields safe for people to play on and would think it would be easy enough to fill in open holes with fresh soil. He said if poisons are used, the risk of accidental or secondary poisoning should be very close to zero.

Hearing no additional public comment, Mayor Hughes brought the item back to the Council for discussion.

Councilmember Derwin said she would like to see a phase-out date, based on the research, and would like the Town to talk to some trappers she could recommend. She said it is difficult for her, as a Councilmember, to ask the Town residents to not use rodenticides when they are used on Town properties. She said she understands the issues with the holes in the fields and the safety of the children, but hopes a satisfactory compromise can be found.

Vice Mayor Richards said the only way to know how it can work without the rodenticides is by abandoning them at some point and making an intense effort to trap and patch. He said that the use of rodenticides is convenient but not something that should be used here, especially with the potential of poisoning natural predators.

Councilmember Wengert said longer-term she would like to see a solution that would eliminate rodenticides. She said she is supportive of the beta field; however, she does not want to sacrifice anyone's safety on that softball field. She said it will take time and money, but they need to make sure that field is in the best possible condition. She said she has also dealt with gopher trappers on her property, and it has worked, but it is a native environment and there are lots of holes all over her garden. She is in favor of continuing the pilot through the seasons of this one-year period so they can evaluate and manage the level of damage on the field. She said if it can be managed in a way that does not create additional hazards, and it's a reasonable quality of play and safety, then that's the way to test it.

Mayor Hughes said as this project goes on, if there ends up being problems on the softball field, there is the opportunity to mitigate it, before doing the soccer field. He was in favor of continuing the pilot program to see how it goes, while putting a lot of effort during that time on how to make it work. He said it should be used as a trial program to collect information, and also as a way to try out different experiments to figure out the time and expense requirements.

Councilmember Derwin asked staff to make sure that if they see poison on the surface, they push it down and cover the holes.

Councilmember Wengert said the leagues that use the fields should have an open line to staff to let them know if there is a problem with the fields. Town Manager Dennis said they have close relationships with the various people who manage the leagues and have reached out to them, asking for regular input.

The Council approved continuation of the pilot program from July 1, 2017, through June 30, 2018, to collect data, but agreed that playing fields must be kept safe and in good condition.

(6) Recommendation by Town Manager – Neighborhood Watch Signs

Town Manager Dennis presented the staff recommendations related to Neighborhood Watch signage design and location as described in the staff report.

Mayor Hughes called for questions from Council.

In response to Mayor Hughes's question, Town Manager Dennis said although the dots on the chart show the cross-streets from the arterial roads where the signs will be placed, those signs will not be placed on the arterial roads, but will actually be placed further down the cross streets into the neighborhoods.

Councilmember Derwin asked how many signs the Neighborhood Watch group was proposing. Tom Moran said there has been a change of heart since the last meeting in April and there is now general acceptance of this proposal, although this particular plan is what they call Town-centric. He said the local issues in each neighborhood are not covered. He said of the 16 Neighborhood Watches, 10 do not have signs at their border, and there five signs in places that don't even have Neighborhood Watch. He said they are asking for a neighborhood-centric plan – if they could supplement staff's plan with a neighborhood approach.

Councilmember Derwin asked if the Neighborhood Watch signs were supposed to go in neighborhoods when they have organized and been certified as a Neighborhood Watch neighborhood. Town Manager Dennis said there is no legal requirement to have an organized Neighborhood Watch program to have the Neighborhood Watch sign. He said Council had advised that sign placement not be decided based on where the Neighborhood Watches were currently organized, because then there would be areas of Town that would have no signage and because Neighborhood Watch programs come and go.

In response to Councilmember Wengert's question, Town Manager Dennis said staff's recommendation was based on Council input, as well as input received from various interested parties.

Councilmember Aalfs asked if the Sheriff's Department had any input on the sign placements. Town Manager Dennis said the Sheriff's Department did not provide input on this specific proposal, but they are generally very supportive of Neighborhood Watch signs and would probably like to see more signs.

Councilmember Derwin asked regarding the size of the signs. Town Manager Dennis said staff recommends the two smaller signs. He said the 12" x 18" is a standard "no parking" sized sign, which could work in inner neighborhoods. He said the medium-sized sign (18" x 24") could work on the Town borders, but he said it may not be large enough, taking into consideration that cars come into town at 45 miles per hour, which is why staff also presented the larger 24" x 30" sign for consideration. Mayor Hughes asked if there were any 24" x 30" signs currently in Town. Town Manager Dennis said there were, such as the "Welcome to Portola Valley" sign at Arastradero.

Hearing no further questions, Mayor Hughes invited public comment.

Judy Leckonby, 455 Golden Oak, block captain for the end of Golden Oak near Zots. She said she reached out to her neighborhood and the people who responded are comfortable with the signage layout, but preferred the eye rather than the owl, mostly because of its recognition value. She said she would not be in favor of the large signs. Town Manager Dennis said there is a diversity of opinion and no consensus on the design of the signs.

Tom Moran, a block captain, presented "Town-Centered vs Neighborhood-Centered Approaches to Safety Signage," which was included in the staff packet. He said that "Neighborhood Watch" is a misnomer and misleading because the proposed signs are not associated with neighborhoods but with the Town as a whole. He asked how the objections to some of the locations would be handled. Town Manager Dennis said when he heard any resident objecting to sign placement, he advised putting the objection in writing and sending it to Council or staff, but he didn't receive anything. Mr. Moran said he thought a lifetime implementation was, in general, not a good idea, and the Town should be flexible and adaptive to changes. Mr. Moran said if neighborhoods want to create a pride of identity with a unique sign, they would recommend the Council entertain allowing variances to put up such signs, such as the signs at PV Ranch, the Highlands, Alpine Hills, and Westridge. Mr. Moran said they feel the general fear of too many signs is overblown. He said staff's proposal increases the number of signs in Portola Valley by 2 percent. If they were allowed to add supplemental signs to neighborhoods, it may add another 2 percent, which they don't feel is an inundation of signs in Town.

Mayor Hughes invited questions from the Council.

Councilmember Derwin confirmed with Mr. Moran that his group was in support of the 14 signs, but they also want to be allowed to have individual signs designed by and for their individual neighborhoods. In response to Councilmember Derwin's question, Mr. Moran said, for example, his neighborhood sign might say, "Welcome to Hillbrook. We're on Watch." He said if they didn't have a Neighborhood Watch, they wouldn't add the "We're on Watch" part to the sign. He said that according to the staff plan, they would get a standard Portola Valley Neighborhood Watch sign, but not one specific to their neighborhood.

Mayor Hughes asked if Mr. Moran knew anything about the origin of the individual signs at places such as PV Ranch, Highlands, etc. Mr. Moran did not know. Town Manager Dennis said he doesn't think the Town owns any of those signs and they are not maintained by the Town.

Felicity Barringer, 27 Hillbrook. She said at the Council meeting in April there was discussion that Neighborhood Watches come and go. She said she agreed that no one knows what will happen in the future and she is therefore satisfied with staff's proposal, but said it is important to have a mechanism built in so that this decision can be revisited at a neighborhood's request.

With no other public comment, Mayor Hughes brought the item back to the Council for discussion.

Vice Mayor Richards said he was intrigued by Mr. Moran's suggestion and that it was closer to what he had in mind. He said he is skeptical of the utility of standard Neighborhood Watch signs, other than that they make a neighborhood look like it's probably unsafe. He said he preferred the owl over the more institutional sign, and he would prefer using the medium and small signs in a few spots in Town, with an option for the neighborhoods to present unique designs identifying their neighborhoods. He said this gets more to the real utility of the signs, which is community identity. He suggested putting a few signs at the entrance to Town and let the neighborhoods decide if they want to use more unique signs in their neighborhoods.

Councilmember Derwin said she was thinking along the same lines as Vice Mayor Richards. She supported three signs at Town entrances and allowing organized neighborhoods to apply for individual neighborhood signs, which would be reviewed by ASCC.

Councilmember Wengert said she respected the desire of individual neighborhoods to have their own signs. She said she hopes the signs are done in the Portola Valley style. She said while she does not prefer the sign with the eye, if a neighborhood prefers to use it, they would potentially have that option as well. She said she is reluctant to place 14 signs in places where they are not necessarily needed, nor requested.

Tom Moran asked if signs placed at the ALPRs should indicate the presence of a camera. Town Manager Dennis said there was discussion about specific verbiage, but they wanted to present a consistent sign. He said the signs can be modified based on input from the Council and the public.

Mayor Hughes said he was supportive of heading in the direction of including neighborhood identities in addition to Neighborhood Watch; however, he said he has logistics questions about such things as where neighborhoods begin and end and where signs would be placed designating those neighborhoods. Mr. Moran suggested that could be decided by the neighborhoods.

Councilmember Wengert asked how many neighborhoods would likely be interested in individual signs as suggested by Mr. Moran. Lorrie Duval, Neighborhood Watch Coordinator, said more than a third of Portola Valley residences are now part of Neighborhood Watch teams. She said there are more than 30 teams of residences and 40 block captains. She said Golden Oak Drive has eight teams. She said drawing the lines is difficult. She said she could not guess how many would want individual signs.

Councilmember Wengert asked Ms. Duval if allowing the neighborhoods to choose signs and placement would present more challenges to the Neighborhood Watch program. Ms. Duval said the huge upside of allowing teams to mark their territory is the generation of enthusiasm to keep the program going and building the sense of esprit de corps. She said there are some very active teams and some less active.

Councilmember Derwin asked who would determine where neighborhoods could put their signs, and the aesthetics and design of a sign. Town Manager Dennis said the closest parallel system the Town has in place is the system they use for "not a through street" signs. He said they want at least 50 percent approval from the residents and there is a process where staff goes out and gathers input from residents. He said there can be a set of general parameters around design, materials, and size. He said the

challenge for staff would be determining the parameters of a neighborhood and how to effectively poll people in those neighborhoods to gather the information needed to move forward. He said given the diversity of opinions expressed about location and design, it will likely be an ongoing debate with any proposal staff presents going forward. Mr. Moran suggested that part of the application process for a unique sign could be the requirement that the neighborhood has been polled by the neighborhood coordinators, not Town staff. He suggested the Town provide a few approved signs with that can be tailored, for the convenience of the neighborhoods that don't want to develop their own design. Councilmember Wengert suggested providing the neighborhoods with a choice of two or three standard signs with consistent verbiage and a place for the particular neighborhood's name. Vice Mayor Richards said the option should remain open for people to propose unique designs. Councilmember Derwin agreed and said she'd like to see creative ideas. With regard to the concern about having too many signs, Mr. Moran pointed out that if not a lot of neighborhoods want to do it, it's not an issue, and if a lot of neighborhoods want to participate, having an enthusiastic Town is an interesting problem to have.

The Council approved the installation of medium-sized signs at the three Town entrances at the ALPR locations. Council directed staff to create the parameters of a neighborhood sign and return to Council with a template, approved by the ASCC. Neighborhoods that desire a sign will then be provided the approved template to create signs unique to their neighborhoods.

(7) COUNCIL LIAISON COMMITTEE AND REGIONAL AGENCIES REPORTS

Councilmember Derwin – Attended the July Council of Cities hosted by the City of San Carlos, where the Chronicle Editorial Page Editor discussed the Fate and Challenge of Mainstream Media in the Era of Fake News. Councilmember Derwin and Town Manager Dennis met with three professionals to discuss the idea of how to approach having a community conversation about the increasing number of young men struggling with addiction and depression difficulties. Attended a C/CAG Resource Management and Climate Protection Committee meeting where there was a presentation and update on the Energy Watch programs, a presentation on the Integration of Battery Storage and Intelligent Controls for Resilience Energy Rate Protection, update on water banks, and the solar eclipse's effect on California solar power resources. She attended a C/CAG Finance Committee meeting with Councilmember Wengert.

Councilmember Aalfs -- Attended the August 16th Planning Commission meeting, where they approved the Alpine Hills final CUP. He also attended a Geologic Safety Committee meeting where they revised the fault map up near the top of Willowbrook and Alpine. Town Manager Dennis said they will be knocking on doors of the neighbors to inform them of the map change. Councilmember Aalfs attended the Trails & Paths Committee meeting where they discussed the newly installed bike gate at Toyon Trail.

Councilmember Wengert – Attended the August 14 ASCC meeting where they reviewed three projects. She attended an August 16 San Francisco Roundtable working session meeting that reviewed the FAA report. They went through item by item, with public attendance from various locations. She said Steve Carnes, the FAA representative attended. She said most things on the list are "under evaluation" and they could not answer regarding timing or likely disposition. She said Steve Carnes is retiring from the FAA before their next meeting.

Vice Mayor Richards – Attended the August 10 Cultural Arts Committee meeting where they discussed insuring the Dengler prints as they travel throughout Town. Town Manager Dennis said staff is working on that. Vice Mayor Richards also attended a Conservation Committee special meeting held on August 15, where they discussed The Priory garden, the partial restoration of Spring Down, the invasives in Ford Field, several oak trees along Portola Road with significant pre-die-off near where the paving was done, and their upcoming rodenticide event.

Mayor Hughes – Attended the August 2nd Bicycle, Pedestrian and Traffic Safety Committee meeting where they heard updates on the road projects and Windy Hill parking.

(8) Town Manager Report – Town Manager Dennis reported that staff participated in a half-day EOC training on August 2 and spent the afternoon looking at improving space and storage at Town Hall. He

said he will bring back another Study Session on marijuana-related issues due to recent action at the State level. He met with representatives from SILVAR Realtors to discuss responsibilities brokers may have toward properties that are for sale long-term. He said staff will meet next week with Accela and OpenGov to continue implementation of the software. Class Instructor Kathy Waddell organized a staff appreciation luncheon. Staff held its annual luncheon with the Mayor and Vice Mayor. He said the first-round interviews will be held this Friday for the new communication position and second round interviews are scheduled for next Tuesday.

WRITTEN COMMUNICATIONS [*9:29 p.m.*]

(9) Town Council Digest – July 28, 2017

#6 – Request from California Healthy Workplace Advocates for a Proclamation declaring October 15-21, 2017 as "Freedom from Workplace Bullies Week". This item was placed as a consent item on the next Council agenda.

(10) Town Council Digest – August 4, 2017

#6 – Email from CalWater re: Comments on Release of a new Water Quality Database by the Environmental Working Group. Vice Mayor Richards said he has seen multiple comments online about water quality in Town. Town Manager Dennis noted that staff contacts CalWater directly when they hear about water issues.

(11) Town Council Digest – August 11, 2017

None.

(12) Town Council Digest – August 18, 2017

None.

ADJOURNMENT [*7:31 p.m.*]

Mayor Hughes adjourned the meeting.

_____ _____

Mayor Town Clerk

INVOICE APPROVAL LIST REPORT - DETAIL WITH GL DIST

09/13/2017

Date: 09/07/2017
Time: 12:01 pm
Page: 1

TOWN OF PORTOLA VALLEY

Vendor Name	Invoice Description1	Ref No.	Discount Date	
Vendor Name Line 2	Invoice Description2	PO No.	Pay Date	
Vendor Address	Vendor Number		Due Date	Taxes Withheld
City	Bank	Check No.	Check Date	Discount Amount
State/Province Zip/Postal	Invoice Number			Check Amount

ROBERT ALLEN — Refund Deposit, 211 Nathhorst — 18932 — 09/13/2017 — 09/13/2017
570 — 09/13/2017 — 0.00
BOA — 51893 — 09/13/2017 — 0.00
CA 94028 — 500.00

GL Number	Description	Invoice Amount	Amount Relieved
96-54-4207	Deposit Refunds, Other Charges	500.00	0.00

Check No. 51893 Total: 500.00
Total for ROBERT ALLEN 500.00

AMERICAN DIABETES ASS'N — Refund deposit, Event 6/11/17 — 18933 — 09/13/2017 — 09/13/2017
1970 BROADWAY SUITE 425 — 0087 — 09/13/2017 — 0.00
OAKLAND — BOA — 51894 — 09/13/2017 — 0.00
CA 94612 — 100.00

GL Number	Description	Invoice Amount	Amount Relieved
05-00-2562	Field Deposits	100.00	0.00

Check No. 51894 Total: 100.00
Total for AMERICAN DIABETES ASS'N 100.00

ANIMAL DAMAGE MGMT INC — August Pest Control — 18976 — 09/13/2017 — 09/13/2017
16170 VINEYARD BLVD. #150 — 804 — 09/13/2017 — 0.00
MORGAN HILL — BOA — 51895 — 09/13/2017 — 0.00
CA 95037 — 101238 — 295.00

GL Number	Description	Invoice Amount	Amount Relieved
05-58-4240	Parks & Fields Maintenance	172.50	0.00
05-66-4342	Landscape Supplies & Services	122.50	0.00

Check No. 51895 Total: 295.00
Total for ANIMAL DAMAGE MGMT INC 295.00

ARC — Plan Copies, Paid by Applicant — 18934 — 09/13/2017 — 09/13/2017
P.O. BOX 192224 — 0112 — 09/13/2017 — 0.00
SAN FRANCISCO — BOA — 51896 — 09/13/2017 — 0.00
CA 94119-2224 — 1734541 — 70.40

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4336	Miscellaneous	70.40	0.00

Check No. 51896 Total: 70.40
Total for ARC 70.40

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AT&T (2)	August M/W	18935	09/13/2017 09/13/2017	
P.O. BOX 5025	877		09/13/2017	0.00
CAROL STREAM	BOA	51897	09/13/2017	0.00
IL 60197-5025				66.89

GL Number	Description	Invoice Amount	Amount Relieved
05-52-4152	Emerg Preparedness Committee	66.89	0.00

Check No. 51897 Total: 66.89

Total for AT&T (2) 66.89

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CAPTUREPOINT.COM	Recreation Software, Annual Subscription	18937	09/13/2017 09/13/2017	
PO BOX 628	0611		09/13/2017	0.00
RIDGEWOOD	BOA	51898	09/13/2017	0.00
NJ 07451	VP22389-2			2,749.00

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4311	Internet Service & Web Hosting	2,749.00	0.00

Check No. 51898 Total: 2,749.00

Total for CAPTUREPOINT.COM 2,749.00

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal	Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number	Ref No. / PO No. / Check No.	Discount Date / Pay Date / Due Date / Check Date	Taxes Withheld / Discount Amount / Check Amount
CARDUCCI & ASSOCIATES INC	Landscape Architect Consultant	18986	09/13/2017 09/13/2017	
555 BEACH STREET, FOURTH FLOOR	0344		09/13/2017	0.00
SAN FRANCISCO	BOA	51899	09/13/2017	0.00
CA 94133	9391			2,220.00

GL Number	Description	Invoice Amount	Amount Relieved
05-58-4240	Parks & Fields Maintenance	2,220.00	0.00

Check No. 51899 Total: 2,220.00

Total for CARDUCCI & ASSOCIATES INC 2,220.00

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal	Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number	Ref No. / PO No. / Check No.	Discount Date / Pay Date / Due Date / Check Date	Taxes Withheld / Discount Amount / Check Amount
SUE CHAPUT	Reimbursement, PV Garden Tour	18936	09/13/2017 09/13/2017	
358 ALAMOS ROAD	0266		09/13/2017	0.00
PORTOLA VALLEY	BOA	51900	09/13/2017	0.00
CA 94028				48.95

GL Number	Description	Invoice Amount	Amount Relieved
05-52-4144	Conservation Committee	48.95	0.00

Check No. 51900 Total: 48.95

Total for SUE CHAPUT 48.95

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal	Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number	Ref No. / PO No. / Check No.	Discount Date / Pay Date / Due Date / Check Date	Taxes Withheld / Discount Amount / Check Amount
CHARGEPOINT	2 Charge Station Replacement	18938 00006473	09/13/2017 09/13/2017	
254 E. HACIENDA AVENUE	0648		09/13/2017	0.00
CAMPBELL	BOA	51901	09/13/2017	0.00
CA 95008	42899			6,745.00

GL Number	Description	Invoice Amount	Amount Relieved

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Vendor Name Line 2	Invoice Description2	PO No.	Pay Date	
Vendor Address	Vendor Number		Due Date	Taxes Withheld
City	Bank	Check No.	Check Date	Discount Amount
State/Province Zip/Postal	Invoice Number			Check Amount

GL Number	Description	Invoice Amount	Amount Relieved
05-70-4481	CIP15/16 Equipment	6,745.00	6,000.00

Check No. 51901 Total: 6,745.00

Total for CHARGEPOINT 6,745.00

CITY OF REDWOOD CITY (IT) | July IT Support | 18939 | 09/13/2017 | 09/13/2017

P.O. BOX 3629 | 586 | 09/13/2017 | 0.00
REDWOOD CITY | BOA | 51902 | 09/13/2017 | 0.00
CA 94064 | BR45435 | 2,250.30

GL Number	Description	Invoice Amount	Amount Relieved
05-54-4216	IT & Website Consultants	2,250.30	0.00

Check No. 51902 Total: 2,250.30

Total for CITY OF REDWOOD CITY (IT) 2,250.30

COMCAST | WIFi, 8/21/17 - 9/20/17 | 18940 | 09/13/2017 | 09/13/2017

P.O. BOX 34744 | 0045 | 09/13/2017 | 0.00
SEATTLE | BOA | 51903 | 09/13/2017 | 0.00
WA 98124-1227 | 45.71

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4318	Telephones	45.71	0.00

Check No. 51903 Total: 45.71

Total for COMCAST 45.71

COTTON SHIRES & ASSOC. INC. | June Applicant Charges | 18941 | 09/13/2017 | 09/13/2017

330 VILLAGE LANE | 0047 | 09/13/2017 | 0.00
LOS GATOS | BOA | 51904 | 09/13/2017 | 0.00
CA 95030-7218 | 5,149.59

GL Number	Description	Invoice Amount	Amount Relieved
96-54-4190	Geologist - Charges to Appls	5,149.59	0.00

Check No. 51904 Total: 5,149.59

Total for COTTON SHIRES & ASSOC. INC. 5,149.59

STACIE DOHERTY | Refund Deposit, Event 8/27/17 | 18942 | 09/13/2017 | 09/13/2017

149 CORTE MADERA RD. | 0700 | 09/13/2017 | 0.00
PORTOLA VALLEY | BOA | 51905 | 09/13/2017 | 0.00
CA 94028 | 100.00

GL Number	Description	Invoice Amount	Amount Relieved
05-00-2562	Field Deposits	100.00	0.00

Check No. 51905 Total: 100.00

Total for STACIE DOHERTY 100.00

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RICHARD GIVENS	Refund Deposit, Event 8/19/17	18943	09/13/2017 09/13/2017	
617 VETERANS BLVD, STE. 106	558		09/13/2017	0.00
REDWOOD CITY	BOA	51906	09/13/2017	0.00
CA 94063				100.00

GL Number	Description	Invoice Amount	Amount Relieved
05-00-2562	Field Deposits	100.00	0.00

Check No. 51906 Total: 100.00

Total for RICHARD GIVENS 100.00

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JEANNIE GOLDMAN	Instructor Fees, Summer 2017	18975	09/13/2017 09/13/2017	
741 MANZANITA ROAD	706		09/13/2017	0.00
WOODSIDE	BOA	51907	09/13/2017	0.00
CA 94062				7,271.00

GL Number	Description	Invoice Amount	Amount Relieved
05-58-4246	Instructors & Class Refunds	7,271.00	0.00

Check No. 51907 Total: 7,271.00

Total for JEANNIE GOLDMAN 7,271.00

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GREEN HALO SYSTEMS	Hosting/Access August 2017	18944	09/13/2017 09/13/2017	
521 CHARCOT AVENUE, SUITE 111	0654		09/13/2017	0.00
SAN JOSE	BOA	51908	09/13/2017	0.00
CA 95131	1380			114.00

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4335	Sustainability	114.00	0.00

Check No. 51908 Total: 114.00

Total for GREEN HALO SYSTEMS 114.00

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HALF MOON BAY GRADING & PAVING	Portola Rd Widening SMTA Proj. 2017-PW02, Prog Pmt #1	18989	09/13/2017 09/13/2017	
1780 HIGGINS CANYON ROAD	0350		09/13/2017	0.00
HALF MOON BAY	BOA	51909	09/13/2017	0.00
CA 94019				67,511.41

GL Number	Description	Invoice Amount	Amount Relieved
05-68-4537	SMTA Road Project	20,820.52	0.00
08-68-4537	SMTA Road Project	46,690.89	0.00

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HALF MOON BAY GRADING & PAVING	Portola Road Widening Proj. #2017-PW02, Prog Pmt #2 Aug	18990	09/13/2017 09/13/2017	
1780 HIGGINS CANYON ROAD	0350		09/13/2017	0.00
HALF MOON BAY	BOA	51909	09/13/2017	0.00
CA 94019				60,172.85

GL Number	Description	Invoice Amount	Amount Relieved
05-68-4537	SMTA Road Project	18,557.31	0.00
08-68-4537	SMTA Road Project	41,615.54	0.00

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HALF MOON BAY GRADING & PAVING	Portola Road Widening Proj.	18991	09/13/2017	
	Change Order items		09/13/2017	
1780 HIGGINS CANYON ROAD	0350		09/13/2017	0.00
HALF MOON BAY	BOA	51909	09/13/2017	0.00
CA 94019	5507			9,212.68

GL Number	Description	Invoice Amount	Amount Relieved
05-68-4537	SMTA Road Project	2,841.20	0.00
08-68-4537	SMTA Road Project	6,371.48	0.00

Check No. 51909 Total: 136,896.94

Total for HALF MOON BAY GRADING & PAV 136,896.94

HALLMARK ROOFING	Refund Deposit, 9 Franciscan	18945	09/13/2017	
			09/13/2017	
604 MOUNTAIN VIEW AVE	0182		09/13/2017	0.00
BELMONT	BOA	51910	09/13/2017	0.00
CA 94002				1,000.00

GL Number	Description	Invoice Amount	Amount Relieved
96-54-4205	C&D Deposit	1,000.00	0.00

Check No. 51910 Total: 1,000.00

Total for HALLMARK ROOFING 1,000.00

TIM HALSTEAD	Refund Deposit, Event 8/23/17	18946	09/13/2017	
			09/13/2017	
3199 WAVERLY STREET	0701		09/13/2017	0.00
PALO ALTO	BOA	51911	09/13/2017	0.00
CA 94306				1,000.00

GL Number	Description	Invoice Amount	Amount Relieved
05-00-2561	Community Hall Deposits	1,000.00	0.00

Check No. 51911 Total: 1,000.00

Total for TIM HALSTEAD 1,000.00

HILLYARD, INC	Janitorial Supplies	18947	09/13/2017	
			09/13/2017	
P.O. BOX 843025	531		09/13/2017	0.00
KANSAS CITY	BOA	51912	09/13/2017	0.00
MO 64184-3025	602650709			311.24

GL Number	Description	Invoice Amount	Amount Relieved
05-66-4340	Building Maint Equip & Supp	103.74	0.00
05-66-4341	Community Hall	103.75	0.00
25-66-4340	Building Maint Equip & Supp	103.75	0.00

HILLYARD, INC	Janitorial Supplies	18948	09/13/2017	
			09/13/2017	
P.O. BOX 843025	531		09/13/2017	0.00
KANSAS CITY	BOA	51912	09/13/2017	0.00
MO 64184-3025	602650710			474.13

GL Number	Description	Invoice Amount	Amount Relieved
05-66-4340	Building Maint Equip & Supp	158.04	0.00
05-66-4341	Community Hall	158.05	0.00

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GL Number	Description	Invoice Amount	Amount Relieved
25-66-4340	Building Maint Equip & Supp	158.04	0.00

Check No. 51912 Total: 785.37

Total for HILLYARD, INC 785.37

HORIZON | Field Fertilizer/Supplies | 18977 | 09/13/2017 / 09/13/2017
P.O. BOX 52758 | 0289 | 09/13/2017 | 0.00
PHOENIX | BOA | 51913 | 09/13/2017 | 0.00
AZ 85072-2758 | 1N313408, 1N312366 | 596.65

GL Number	Description	Invoice Amount	Amount Relieved
05-58-4240	Parks & Fields Maintenance	596.65	0.00

Check No. 51913 Total: 596.65

Total for HORIZON 596.65

INTEGRAL GROUP, INC. | HVAC Assessment | 18981 | 09/13/2017 / 09/13/2017
427 - 13TH STREET | 1369 | 09/13/2017 | 0.00
OAKLAND | BOA | 51914 | 09/13/2017 | 0.00
CA 94612 | 11089 | 1,836.00

GL Number	Description	Invoice Amount	Amount Relieved
05-66-4346	Mechanical Sys Maint & Repair	1,836.00	0.00

Check No. 51914 Total: 1,836.00

Total for INTEGRAL GROUP, INC. 1,836.00

INTERSTATE TRAFFIC CNTRL | Custom Neighborhood Watch Sign | 18978 | 09/13/2017 / 09/13/2017
1700 INDUSTRIAL ROAD, STE B | 564 | 09/13/2017 | 0.00
SAN CARLOS | BOA | 51915 | 09/13/2017 | 0.00
CA 94070 | 220322, 220323 | 203.29

GL Number	Description	Invoice Amount	Amount Relieved
20-60-4268	Street Signs & Striping	203.29	0.00

Check No. 51915 Total: 203.29

Total for INTERSTATE TRAFFIC CNTRL 203.29

J.W. ENTERPRISES | Portable Lavs, 8/31-9/27/17 | 18979 | 09/13/2017 / 09/13/2017
1689 MORSE AVE | 829 | 09/13/2017 | 0.00
VENTURA | BOA | 51916 | 09/13/2017 | 0.00
CA 93003 | 202786 | 242.40

GL Number	Description	Invoice Amount	Amount Relieved
05-58-4244	Portable Lavatories	242.40	0.00

Check No. 51916 Total: 242.40

Total for J.W. ENTERPRISES 242.40

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KUTZMANN & ASSOCIATES	July Plan Check Svcs.	18949	09/13/2017 09/13/2017	
39355 CALIFORNIA STREET	0090		09/13/2017	0.00
FREMONT	BOA	51917	09/13/2017	0.00
CA 94538				10,883.75

GL Number	Description	Invoice Amount	Amount Relieved
05-54-4200	Plan Check Services	10,883.75	0.00

Check No. 51917 Total: 10,883.75

Total for KUTZMANN & ASSOCIATES 10,883.75

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LADERA GARDEN CENTER	Flower Arrangement, Haskell Family	18950	09/13/2017 09/13/2017	
3130 LADERA COUNTRY SHOPPER	0490		09/13/2017	0.00
PORTOLA VALLEY	BOA	51918	09/13/2017	0.00
CA 94028	14465			90.00

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4336	Miscellaneous	90.00	0.00

Check No. 51918 Total: 90.00

Total for LADERA GARDEN CENTER 90.00

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LCC PENINSULA DIVISION	Dinner/Mtg, Derwin	18951	09/13/2017	
ATTN: Debbie Bretschneider			09/13/2017	
CITY OF SO. SAN FRANCISCO	623		09/13/2017	0.00
SO. SAN FRANCISCO	BOA	51919	09/13/2017	0.00
CA 95070				55.00

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4327	Educ/Train: Council & Commissn	55.00	0.00

Check No. 51919 Total: 55.00

Total for LCC PENINSULA DIVISION 55.00

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NANCY LUND	Reimbursement, Literature/Doc Storage	18952	09/13/2017 09/13/2017	
240 GOLDEN HILLS	0241		09/13/2017	0.00
PORTOLA VALLEY	BOA	51920	09/13/2017	0.00
CA 94028				45.36

GL Number	Description	Invoice Amount	Amount Relieved
05-52-4154	Historic Resources Committee	45.36	0.00

Check No. 51920 Total: 45.36

Total for NANCY LUND 45.36

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NICHOLAS MCKEOWN	Refund Deposit, 8/13/17	18953	09/13/2017 09/13/2017	
8 BUCK MEADOW DRIVE	0702		09/13/2017	0.00
PORTOLA VALLEY	BOA	51921	09/13/2017	0.00
CA 94028				100.00

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Vendor Address	Vendor Number		Due Date	Taxes Withheld
City	Bank	Check No.	Check Date	Discount Amount
State/Province Zip/Postal	Invoice Number			Check Amount

GL Number	Description	Invoice Amount	Amount Relieved
05-00-2562	Field Deposits	100.00	0.00

Check No. 51921 Total: 100.00

Total for NICHOLAS MCKEOWN 100.00

BRIAN MELTON | Refund Deposit, 40 Antonio Ct. | 18954 | 09/13/2017 | 09/13/2017

40 ANTONIO COURT | 0651 | 09/13/2017 | 0.00
PORTOLA VALLEY | BOA | 51922 | 09/13/2017 | 0.00
CA 94028 | | | | 3,423.70

GL Number	Description	Invoice Amount	Amount Relieved
96-54-4207	Deposit Refunds, Other Charges	3,423.70	0.00

Check No. 51922 Total: 3,423.70

Total for BRIAN MELTON 3,423.70

JOHN NOONE | Refund Deposit, Event 8/26/17 | 18956 | 09/13/2017 | 09/13/2017

7628 WEST HILL LANE | 0703 | 09/13/2017 | 0.00
CUPERTINO | BOA | 51923 | 09/13/2017 | 0.00
CA 95014 | | | | 100.00

GL Number	Description	Invoice Amount	Amount Relieved
05-00-2562	Field Deposits	100.00	0.00

Check No. 51923 Total: 100.00

Total for JOHN NOONE 100.00

NOLTE ASSOCIATES, INC. NV5 | Portola Rd., Resurf Proj 2017 Inspections | 18955 | 09/13/2017 | 09/13/2017

P.O. BOX 74008680 | 0104 | 09/13/2017 | 0.00
CHICAGO | BOA | 51924 | 09/13/2017 | 0.00
IL 89193-3243 | 68863 | | | 10,563.50

GL Number	Description	Invoice Amount	Amount Relieved
05-68-4544	CIP16/17 Street Resurface	10,563.50	0.00

NOLTE ASSOCIATES, INC. NV5 | June Applicant Charges | 18988 | 09/13/2017 | 09/13/2017

P.O. BOX 74008680 | 0104 | 09/13/2017 | 0.00
CHICAGO | BOA | 51924 | 09/13/2017 | 0.00
IL 89193-3243 | | | | 7,754.50

GL Number	Description	Invoice Amount	Amount Relieved
96-54-4194	Engineer - Charges to Appls	7,754.50	0.00

Check No. 51924 Total: 18,318.00

Total for NOLTE ASSOCIATES, INC. NV5 18,318.00

PLATINUM FACILITY SERVICES | Library Carpet Cleaning | 18982 | 09/13/2017 | 09/13/2017

1530 OAKLAND RD., #150 | 402 | 09/13/2017 | 0.00
SAN JOSE | BOA | 51925 | 09/13/2017 | 0.00
CA 95112 | 29335 | | | 245.00

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GL Number	Description	Invoice Amount	Amount Relieved
25-66-4344	Janitorial Services	245.00	0.00

PLATINUM FACILITY SERVICES — August Janitorial — 18987 — 09/13/2017 — 09/13/2017
1530 OAKLAND RD., #150 — 402 — 09/13/2017 — 0.00
SAN JOSE — BOA — 51925 — 09/13/2017 — 0.00
CA 95112 — 29140R — 4,903.13

GL Number	Description	Invoice Amount	Amount Relieved
05-66-4341	Community Hall	1,203.35	0.00
05-66-4344	Janitorial Services	2,467.64	0.00
25-66-4344	Janitorial Services	1,232.14	0.00

Check No. 51925 Total: 5,148.13

Total for PLATINUM FACILITY SERVICES 5,148.13

ELOISE POLLOCK — Refund Deposit, Event 8/26/17 — 18957 — 09/13/2017 — 09/13/2017
6 WOODFERN STREET — 0704 — 09/13/2017 — 0.00
PORTOLA VALLEY — BOA — 51926 — 09/13/2017 — 0.00
CA 94028 — 1,350.00

GL Number	Description	Invoice Amount	Amount Relieved
05-00-2561	Community Hall Deposits	1,350.00	0.00

Check No. 51926 Total: 1,350.00

Total for ELOISE POLLOCK 1,350.00

CYNTHIA RICHARDSON — July Planning Consult Svcs. — 18958 — 09/13/2017 — 09/13/2017
dba Richardson Consulting
24 CAMPBELL LANE — 1250 — 09/13/2017 — 0.00
MENLO PARK — BOA — 51892 — 09/13/2017 — 0.00
CA 94025 — 7,927.50

GL Number	Description	Invoice Amount	Amount Relieved
05-54-4196	Planner	1,050.00	0.00
96-54-4198	Planner - Charges to Appls	6,877.50	0.00

Check No. 51892 Total: 7,927.50 H

CYNTHIA RICHARDSON — August Planning Consult Svcs — 18959 — 09/13/2017 — 09/13/2017
dba Richardson Consulting
24 CAMPBELL LANE — 1250 — 09/13/2017 — 0.00
MENLO PARK — BOA — 51927 — 09/13/2017 — 0.00
CA 94025 — 9,712.50

GL Number	Description	Invoice Amount	Amount Relieved
05-54-4196	Planner	787.50	0.00
96-54-4198	Planner - Charges to Appls	8,925.00	0.00

Check No. 51927 Total: 9,712.50

Total for CYNTHIA RICHARDSON 17,640.00

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TOWN OF PORTOLA VALLEY

Vendor Name	Invoice Description1	Ref No.	Discount Date	
Vendor Name Line 2	Invoice Description2	PO No.	Pay Date	
Vendor Address	Vendor Number		Due Date	Taxes Withheld
City	Bank	Check No.	Check Date	Discount Amount
State/Province Zip/Postal	Invoice Number			Check Amount

RON RAMIES AUTOMOTIVE, INC. — July Fuel Statement — 18960 — 09/13/2017 — 09/13/2017
115 PORTOLA ROAD — 422 — 09/13/2017 — 0.00
PORTOLA VALLEY — BOA — 51928 — 09/13/2017 — 0.00
CA 94028 — 336.89

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4334	Vehicle Maintenance	336.89	0.00

Check No. 51928 Total: 336.89
Total for RON RAMIES AUTOMOTIVE, INC. 336.89

ROTO-ROOTER PLUMBERS — Mainline Clean-out, Maint Bldg — 18983 — 09/13/2017 — 09/13/2017
5672 COLLECTION CENTER DR — 360 — 09/13/2017 — 0.00
CHICAGO — BOA — 51929 — 09/13/2017 — 0.00
IL 60693 — 19319717045 — 524.00

GL Number	Description	Invoice Amount	Amount Relieved
05-66-4346	Mechanical Sys Maint & Repair	524.00	0.00

Check No. 51929 Total: 524.00
Total for ROTO-ROOTER PLUMBERS 524.00

RR DONNELLEY — Various Bus Cards/Envelopes — 18961 — 09/13/2017 — 09/13/2017
PO BOX 932721 — 582 — 09/13/2017 — 0.00
CLEVELAND — BOA — 51930 — 09/13/2017 — 0.00
OH 44193 — 854.85

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4308	Office Supplies	854.85	0.00

Check No. 51930 Total: 854.85
Total for RR DONNELLEY 854.85

SAN MATEO SHERIFF — FY 17-18 Law Enforcement Qtr 1 — 18962 — 09/13/2017
OFFICE OF EMERGENCY SERVICES — 09/13/2017
400 COUNTY CENTER — 0119 — 09/13/2017 — 0.00
REDWOOD CITY — BOA — 51931 — 09/13/2017 — 0.00
CA 94063-0978 — 10824 — 255,490.25

GL Number	Description	Invoice Amount	Amount Relieved
05-62-4282	San Mateo County Sheriff's Ofc	255,490.25	0.00

Check No. 51931 Total: 255,490.25
Total for SAN MATEO SHERIFF 255,490.25

EDWARD SCREVEN — Refund Deposit, 188 Georgia Ln — 18963 — 09/13/2017 — 09/13/2017
188 GEORGIA LANE — 0705 — 09/13/2017 — 0.00
PORTOLA VALLEY — BOA — 51932 — 09/13/2017 — 0.00
CA 94028 — 1,796.40

GL Number	Description	Invoice Amount	Amount Relieved

Vendor Name	Invoice Description1	Ref No.	Discount Date	
Vendor Name Line 2	Invoice Description2	PO No.	Pay Date	
Vendor Address	Vendor Number		Due Date	Taxes Withheld
City	Bank	Check No.	Check Date	Discount Amount
State/Province Zip/Postal	Invoice Number			Check Amount

GL Number	Description	Invoice Amount	Amount Relieved
96-54-4207	Deposit Refunds, Other Charges	1,796.40	0.00

Check No. 51932 Total: 1,796.40

Total for EDWARD SCREVEN 1,796.40

STANDARD INSURANCE CO. | July Ltd/Life Premium | 18964 | 09/13/2017 | 09/13/2017
PO BOX 5676 | 0469 | | 09/13/2017 | 0.00
PORTLAND | BOA | 51933 | 09/13/2017 | 0.00
OR 97228 | | | | 579.23

GL Number	Description	Invoice Amount	Amount Relieved
05-50-4091	Long Term Disability Insurance	579.23	0.00

Check No. 51933 Total: 579.23

Total for STANDARD INSURANCE CO. 579.23

STAPLES CREDIT PLAN | Office Supplies, 7/12-8/4/17 | 18965 | 09/13/2017 | 09/13/2017
DEPT. 31 - 0000306219 | 430 | | 09/13/2017 | 0.00
PHOENIX | BOA | 51934 | 09/13/2017 | 0.00
AZ 85062-8004 | | | | 270.96

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4308	Office Supplies	270.96	0.00

Check No. 51934 Total: 270.96

Total for STAPLES CREDIT PLAN 270.96

STATE COMP INSURANCE FUND | August Premium | 18966 | 09/13/2017 | 09/13/2017
PO BOX 748170 | 0122 | | 09/13/2017 | 0.00
LOS ANGELES | BOA | 51935 | 09/13/2017 | 0.00
CA 90074-8170 | | | | 3,152.17

GL Number	Description	Invoice Amount	Amount Relieved
05-50-4094	Worker's Compensation	3,152.17	0.00

Check No. 51935 Total: 3,152.17

Total for STATE COMP INSURANCE FUND 3,152.17

RAMESH SUBRAMONIAN | Refund Deposit, 20 Russell Ave | 18967 | 09/13/2017 | 09/13/2017
20 RUSSELL AVENUE` | 0706 | | 09/13/2017 | 0.00
PORTOLA VALLEY | BOA | 51936 | 09/13/2017 | 0.00
CA 94028 | | | | 3,809.16

GL Number	Description	Invoice Amount	Amount Relieved
96-54-4207	Deposit Refunds, Other Charges	3,809.16	0.00

Check No. 51936 Total: 3,809.16

Total for RAMESH SUBRAMONIAN 3,809.16

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal	Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number	Ref No. / PO No. / Check No.	Discount Date / Pay Date / Due Date / Check Date	Taxes Withheld / Discount Amount / Check Amount
THERMAL MECHANICAL, INC	Quarterly PM Service, July '17	18980	09/13/2017 09/13/2017	
425 ALDO AVENUE	955		09/13/2017	0.00
SANTA CLARA	BOA	51937	09/13/2017	0.00
CA 95054	70366			1,539.00

GL Number	Description	Invoice Amount	Amount Relieved
05-66-4341	Community Hall	513.00	0.00
05-66-4346	Mechanical Sys Maint & Repair	513.00	0.00
25-66-4346	Mechanical Sys Maint & Repair	513.00	0.00

Check No. 51937 Total: 1,539.00

Total for THERMAL MECHANICAL, INC 1,539.00

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal	Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number	Ref No. / PO No. / Check No.	Discount Date / Pay Date / Due Date / Check Date	Taxes Withheld / Discount Amount / Check Amount
TOTLCOM, INC.	Annual Service Contract, 10/1/17 - 9/30/18	18968	09/13/2017 09/13/2017	
65 HANGAR WAY	349		09/13/2017	0.00
WATSONVILLE	BOA	51938	09/13/2017	0.00
CA 95076	259977			803.00

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4312	Office Equipment	803.00	0.00

Check No. 51938 Total: 803.00

Total for TOTLCOM, INC. 803.00

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal	Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number	Ref No. / PO No. / Check No.	Discount Date / Pay Date / Due Date / Check Date	Taxes Withheld / Discount Amount / Check Amount
TOWNSEND MGMT, INC	March Pre-Con Svcs, Portola Rd Shoulder Widening Project	18984	09/13/2017 09/13/2017	
P.O. BOX 24442	609		09/13/2017	0.00
SAN FRANCISCO	BOA	51939	09/13/2017	0.00
CA 94124	200183-03-17			1,671.00

GL Number	Description	Invoice Amount	Amount Relieved
05-68-4537	SMTA Road Project	515.34	0.00
08-68-4537	SMTA Road Project	1,155.66	0.00

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal	Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number	Ref No. / PO No. / Check No.	Discount Date / Pay Date / Due Date / Check Date	Taxes Withheld / Discount Amount / Check Amount
TOWNSEND MGMT, INC	2016-17 Annual Street Resurf Project Pre-Con Svcs, March 17	18985	09/13/2017 09/13/2017	
P.O. BOX 24442	609		09/13/2017	0.00
SAN FRANCISCO	BOA	51939	09/13/2017	0.00
CA 94124	200182-03-17			4,730.00

GL Number	Description	Invoice Amount	Amount Relieved
05-68-4544	CIP16/17 Street Resurface	4,730.00	0.00

Check No. 51939 Total: 6,401.00

Total for TOWNSEND MGMT, INC 6,401.00

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal	Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number	Ref No. / PO No. / Check No.	Discount Date / Pay Date / Due Date / Check Date	Taxes Withheld / Discount Amount / Check Amount
VERIZON WIRELESS	August Statement	18969	09/13/2017 09/13/2017	
P.O. BOX 660108	0131		09/13/2017	0.00
DALLAS	BOA	51940	09/13/2017	0.00
TX 75266-0108	9791652266			282.83

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4318	Telephones	282.83	0.00

Vendor Name / Vendor Name Line 2 / Vendor Address / City / State/Province Zip/Postal | Invoice Description1 / Invoice Description2 / Vendor Number / Bank / Invoice Number | Ref No. / PO No. / Check No. | Discount Date / Pay Date / Due Date / Check Date | Taxes Withheld / Discount Amount / Check Amount

Check No. 51940 Total: 282.83
Total for VERIZON WIRELESS 282.83

VIDEO VOICE DATA COMMUNICATION | EV Charge Station Install | 18970 | 09/13/2017 / 09/13/2017
12681 PALA DRIVE | 0707 | 09/13/2017 | 0.00
GARDEN GROVE | BOA | 51941 | 09/13/2017 | 0.00
CA 92841 | 17203EVP | 1,700.00

GL Number	Description	Invoice Amount	Amount Relieved
05-70-4481	CIP15/16 Equipment	1,700.00	0.00

Check No. 51941 Total: 1,700.00
Total for VIDEO VOICE DATA COMMUNICA 1,700.00

KATHY WADDELL | Instructor Fees, Summer 2017 | 18971 | 09/13/2017 / 09/13/2017
460 CERVANTES ROAD | 1354 | 09/13/2017 | 0.00
PORTOLA VALLEY | BOA | 51942 | 09/13/2017 | 0.00
CA 94028 | 2,552.00

GL Number	Description	Invoice Amount	Amount Relieved
05-58-4246	Instructors & Class Refunds	2,552.00	0.00

Check No. 51942 Total: 2,552.00
Total for KATHY WADDELL 2,552.00

WOODSIDE FIRE PROTECTION DISTR | 2017-18 Chipper Program | 18972 | 09/13/2017 / 09/13/2017
808 PORTOLA ROAD | 709 | 09/13/2017 | 0.00
PORTOLA VALLEY | BOA | 51943 | 09/13/2017 | 0.00
CA 94028 | PV-Chipper2017 | 26,890.00

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4333	Fire Prevention	25,290.00	0.00
08-56-4221	ABAG Risk Mgmt Programs	1,600.00	0.00

WOODSIDE FIRE PROTECTION DISTR | Rapid Notify Program 2017 | 18973 | 09/13/2017 / 09/13/2017
808 PORTOLA ROAD | 709 | 09/13/2017 | 0.00
PORTOLA VALLEY | BOA | 51943 | 09/13/2017 | 0.00
CA 94028 | PV-Rapid 2017 | 2,683.35

GL Number	Description	Invoice Amount	Amount Relieved
05-64-4333	Fire Prevention	2,683.35	0.00

Check No. 51943 Total: 29,573.35
Total for WOODSIDE FIRE PROTECTION DI 29,573.35

WOODSIDE PRIORY | Refund Deposit, 302 Portola | 18974 | 09/13/2017 / 09/13/2017
302 PORTOLA ROAD | 0230 | 09/13/2017 | 0.00
PORTOLA VALLEY | BOA | 51944 | 09/13/2017 | 0.00
CA 94028 | 10,000.00

INVOICE APPROVAL LIST REPORT - DETAIL WITH GL DIST

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TOWN OF PORTOLA VALLEY

Vendor Name	Invoice Description1	Ref No.	Discount Date	
Vendor Name Line 2	Invoice Description2	PO No.	Pay Date	
Vendor Address	Vendor Number		Due Date	Taxes Withheld
City	Bank	Check No.	Check Date	Discount Amount
State/Province Zip/Postal	Invoice Number			Check Amount

GL Number	Description	Invoice Amount	Amount Relieved	
96-54-4207	Deposit Refunds, Other Charges	10,000.00	0.00	

Check No. 51944 Total: 10,000.00

Total for WOODSIDE PRIORY 10,000.00

Total Invoices: 60

Grand Total:	547,205.52
Less Credit Memos:	0.00
Net Total:	547,205.52
Less Hand Check Total:	7,927.50
Outstanding Invoice Total:	539,278.02

TOWN OF PORTOLA VALLEY

Warrant Disbursement Journal
September 13, 2017

Claims totaling $547,205.52 having been duly examined by me and found to be correct are hereby approved and verified by me as due bills against the Town of Portola Valley.

Date_____ _____
Jeremy Dennis, Treasurer

Motion having been duly made and seconded, the above claims are hereby approved and allowed for payment.

Signed and sealed this (Date) _____

_____ _____
Sharon Hanlon, Town Clerk Mayor

Proclamation of the Portola Valley Town Council
Declaring October 15 – October 21, 2017
"Freedom from Workplace Bullies Week"

WHEREAS, the Town of Portola Valley has an interest in promoting the social and economic well-being of its citizens, employees and employers; and

WHEREAS, that well-being depends upon the existence of healthy and productive employees working in safe and abuse-free environments; and

WHEREAS, research has documented the stress-related health consequences for individuals caused by exposure to abusive work environments; and

WHEREAS, abusive work environments are costly to employers with consequences including reduced productivity, absenteeism, turnover, and injuries; and

WHEREAS, protection from abusive work environments should apply to every worker, and not limited to legally protected class status based only on race, color, gender, national origin, age, or disability;

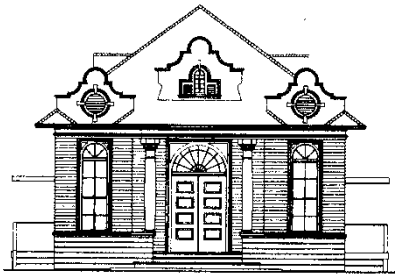
NOW, **THEREFORE**, **BE IT RESOLVED,** that the Mayor and Council of the Town of Portola Valley hereby proclaim October 15 - 21, 2017 "Freedom from Workplace Bullies Week" and commends the California Healthy Workplace Advocates and the Workplace Bullying Institute, which raise awareness of the impacts of, and solutions for, workplace bullying in the U.S.; and encourages all citizens to recognize this special observance.

WITNESS MY HAND AND THE SEAL OF THE TOWN OF PORTOLA VALLEY on this 13th day of September, 2017.

_____
Mayor

Attest:

_____
Town Clerk



TOWN OF PORTOLA VALLEY
STAFF REPORT

TO: Mayor and Members of the Town Council

FROM: Debbie Pedro, Planning Director

DATE: September 13, 2017

RE: Resolution Authorizing a Cooperation Agreement with the County of San Mateo for Participation in the Urban County for Community Development Block Grant (CDBG) Funding

(Link to attachments page)

RECOMMENDATION

Staff recommends that the Town Council adopt the attached Resolution authorizing a Cooperation Agreement with the County of San Mateo for participation in the Urban County for Community Development Block Grant (CDBG) Funding.

BACKGROUND

The Housing and Community Development Act of 1974 provides for the distribution of federal funds to eligible public entities. Eligible public entities include cities with a population over 50,000 and urban counties. Cities with over 50,000 population can apply directly to HUD as Entitlement cities. Cities under 50,000 population can include their population in the Urban County and thereby participate in CDBG programs

Since 1996, the Town of Portola Valley has participated in the San Mateo County Urban County Program for non-entitlement jurisdictions to access CDBG funding. The Cooperation Agreement automatically renews every three years. In August 2017, HUD notified the County that it needed to make certain changes to its cooperation agreements with non-entitlement cities to requalify as an Urban County. HUD is requiring the County and participating cities in the Urban County to execute a new Cooperation Agreement and for each jurisdiction to adopt a resolution to authorize the execution of the new Agreement by September 21, 2017.

DISCUSSION

The changes made to the Cooperation Agreement are noted in bold (Attachment 2) and predominantly describe new sections of federal law, prohibiting transfers of CDBG funds to other agencies, and including the Emergency Solutions Grant (ESG) program in the Cooperation Agreement.

With a population under 50,000, Portola Valley is considered a “non-entitlement” city and does not qualify for its own allocation of HUD funding. By continuing this relationship with the County, income eligible homeowners in Portola Valley will be able to access the County’s Housing and Community Development Programs including CDBG, HOME, and ESG and the County can maximize the federal funding it receives as an Urban County.

FISCAL IMPACT
None.

ATTACHMENTS
1. Resolution
2. 2017 CDBG Cooperation Agreement
3. Letter from County of San Mateo Department of Housing dated August 8, 2017
4. Cooperation Agreement dated July 9, 1996

Approved by: Jeremy Dennis, Town Manager

RESOLUTION NO. _____-2017

RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF PORTOLA VALLEY AUTHORIZING EXECUTION OF A COOPERATIVE AGREEMENT WITH THE COUNTY OF SAN MATEO WHICH PERMITS THE TOWN'S PARTICIPATION IN THE COUNTY'S HOUSING AND COMMUNITY DEVELOPMENT PROGRAM

WHEREAS, the Housing and Community Development Act of 1974, as amended ("Act"), provides for the distribution of federal funds through the process of Community Development Block Grants to eligible public entities; and

WHEREAS, those public entities which are eligible to receive said funds are cities with population in excess of 50,000, "hold harmless" public entities, and urban counties; and

WHEREAS, public entities that do not otherwise come within the definition of an eligible public agency may cooperate and participate with an eligible public entity such as an Urban County; and

WHEREAS, the Town of Portola Valley has previously entered into a Cooperative Agreement with San Mateo County for participation in the Housing and Community Development Program; and

WHEREAS, the Cooperation Agreement has renewed automatically every three years since its initial execution; and

WHEREAS, the U.S. Department of Housing and Urban Development ("HUD") notified the County in August 2017 that certain changes were needed to the existing Cooperation Agreements between the County and non-entitlement cities in order to requalify as an Urban County; and

WHEREAS, the Town of Portola Valley desire to continue its participation in the Housing and Community Development Program;

NOW, THEREFORE, the Town Council of the Town does RESOLVE as follows:

That the Cooperative Agreement with San Mateo County is hereby approved, and the mayor is hereby authorized and directed to execute said agreement for and on behalf of the Town of Portola Valley.

PASSED AND ADOPTED this 6th day of September, 2017.

By: _____
Mayor

ATTEST:

_____
Town Clerk

COOPERATION AGREEMENT

This AGREEMENT, entered into this _____ day of _____, 2017, between the COUNTY OF SAN MATEO, a political subdivision of the State of California ("COUNTY"), and the Town of Portola Valley, a duly incorporated City within the County of San Mateo ("CITY"),

WITNESSETH

WHEREAS, the Housing and Community Development Act of 1974, as amended ("Act"), provides for the distribution of federal funds through the process of Community Development Block Grants to eligible public entities; and

WHEREAS, those public entities which are eligible to receive said funds are cities with a population in excess of 50,000, "hold harmless" public entities, and urban counties; and

WHEREAS, public entities that do not otherwise come within the definition of an eligible public agency may cooperate and participate with an eligible public entity such as an urban county; and

WHEREAS, the County of San Mateo has heretofore qualified as an urban county under the Act, the County again solicits the cooperation and co-participation of public entities such as City in its application for federal assistance under the Act for the Federal Fiscal Years 2018, 2019 and 2020 and subsequent three-year periods thereafter; and

WHEREAS, City, having a population of less than 50,000, desires to cooperate and co-participate with County in this venture; and

WHEREAS, a Cooperation Agreement by and between City and County establishes the formal relationship to cooperate and co-participate and is specifically authorized under the provisions of Government Code Section 6502 and 26227; and

WHEREAS, County is in receipt of a communication from the United States Department of Housing and Urban Development, ("HUD"), with regard to requisites which must be included in said Cooperation Agreement and which further stated that the same must be completed and submitted by September 21, 2017; and

WHEREAS, City has previously, by an official act of pronouncement expressed its intent and desire to cooperate and participate with County in its plan application and to engage in housing and community development activities within its incorporated limits thereunder; and

WHEREAS, City understands that in becoming part of the Urban County, City automatically participates in the HOME and ESG Programs, which provide eligible local jurisdictions with federal funds for affordable housing activities; and

WHEREAS, City now desires to enter into this Cooperation Agreement ("Agreement") with the

County of San Mateo so that it may qualify, under applicable provisions of the Act and HUD regulations, as co-participant with County ineligible activities under the Act:

NOW, THEREFORE, IN CONSIDERATION OF THE FOREGOING, the parties hereto agree as follows:

1. **Purpose:**
   County and City agree to cooperate to undertake, or assist in undertaking, community renewal and lower income housing assistance activities, specifically urban renewal and publicly assisted housing; economic development, neighborhood facilities, housing rehabilitation, and other appropriate housing assistance to primarily benefit lower and moderate income people. 'This Agreement includes participation in the Community Development Block Grant (CDBG), the HOME Investment Partnerships Program and the Emergency Solutions Grant (ESG) Program.

2. **Term:**
   The term of this Agreement shall be for Federal Fiscal Year 2018, 2019 and 2020 after which the term shall be automatically renewed unless action is taken by the City to terminate this Agreement. As provided by HUD rules and regulations, this Agreement shall automatically be renewed for participation in successive three-year qualification periods, unless County or City provides written notice it elects not to participate in a new qualification period, provided however, that this Agreement shall remain in effect until CDBG, HOME and ESG funds and income received with respect to the three-year qualification period are expended and the funded activities completed. County and City cannot terminate or withdraw from this Agreement while the Agreement remains in effect. The County and City may not withdraw from this Agreement prior to expiration of Federal Fiscal Year 2020.

   By the date specified in HUD's Urban County Qualification Notice for a subsequent qualification period, County will notify City in writing of its right not to participate. Should there be changes necessary to meet the requirements for cooperation agreements set forth in the Urban County Qualification Notice applicable for a subsequent three-year urban county qualification period, amendment(s) to this Agreement shall be executed between County and City. Such amendment(s) shall be submitted to HUD; failure to do so will void the automatic renewal of such qualification period.

3. **Applicant Responsibility**
   a. County, as applicant, has ultimate responsibility for execution of the community development program, for following its Consolidated Plan, which provides for an analysis of housing and non-housing community development needs of the geographic area, and for meeting the requirements of other applicable laws, including but not limited to the National Environmental Policy Act, Uniform Relocation Act, Fair Housing Act, Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Section 109 of the Housing and Community Development Act of 1974, and the Americans with Disabilities Act of 1990.

County is the lead agent for carrying out the Urban County CDBG Program and for the ESG Program. The Urban County, as a CDBG entitlement jurisdiction, qualifies to receive its own allocation of federal HOME funds. However, to increase HOME funding access to the County overall, County has formed the San Mateo County HOME Consortium, of which the Urban County is a member.

County is also the lead agent for the HOME Consortium. The HOME Consortium is technically responsible for preparing and submitting to HUD the Consolidated Plan which covers the geographic area of the Consortium. The Urban County is responsible for submitting its own non-housing community development plan, an Action Plan, and required certifications as part of the Consortium's Consolidated Plan. As lead agent for the Urban County and the HOME Consortium, County is responsible for coordinating Consolidated Planning activities, including providing assurances or certifications to HUD.

Therefore, County requires City, and City agrees **to cooperate to undertake, or assist in undertaking community renewal and lower-income housing assistance activities** and to strict adherence to the Consolidated Plan as approved, and to all assurances and certifications provided, including agreeing to take all actions necessary to assure compliance with the Urban County's certifications under Sections 104(b) of Title I of the Housing and Community Development Act of 1974, as amended, including Title VI of the Civil Rights Act of 1964, the Fair Housing Act, **and affirmatively furthering fair housing. See 24 CFR 91.221(a)** and to comply with section 109 of Title I of the Housing and Community Development Act of 1974, **which incorporates Section 504 of the Rehabilitation Act of 1973 and the Age Discrimination Act of 1975. The County requires the City and the City agrees to comply with all other applicable laws.**

This Agreement shall also prohibit the Urban County from funding activities in or in support of, any cooperating unit of general local government that does not affirmatively further fair housing within its own jurisdiction or that impedes the County's actions to comply with their own fair housing certification. This provision is required because noncompliance by a unit of general local government included in an urban county may constitute noncompliance by the grantee (i.e. the Urban County) that can, in turn, provide cause for funding sanctions or other remedial actions by the Department.

County shall not provide CDBG, HOME or ESG funds for activities in, or in support of, any cooperating city that does not affirmatively further fair housing within its own jurisdiction or for activities that impede the County's actions to comply with its fair housing certification. In addition, County and City are responsible for taking all required actions to comply with the provisions of the National Environmental Policy Act of 1969.

b. Further, pursuant to 24 CFR 570.501(b), County, as applicant, has the responsibility for ensuring that CDBG, HOME and ESG funds are used in accordance with all

program requirements, for determining the adequacy of performance under agreements and procurement contracts, and for taking appropriate action when performance problems arise. Therefore, before disbursing any CDBG, HOME or ESG funds to City or projects in the City, County will require City, and City agrees to enter into a written agreement for each individual project.

c. The City may not sell, trade, or otherwise transfer all or any portion of such funds to another such metropolitan city, urban county, unit of general local government, or Indian tribe, or insular area that directly or indirectly receives CDBG funds on exchange for any other funds, credits or non-Federal considerations, but, must use such funds for activities eligible under title I of the Act. This new requirement is contained in the Transportation, Housing and Urban Development, and Related Agencies Appropriation Act, 2014, pub. L113-76.

4. **City Subject to Same Requirements as Subrecipients**:
Pursuant to 24 CFR 570.501(b), the City is subject to the same requirements applicable to subrecipients, including the requirements of a written agreement set forth in 24 CFR 570.503. County as applicant, has the responsibility for ensuring that CDBG, HOME and ESG funds are used in accordance with all program requirements, for determining the adequacy of performance under agreements and procurement contracts, and for taking appropriate action when performance problems arise. Therefore, before disbursing any CDBG, HOME or ESG funds to City or projects in the City, County will require City, and City agrees to enter into a written agreement for each individual project.

5. The City has adopted and is enforcing:

a. A policy prohibiting the use of excessive force by law enforcement agencies within its jurisdiction against any individuals engaged in non-violent civil rights demonstrations;

b. A policy of enforcing applicable State and local laws against physically barring entrance to or exit from a facility or location which is the subject of such non-violent civil rights demonstrations within jurisdictions.

6. By executing this Agreement, the City understands that it:

a. May not apply for grants from appropriations under the Small Cities or State CDBG Programs for fiscal years during the period in which it participates in the Urban County's CDBG program;

b. May participate in a HOME Program only through the Urban County. Thus, even if the Urban County does not receive a HOME formula allocation, City cannot form a HOME consortium with other local governments.

c. May receive a formula allocation under the ESG Program only through the

urban county, although this does not preclude the urban county or a unit of government participating with the urban county from applying to the Sate for ESG funds, if the state allows.

7. **Affirmative Action.**
Under County's ultimate supervision and responsibility, City covenants and agrees that it will abide by and enforce all applicable affirmative action requirements including, but not limited to Executive Order 11246, the Equal Employment Opportunities Act, the San Mateo County Affirmative Action Plan and local affirmative action plans.

8. **County's Responsibility to City.**
In addition to the foregoing obligations, County agrees:

a. County shall, in preparing future plans under the Act, solicit to the extent allowed by the Act and all lawful HUD regulations, City's participation in the development of such future plans which refer to City's activities under the Act.

b. In accordance with instructions from HUD, County agrees to permit City to carry out the essential community development and housing assistance activities provided for in the application and in future plans.

c. County agrees to distribute funding it receives from its current plan application and in future plans, ln. accordance with the terms and provisions therein contained, or in accordance with such terms and conditions as required by the Act of HUD.

9. **City's Responsibilities to County.**
In addition to the foregoing obligations:

a. City agrees to expend any funds received by virtue of any of Urban County's plans only in accordance with the terms and conditions stated therein, or amended by HUD.

b. City agrees to cooperate with Urban County, as it has heretofore, with the development of future plan applications for funds under the Act, with regard to housing and community development activities to be continued or undertaken by City within its boundaries.

10. **Program Income.**

a. City must inform County of any income generated by the expenditure of CDBG, HOME or ESG funds received by City.

b. Any such program income must be paid to the County or City may retain the program income subject to requirements set forth in this Agreement.

c. Any program income City is authorized to retain may only be used for eligible activities in accordance with all CDBG, HOME or ESG requirements as may then

apply.

d. County has the responsibility for monitoring and reporting to HUD on the use of any such program income and County shall require appropriate recordkeeping and reporting by City as may be needed for this purpose and

e. In the event of close-out or change in status of City, any program income that is on hand or received subsequent to the close-out or change in status shall be paid to County.

11. Acquisition, Change in Use, and Disposition of Real Property Acquired or Improved with CDBG Funds.

a. City shall notify County of any change in use including disposition of real property, within the control of City, which was acquired or improved in whole or in part with CDBG funds, from that approved at the time CDBG funds were authorized for acquisition or improvement.

b. City shall reimburse County in an amount equal to the current fair market value (less any portion thereof attributable to expenditures of non-CDBG funds) of property acquired or improved with CDBG funds that is sold or transferred for a use which does not qualify under the CDBG regulations at any time prior to or subsequent to the close-out, change of status or termination of this Agreement between the County and City.

12. Headings.

The headings in this document are merely for the convenience of the parties, and do not form a material part of this document. Headings shall not be considered in the construction of this document.

13. Minor Amendments to the Agreement.

Notwithstanding, Paragraph 2 above, should it become necessary to change the language of this Agreement to meet HUD approval, without making major changes and without altering the intent of the Agreement, such changes may be made administratively by the City Manager of City.

All remaining provisions of said Agreement shall remain in full force and effect for the term provided herein.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

COUNTY OF SAN MATEO

By _____
President, Board of Supervisors

ATTEST:

_____
Clerk of Said Board

Town of Portola Valley

By_____
Mayor

ATTEST:

_____
Town Clerk

Certificate of Delivery
(Government Code Section 25103)
I certify that a copy of the original document filed in the Office of the Clerk of the Board of Supervisors of San Mateo County has been delivered to the President of the Board of Supervisors.

_____
By
Clerk of the Board of Supervisors

August 8, 2017

Dear City Official,

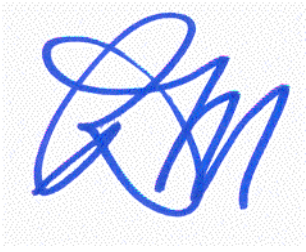
In May 2017, the Department of Housing sent you a letter regarding the automatic renewal of the Cooperation Agreement between San Mateo County and your jurisdiction. Unfortunately, the U.S. Department of Housing and Urban Development (HUD) has made some changes to their requirements regarding what must be included in the Cooperation Agreement in order to participate in the San Mateo County Urban County Program for non-entitlement jurisdictions to access Community Development Block Grant (CDBG) funding.

HUD is requiring the County and participating cities in the Urban County to execute a new Cooperation Agreement and for each jurisdiction to adopt a resolution to authorize the execution of the new Agreement. A copy of the new Cooperation Agreement and draft authorizing resolution are enclosed with this letter. HUD has informed the County that a new Cooperation Agreement and all authorizing resolutions, adopted by each participating city **MUST BE** submitted by September 15, 2017.

As soon as possible, please confirm the date of the City Council meeting at which the proposed resolution will be adopted.

Please return a signed copy of the Cooperation Agreement and a copy of your City Council approved resolution authorizing the execution of the Urban County Cooperation Agreement and participation in the Urban County to be eligible to access Community Development Block Grant (CDBG) funding. If you have any questions or need any additional information please contact Rosa Mendoza at 650-802-5037 or rmendoza@smchousing.org.

Thank you,



Rosa Mendoza
HCD Specialist III

COOPERATION AGREEMENT

THIS AGREEMENT, entered into this 9th day of July, 1996, between the **COUNTY OF SAN MATEO**, a political subdivision of the State of California ("COUNTY"), and the **TOWN OF PORTOLA VALLEY**, a duly incorporated City within the County of San Mateo ("CITY"),

W I T N E S S E T H

WHEREAS, the Housing and Community Development Act of 1974, as amended ("Act"), provides for the distribution of federal funds through the process of Community Development Block Grants to eligible public entities; and

WHEREAS, those public entities which are eligible to receive said funds are cities with a population in excess of 50,000, "hold harmless" public entities, and urban counties; and

WHEREAS, public entities that do not otherwise come within the definition of an eligible public agency may cooperate and participate with a eligible public entity such as an urban county; and

WHEREAS, the County of San Mateo has heretofore qualified as an urban county under the Act, the County again solicits the cooperation and co-participation of public entities such as City in its application for federal assistance under the Act for the Federal Fiscal Years 1997 through 1999 and subsequent three-year periods thereafter; and

WHEREAS, City, having a population of less than 50,000, desires to cooperate and co-participate with County in this venture; and

WHEREAS, a Cooperation Agreement by and between City and County establishes the formal relationship to cooperate and co-participate and is specifically authorized under the provisions of Government Code Section 6502 and 26227; and

WHEREAS, County is in receipt of a communication from the United States Department of Housing and Urban Development, ("HUD"), with regard to requisites which must be included in said Cooperation Agreement and which further stated that the same must be completed and submitted by July 12, 1996; and

WHEREAS, City has previously, by an official act of pronouncement expressed its intent and desire to cooperate and participate with County in its plan application and to engage in housing and community development activities within its incorporated limits thereunder; and

WHEREAS, City understands that in becoming part of the Urban County, City automatically participates in the HOME Program, which provides eligible local jurisdictions with federal funds for affordable housing activities; and

WHEREAS, City now desires to enter into this Cooperation Agreement ("Agreement") with the County of San Mateo so that it may qualify, under applicable provisions of the Act and HUD regulations, as co-participant with County in eligible activities under the Act:

NOW, THEREFORE, IN CONSIDERATION OF THE FOREGOING, the parties hereto agree as follows:

1. Purpose: County and City agree to cooperate to undertake, or assist in undertaking, community renewal and lower income housing assistance activities, specifically urban renewal and publicly assisted housing; economic development, neighborhood facilities, housing rehabilitation, and other appropriate housing assistance to primarily benefit lower and moderate income people. This Agreement includes participation in the Community Development Block Grant and the HOME Investment Partnerships Programs.

2. Term. The term of this Agreement shall be for Federal Fiscal Years 1997, 1998, and 1999, after which the term shall be automatically renewed unless action is taken by the City to terminate this Agreement. As provided by HUD rules and regulations, this Agreement shall automatically be renewed for participation in successive three-year qualification periods, unless County or City provides written notice it elects not to participate in a new qualification period, provided however, that this Agreement shall remain in effect until CDBG and HOME funds and income received with respect to the three-year qualification period are expended and the funded activities completed. County and City cannot terminate or withdraw from this Agreement while the Agreement remains in effect. The County and City may not withdraw from this Agreement prior to expiration of Federal Fiscal Year 1999.

   By the date specified in HUD's Urban County Qualification Notice for a subsequent qualification period, County will notify City in writing of its right not to participate. Should there be changes necessary to meet the requirements for cooperation agreements set forth in the Urban County Qualification Notice applicable for a subsequent three-year urban county qualification period, amendment(s) to this Agreement shall be executed between County and City. Such amendment(s) shall be submitted to HUD; failure to do so will void the automatic renewal of such qualification period.

3. a. Applicant's Responsibility. County, as applicant, has ultimate responsibility for execution of the community development program, for following its Consolidated Plan, which provides for an analysis of housing and nonhousing community development needs of the geographic area, and for meeting the requirements of other applicable laws, including but not limited to the National Environmental Policy Act, Uniform Relocation Act, Fair Housing Act, Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Section 109 of the Housing and Community Development Act of 1974, and the Americans with Disabilities Act of 1990.

County is the lead agent for carrying out the Urban County CDBG Program. The Urban County, as a CDBG entitlement jurisdiction, qualifies to receive its own allocation of federal HOME funds. However, to increase HOME funding access to the County overall, County has formed the San Mateo County HOME Consortium, of which the Urban County is a member.

County is also the lead agent for the HOME Consortium. The HOME Consortium is technically responsible for preparing and submitting to HUD the Consolidated Plan which covers the geographic area of the Consortium. The Urban County is responsible for submitting its own nonhousing community development plan, an Action Plan, and required certifications as part of the Consortium's Consolidated Plan. As lead agent for the Urban County and the HOME Consortium, County is responsible for coordinating Consolidated Planning activities, including providing assurances or certifications to HUD.

Therefore, County requires City, and City agrees to strict adherence to the Consolidated Plan as approved, and to all assurances and certifications provided, including agreeing to take all actions necessary to assure compliance with the Urban County's certifications under Sections 104(b) of Title I of the Housing and Community Development Act of 1974, as amended, including Title VI of the Civil Rights Act of 1964, the Fair Housing Act, section 109 of Title I of the Housing and Community Development Act of 1974, and other applicable laws.

County shall not provide CDBG or HOME funds for activities in, or in support of, any cooperating city that does not affirmatively further fair housing within its own jurisdiction or for activities that impede the County's actions to comply with its fair housing certification. In addition, County and City are responsible for taking all required actions to comply with the provisions of the National Environmental Policy Act of 1969.

b. Further, pursuant to 24 CFR 570.501(b), County, as applicant, has the responsibility for ensuring that CDBG and HOME funds are used in accordance with all program requirements, for determining the adequacy of performance under agreements and procurement contracts, and for taking appropriate action when performance problems arise. Therefore, before disbursing any CDBG or HOME funds to City or projects in the City, County will require City, and City agrees to enter into a written agreement for each individual project.

4. City Subject to Same Requirements as Subrecipients: Pursuant to 24 CFR 570.501(b), the City is subject to the same requirements applicable to subrecipients, including the requirements of a written agreement set forth in 24 CFR 570.503. County as applicant, has the responsibility for ensuring that CDBG and HOME funds are used in accordance with all program requirements, for determining the adequacy of performance under agreements and procurement contracts, and for taking appropriate action when performance problems arise. Therefore, before disbursing any CDBG or HOME funds to City or projects in the City, County will require City, and City agrees to enter into a written agreement for each individual project.

5. The City has adopted and is enforcing:

a. a policy prohibiting the use of excessive force by law enforcement agencies within its jurisdiction against any individuals engaged in non-violent civil rights demonstrations; and

b. a policy of enforcing applicable State and local laws against physically barring entrance to or exit from a facility or location which is the subject of such non-violent civil rights demonstrations within jurisdictions.

6. By executing this Agreement the City understands that it:

a. may not apply for grants from appropriations under the Small Cities or State CDBG Programs for fiscal years during the period in which it participates in the Urban County's CDBG program; and

b. may participate in a HOME Program only through the Urban County. Thus, even if the Urban County does not receive a HOME formula allocation, City cannot form a HOME consortium with other local governments.

7. Affirmative Action. Under County's ultimate supervision and responsibility, City covenants and agrees that it will abide by and enforce all applicable affirmative action requirements including, but not limited to Executive Order 11246, the Equal Employment Opportunities Act, the San Mateo County Affirmative Action Plan and local affirmative action plans.

8. County's Responsibility to City. In addition to the foregoing obligations, County agrees:

   a. County shall, in preparing future plans under the Act, solicit to the extent allowed by the Act and all lawful HUD regulations, City's participation in the development of such future plans which refer to City's activities under the Act.

   b. In accordance with instructions from HUD, County agrees to permit City to carry out the essential community development and housing assistance activities provided for in the application and in future plans.

   c. County agrees to distribute funding it receives from its current plan application and in future plans, in accordance with the terms and provisions therein contained, or in accordance with such terms and conditions as required by the Act of HUD.

9. City's Responsibilities to County. In addition to the foregoing obligations:

   a. City agrees to expend any funds received by virtue of any of Urban County's plans only in accordance with the terms and conditions stated therein, or as amended by HUD.

   b. City agrees to cooperate with Urban County, as it has heretofore, with the development of future plan applications for funds under the Act, with regard to housing and community development activities to be continued or undertaken by City within its boundaries.

10. Program Income.

   a. City must inform County of any income generated by the expenditure of CDBG or HOME funds received by City.

   b. Any such program income must be paid to the County or City may retain the program income subject to requirements set forth in this Agreement.

c. Any program income City is authorized to retain may only be used for eligible activities in accordance with all CDBG or HOME requirements as may then apply.

d. County has the responsibility for monitoring and reporting to HUD on the use of any such program income and County shall require appropriate recordkeeping and reporting by City as may be needed for this purpose; and

e. In the event of close-out or change in status of City, any program income that is on hand or received subsequent to the close-out or change in status shall be paid to County.

11. Acquisition, Change in Use, and Disposition of Real Property Acquired or Improved with CDBG Funds.

a. City shall notify County of any change in use including disposition of real property, within the control of City, which was acquired or improved in whole or in part with CDBG funds, from that approved at the time CDBG funds were authorized for acquisition or improvement.

b. City shall reimburse County in an amount equal to the current fair market value (less any portion thereof attributable to expenditures of non-CDBG funds) of property acquired or improved with CDBG funds that is sold or transferred for a use which does not qualify under the CDBG regulations at any time prior to or subsequent to the close-out, change of status or termination of this Agreement between the County and City.

12. Headings. The headings in this document are merely for the convenience of the parties, and do not form a material part of this document. Headings shall not be considered in the construction of this document.

13. Minor Amendments to the Agreement. Notwithstanding, Paragraph 2 above, should it become necessary to change the language of this Agreement to meet HUD approval, without making major changes and without altering the intent of the Agreement, such changes may be made administratively by the City Manager of City.

All remaining provisions of said Agreement shall remain in full force and effect for the term provided herein.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

COUNTY OF SAN MATEO

by _____
President, Board of Supervisors

ATTEST:

_____
Clerk of Said Board

TOWN OF PORTOLA VALLEY

by _____
Edward C. Driscoll Mayor
Title

ATTEST:

_____
Town Clerk

Certificate of Delivery
(Government Code section 25103)

I certify that a copy of the original document filed in the Office of the Clerk of the Board of Supervisors of San Mateo County has been delivered to the President of the Board of Supervisors.

ELAINE WALTON HORSLEY, Assistant
Clerk of the Board of Supervisors

TOWN OF PORTOLA VALLEY
STAFF REPORT

TO: Mayor and Members of the Town Council

FROM: Debbie Pedro, Planning Director
Keith Weiner, Deputy Building Inspector

DATE: September 13, 2017

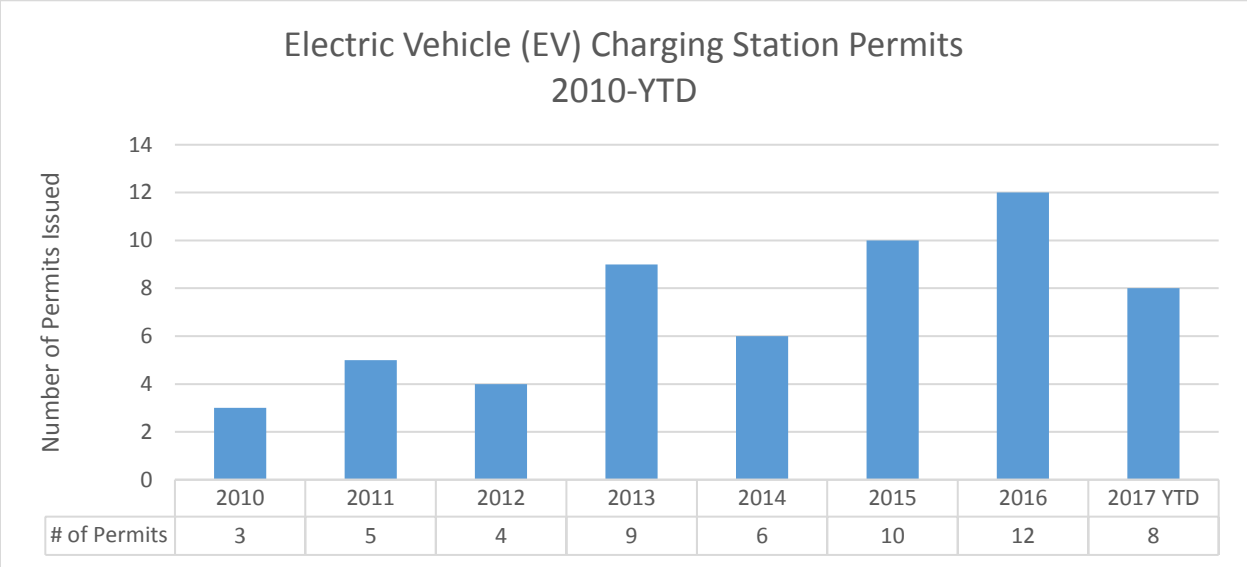
RE: Review of Proposed Ordinance Adding Chapter 15.22 to the Portola Valley Municipal Code to Establish Expedited Permitting Procedures for Electric Vehicle Charging Systems
(Link to attachments page)

RECOMMENDATION
Staff recommends that the Town Council waive reading and introduce the attached ordinance adding Chapter 15.22 [Electric Vehicle Charging Systems] to Title 15 [Building and Construction] of the Portola Valley Municipal Code.

BACKGROUND
Assembly Bill No. 1236 (Chiu, 2015) requires local governments with a population less than 200,000 residents to adopt an ordinance that creates an expedited, streamlined permitting process for electric vehicle charging systems on or before September 30, 2017.

DISCUSSION
The purpose of AB 1236 is to promote electric vehicle infrastructure and to limit obstacles to their use. The proposed ordinance is intended to comply with the requirements of Government Code section 65850.7 and provide an expedited plan submittal and review process for electric vehicle charging systems. The Town will allow electronic submittal and review of plans, use a standard checklist to determine a project's eligibility for expedited review, and require only one inspection by the Town's Building Inspector.

In Portola Valley, EV permits are issued over the counter and costs $70. Below is a chart showing the number of EV permits issued by the Building Department in the last 8 years.



Staff does not anticipate any issues with implementing the requirements of AB1236. The Town's Building Department, by its current process, already expedites the review of electric vehicle charger applications. However, to satisfy the State requirement, the Town must adopt an ordinance as mandated by section 65850.7 of the California Government Code.

FISCAL IMPACT
None.

PUBLIC COMMENTS
No written public comments have been received as of the writing of this report.

ENVIRONMENTAL REVIEW
The proposed application is exempt from California Environmental Quality Act (CEQA) pursuant to Section 15061 (b)(3) of the CEQA Guidelines because it can be seen with certainty that the proposed ordinance will have no significant negative impact on the environment.

ATTACHMENTS
1. Ordinance
2. State Assembly Bill 1236

Reviewed by Jeremy Dennis, Town Manager:

ORDINANCE NO. 2017 - _____

ORDINANCE OF THE TOWN COUNCIL OF THE TOWN OF PORTOLA VALLEY ADDING CHAPTER 15.22 TO THE PORTOLA VALLEY MUNICIPAL CODE TO ESTABLISH EXPEDITED PERMITTING PROCEDURES FOR ELECTRIC VEHICLE CHARGING SYSTEMS

WHEREAS, the State of California and the Town of Portola Valley ("Town") have consistently promoted and encouraged the use of fuel-efficient electric vehicles; and

WHEREAS, the State of California recently adopted Assembly Bill 1236, which requires local agencies to adopt an ordinance that creates an expedited and streamlined permitting process for electric vehicle charging systems; and

WHEREAS, creation of an expedited, streamlined permitting process for electric vehicle charging stations would facilitate convenient charging of electric vehicles and help reduce the Town's reliance on environmentally damaging fossil fuels; and

WHEREAS, the Town desires to comply with Government Code Section 65850.7, to encourage the installation of electric vehicle charging systems and minimize barriers, obstacles, and costs of obtaining permits for their installation; and

WHEREAS, on September 13, 2017, the Town Council held a duly noticed public hearing to carefully consider the proposed ordinance, public comments, and the staff report and have determined to adopt the proposed ordinance for the public necessity, convenience and general welfare of the Town.

NOW, THEREFORE, the Town Council of the Town of Portola Valley does **ORDAIN** as follows:

SECTION 1. ADDITION OF CODE. Chapter 15.22 [Residential Electric Vehicle Charging Systems] is hereby added to Title 15 [Buildings and Construction] of the Town of Portola Valley Municipal Code to read in full as follows:

CHAPTER 15.22
ELECTRIC VEHICLE CHARGING SYSTEMS

15.22.010 - Intent and Purpose.

The purpose of this Chapter is to promote and encourage the use of electric vehicles by creating an expedited, streamlined permitting process for electric vehicle charging stations while promoting public health and safety and preventing specific adverse impacts in the installation and use of such charging stations.

15.22.020 - Definitions.

(a) An "Electric Vehicle Charging System or Charging Station" means any level of electric vehicle supply equipment station that is designed and built in compliance with Article 625 of the California Electrical Code, as it reads on the effective date of this Chapter, and delivers electricity from a source outside an electric vehicle into a plug-in electric vehicle.

(b) "Electronic submittal" means the utilization of one or more of the following:
(1) Email
(2) Internet
(3) Facsimile

(c) "Specific, adverse impact" means a significant, quantifiable, direct, and unavoidable impact, based on objective, identified, and written public health or safety standards, policies, or conditions as they existed on the date the application was deemed complete.

15.22.030 – Expedited permit process.

The Building Official shall implement the expedited, streamlined permitting process described in this Chapter for electric vehicle charging stations, and adopt a checklist of all requirements that electric vehicle charging stations shall comply with in order to be eligible for expedited review. The expedited, streamlined permitting process and checklist may refer to the recommendations contained in the most current version of the "Plug-In Electric Vehicle Infrastructure Permitting Checklist" of the "Zero-Emission Vehicles in California: Community Readiness Guidebook" as published by the Governor's Office of Planning and Research. The adopted checklist shall be published on the Town's website.

15.22.040 – Permit Application process

(a) Prior to submitting an application for processing, the applicant shall verify that the installation of an electric vehicle charging station will not have specific, adverse impact to public health and safety and building occupants. Verification by the applicant includes, but is not limited to, information indicating the adequacy of electrical system capacity and loads; electrical system wiring, bonding and overcurrent protection; building infrastructure affected by charging station equipment and associated conduits; areas of charging station equipment and vehicle parking.

(b) A permit application that satisfies the information requirements in the Town's adopted checklist shall be deemed complete and be promptly processed. If the Building Official determines that the permit application is incomplete, he or she shall issue a written correction notice to the applicant, detailing all deficiencies in the application and any additional information required to be eligible for expedited permit issuance. Upon confirmation by the Building Official that the permit application and supporting documents are complete, the requirements of the Town adopted checklist are met, and are consistent with all applicable laws and health and safety standards, the Building Official shall approve the application and issue all necessary permits.

(c) The Building Official shall allow for electronic submittal of permit applications covered by this Chapter and associated supporting documentations. In accepting such permit applications, the Building Official shall also accept electronic signatures on all forms, applications, and other documentation in lieu of a wet signature by any applicant.

15.22.50 – Technical review

(a) If the Building Official makes a written finding based on substantial evidence that the electric vehicle charging station could have a specific adverse impact upon the public health or safety, as defined in this Chapter, the Building Official may require modifications to or deny the application.

(b) In the technical review of a charging station, the Building Official shall not condition the approval for any electric vehicle charging station permit on the approval of such a system by an association, as that term is defined by Civil Code Section 4080.

15.22.60 – Electric vehicle charging station installation

(a) Electric vehicle charging station equipment shall meet the requirements of the California Electrical Code, the Society of Automotive Engineers, the National Electrical Manufacturers Association, and accredited testing laboratories such as Underwriters Laboratories, and rules of the Public Utilities Commission or a Municipal Electric Utility Company regarding safety and reliability.

(b) Installation of electric vehicle charging stations and associated wiring, bonding, disconnecting means and overcurrent protective devices shall meet the requirements of Article 625 and all applicable provisions of the California Electrical Code.

(c) Installation of electric vehicle charging stations shall be incorporated into the load calculations of all new or existing electrical services and shall meet the requirements of the California Electrical Code. Electric vehicle charging equipment shall be considered a continuous load.

(d) Anchorage of either floor-mounted or wall-mounted electric vehicle charging stations shall meet the requirements of the California Building or Residential Code as applicable per occupancy, and the provisions of the manufacturer's installation

instructions. Mounting of charging stations shall not adversely affect building elements.

SECTION 2. SEVERABILITY. If any part of this Ordinance is held to be invalid or inapplicable to any situation by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance or the applicability of this Ordinance to other situations.

SECTION 3. ENVIRONMENTAL REVIEW. The project is exempt from environmental review per the California Environmental Quality Act Guidelines under the General Rule, Section 15051(b)(3). The project involves additions to the Portola Valley Municipal Code that are consistent with California Law, specifically Government Code Section 65850.7. It can be seen with certainty that the Ordinance will have no significant effect on the environment.

SECTION 4. EFFECTIVE DATE; POSTING. This Ordinance shall become effective 30 days after the date of its adoption and shall be posted within the Town of Portola Valley in three public places.

INTRODUCED:

PASSED:

AYES:

NOES:

ABSTENTIONS:

ABSENT:

By: _____
Mayor

ATTEST:

_____
Town Clerk

APPROVED AS TO FORM:

_____
Town Attorney

Assembly Bill No. 1236

CHAPTER 598

An act to add Section 65850.7 to the Government Code, relating to local ordinances.

[Approved by Governor October 8, 2015. Filed with Secretary of State October 8, 2015.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1236, Chiu. Local ordinances: electric vehicle charging stations.

The Planning and Zoning Law, among other things, requires the legislative body of each county and city to adopt a general plan for the physical development of the county or city and authorizes the adoption and administration of zoning laws, ordinances, rules, and regulations by counties and cities. Existing law, the Electric Vehicle Charging Stations Open Access Act, prohibits the charging of a subscription fee on persons desiring to use an electric vehicle charging station, as defined, and prohibits a requirement for persons to obtain membership in any club, association, or organization as a condition of using the station, except as specified.

The bill would require a city, county, or city and county to approve an application for the installation of electric vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill would provide for appeal of that decision to the planning commission, as specified. The bill would provide that the implementation of consistent statewide standards to achieve the timely and cost-effective installation of electric vehicle charging stations is a matter of statewide concern. The bill would require electric vehicle charging stations to meet specified standards. The bill would require a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that creates an expedited and streamlined permitting process for electric vehicle charging stations, as specified. The bill would require a city, county, or city and county with a population of less than 200,000 residents to adopt this ordinance by September 30, 2017. The bill would authorize the city, county, or city and county, in developing the ordinance, to refer to guidelines contained in a specified guidebook. The bill would also authorize the adoption of an ordinance that modifies the checklists and standards found in the guidebook due to unique conditions. By increasing the duties of local officials, this bill would create a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Section 65850.7 is added to the Government Code, to read:

65850.7. (a) The Legislature finds and declares all of the following:

(1) The implementation of consistent statewide standards to achieve the timely and cost-effective installation of electric vehicle charging stations is not a municipal affair, as that term is used in Section 5 of Article XI of the California Constitution, but is instead a matter of statewide concern.

(2) It is the intent of the Legislature that local agencies not adopt ordinances that create unreasonable barriers to the installation of electric vehicle charging stations and not unreasonably restrict the ability of homeowners and agricultural and business concerns to install electric vehicle charging stations.

(3) It is the policy of the state to promote and encourage the use of electric vehicle charging stations and to limit obstacles to their use.

(4) It is the intent of the Legislature that local agencies comply not only with the language of this section, but also the legislative intent to encourage the installation of electric vehicle charging stations by removing obstacles to, and minimizing costs of, permitting for charging stations so long as the action does not supersede the building official's authority to identify and address higher priority life-safety situations.

(b) A city, county, or city and county shall administratively approve an application to install electric vehicle charging stations through the issuance of a building permit or similar nondiscretionary permit. Review of the application to install an electric vehicle charging station shall be limited to the building official's review of whether it meets all health and safety requirements of local, state, and federal law. The requirements of local law shall be limited to those standards and regulations necessary to ensure that the electric vehicle charging station will not have a specific, adverse impact upon the public health or safety. However, if the building official of the city, county, or city and county makes a finding, based on substantial evidence, that the electric vehicle charging station could have a specific, adverse impact upon the public health or safety, the city, county, or city and county may require the applicant to apply for a use permit.

(c) A city, county, or city and county may not deny an application for a use permit to install an electric vehicle charging station unless it makes written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The findings shall include the basis

for the rejection of potential feasible alternatives of preventing the adverse impact.

(d) The decision of the building official pursuant to subdivisions (b) and (c) may be appealed to the planning commission of the city, county, or city and county.

(e) Any conditions imposed on an application to install an electric vehicle charging station shall be designed to mitigate the specific, adverse impact upon the public health or safety at the lowest cost possible.

(f) (1) An electric vehicle charging station shall meet applicable health and safety standards and requirements imposed by state and local permitting authorities.

(2) An electric vehicle charging station shall meet all applicable safety and performance standards established by the California Electrical Code, the Society of Automotive Engineers, the National Electrical Manufacturers Association, and accredited testing laboratories such as Underwriters Laboratories and, where applicable, rules of the Public Utilities Commission regarding safety and reliability.

(g) (1) On or before September 30, 2016, every city, county, or city and county with a population of 200,000 or more residents, and, on or before September 30, 2017, every city, county, or city and county with a population of less than 200,000 residents, shall, in consultation with the local fire department or district and the utility director, if the city, county, or city and county operates a utility, adopt an ordinance, consistent with the goals and intent of this section, that creates an expedited, streamlined permitting process for electric vehicle charging stations. In developing an expedited permitting process, the city, county, or city and county shall adopt a checklist of all requirements with which electric vehicle charging stations shall comply to be eligible for expedited review. An application that satisfies the information requirements in the checklist, as determined by the city, county, or city and county, shall be deemed complete. Upon confirmation by the city, county, or city and county of the application and supporting documents being complete and meeting the requirements of the checklist, and consistent with the ordinance, a city, county, or city and county shall, consistent with subdivision (b), approve the application and issue all required permits or authorizations. However, the city, county, or city and county may establish a process to prioritize competing applications for expedited permits. Upon receipt of an incomplete application, a city, county, or city and county shall issue a written correction notice detailing all deficiencies in the application and any additional information required to be eligible for expedited permit issuance. An application submitted to a city, county, or city and county that owns and operates an electric utility shall demonstrate compliance with the utility's interconnection policies prior to approval.

(2) The checklist and required permitting documentation shall be published on a publicly accessible Internet Web site, if the city, county, or city and county has an Internet Web site, and the city, county, or city and county shall allow for electronic submittal of a permit application and associated documentation, and shall authorize the electronic signature on

all forms, applications, and other documentation in lieu of a wet signature by an applicant. In developing the ordinance, the city, county, or city and county may refer to the recommendations contained in the most current version of the "Plug-In Electric Vehicle Infrastructure Permitting Checklist" of the "Zero-Emission Vehicles in California: Community Readiness Guidebook" published by the Office of Planning and Research. A city, county, or city and county may adopt an ordinance that modifies the checklists and standards found in the guidebook due to unique climactic, geological, seismological, or topographical conditions. If a city, county, or city and county determines that it is unable to authorize the acceptance of an electronic signature on all forms, applications, and other documents in lieu of a wet signature by an applicant, the city, county, or city and county shall state, in the ordinance required under this subdivision, the reasons for its inability to accept electronic signatures and acceptance of an electronic signature shall not be required.

(h) A city, county, or city and county shall not condition approval for any electric vehicle charging station permit on the approval of an electric vehicle charging station by an association, as that term is defined in Section 4080 of the Civil Code.

(i) The following definitions shall apply to this section:

(1) "A feasible method to satisfactorily mitigate or avoid the specific, adverse impact" includes, but is not limited to, any cost-effective method, condition, or mitigation imposed by a city, county, or city and county on another similarly situated application in a prior successful application for a permit.

(2) "Electronic submittal" means the utilization of one or more of the following:

(A) Email.

(B) The Internet.

(C) Facsimile.

(3) "Electric vehicle charging station" or "charging station" means any level of electric vehicle supply equipment station that is designed and built in compliance with Article 625 of the California Electrical Code, as it reads on the effective date of this section, and delivers electricity from a source outside an electric vehicle into a plug-in electric vehicle.

(4) "Specific, adverse impact" means a significant, quantifiable, direct, and unavoidable impact, based on objective, identified, and written public health or safety standards, policies, or conditions as they existed on the date the application was deemed complete.

SEC. 2. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

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TOWN OF PORTOLA VALLEY
STAFF REPORT

TO: Mayor and Members of the Town Council

FROM: Jeremy Dennis, Town Manager

DATE: September 13, 2017

RE: Study Session, Leaf Blowers
(Link to attachments page)

RECOMMENDATION

Staff recommends that the Town Council provide direction to staff on potential further regulation of leaf blowers in Portola Valley.

BACKGROUND

At the July 26th 2017 Council meeting, a resident requested that the Town further regulate the use of leaf blowers, citing noise, air quality, and other pollution issues. The Mayor and Vice Mayor requested that a study session be scheduled on the next available Council agenda to discuss these issues and provide direction to staff on potential next steps.

Regulation in Portola Valley

The Town currently regulates leaf blowers through the Noise Ordinance (Attachment 1). Regulation is achieved through specific noise standards, as well as the times “domestic garden tools” can be used by both commercial entities and residents. There is further regulation in a subsequent code section specifying dBa levels within 50 feet of the equipment while in use, the equipment’s model number and dBa rating and the use of mufflers and extension tubes

As show in the table below, non-transportation noise in residential districts cannot be higher than 65dBa during daylight hours:

Non-Transportation Generated Noise Standards

Land Use Receiving the Noise	Hourly Noise-Level Descriptor	Exterior Noise-Level Standard In Any Hour {dBa)		Interior Noise-Level Standard In Any Hour {dBa)	
		Day 7am-10pm	Night 10pm-7am	Day 7am-10pm	Night 10pm-7am
Residential	Leq Lmax	50 65	40 55	40 55	30 45
Medical, convalescent	Leq Lmax	5.5 70	45 60	45 55	35 45
Theater, auditorium	Leq Lmax			35 50	35 50
Religious facility, meeting hall	Leq	55		40 55	40 55
Office Building	Leq			45	

9.10.040B. Domestic Garden Tools[1]. Domestic garden tools may be used by commercial companies only Monday through Friday between 8:00 am and 5:30 pm and Saturday between 10:00 am and 5:00 pm; provided that chippers and chain saws may not be used on Saturday. Any resident may personally (including with the help of immediate family members) use domestic garden tools during the following hours: Monday through Friday between 8:00 am and 5:30 pm and Saturday and Sunday between 10:00 am and 5:00 pm. Domestic garden tools may be used by property owners only for the purpose of removing seasonal grasses and plant materials that pose a fire hazard on all days, except holidays, between 8:00 am and 8:00 pm from April 15 to June 15; however, this provision does not allow the use of chain saws and chippers on Sundays. The commercial and resident use of domestic garden tools is prohibited on holidays.

9.10.060H. Prohibited Sources of Noise. Leaf blowers. Leaf blowers shall not produce a sound that exceeds sixty-five dBA when measured from a distance of fifty feet utilizing American National Standard Institute methodology. No person shall operate any leaf blower which does not bear an affixed manufacturer's label indicating the model number of the leaf blower and designating a noise level not in excess of

[1] "Domestic garden tools" are defined in this ordinance as leaf blowers, weed whackers, lawn mowers, chippers, chain saws, or any other lawn or garden power tool.

sixty-five dBA. Any leaf blower that bears such a manufacturer's label shall be presumed to comply with any noise level limit of this chapter provided that it is operated with all mufflers and full extension tubes supplied by the manufacturer for that leaf blower. No person shall operate any leaf blower without attachment of all mufflers and full extension tubes supplied by the manufacturer for that leaf blower. This requirement becomes effective one year after the adoption of this revised chapter.

In the past 6 years, Town Staff has fielded six complaints related to gardening work – two were specific to leaf blower noise.

General Plan

The Sustainability Element of the General Plan calls on the "reduction of greenhouse gas emissions in the air" and a primary goal. Additionally, the Sustainability Element calls for "community education about sustainable principles and applications" (Attachment 2). The Noise Element of the General Plan addresses noise generated by yard maintenance activities and states a goal to "implement appropriate standard controls for yard maintenance activities carried out by commercial companies and homeowners" (Attachment 3).

From a greenhouse gas emissions standpoint, leaf blowers are considered part of the "off-road emissions" inventory, which accounted for 4.5% of the Town's total 2010 GHG emissions. (Attachment 4)

DISCUSSION

Leaf Blower Design

The majority of leaf blowers purchased in the United States are two stroke model, which means that gas and oil are mixed together to fuel the device. Approximately 30% of the fuel does not completely combust; as a result, they are considered significant polluters. Certain types of two stroke engines have been banned in some areas, including Lake Tahoe, Lake Mead, and many California State Parks that contain lakes. Four stroke engines, similar to automobile engines, are much less common in leaf blowers and are much more environmentally friendly.

In 2000, the California Air Resources Board's "Report to the California Legislature on the Potential Health and Environmental Impacts of Leaf Blowers" (Attachment 4) identified approximately 410,000 gasoline leaf blowers in California with 1.2% four stroke models. At the same time, there were approximately 600,000 electric leaf blowers in the State, the vast majority used occasionally by homeowners. At the time of the report, it was assumed that "virtually all professional gardeners use gas engine-powered blowers" (page 13).

Air Pollution and Dust

Although somewhat limited, there is a growing number of sources documenting the pollution impacts of leaf blowers.

The aforementioned 2000 California Air Resources Board (CARB) report cited above identified potential health impacts from noise, carbon and dust emissions. The health impacts from these hazards were "from mild to serious, but the appearance of those effects depends on the exposure, the dose, or how much of the hazard is received by a person, and the exposure time" (Page 55).

The CARB report found that leaf blowers generated 7.1 tons per day of hydrocarbons, and 16.6 tons per day of carbon monoxide; however, the report anticipated reductions by 2010 as a result of new leaf blowers standards implemented in 2000. A half-hour of leaf blower operation generated the same amount of hydrocarbon emissions as 7,700 miles of driving at 30 miles per hour; for carbon monoxide, half hour of use is equivalent to 440 miles of driving at 30 miles per hour.

Leaf blowers also impacted the spread of fugitive dust due to the hurricane-level speed of the wind generated (typically between 150 and 280 mph).

Other noteworthy studies/reports/news articles/programs include:

1. 2010 US EPA review of Maricopa County Arizona's air quality plan – the EPA found that Maricopa County did not adequately inventory sources of coarse particulate matter, and that leaf blowers contributed to the amount of particulate matter in the air.
2. 2011 Edmunds report – the automobile review company Edmunds found that a Ryobi 4-stroke leaf blower contributes 7 times more oxides of nitrogen and 12.5 times more carbon monoxide than a 2011 Ford F-150 Raptor truck, and a 2 stroke Echo 2 leaf blower generated 23 times more carbon monoxide and nearly 300 times more non-methane hydrocarbons than the truck (Attachment 6)
3. 2016 Medical Society of the State of New York resolution – In May 2016, the MSSNY passed a first of its kind resolution calling on the New York State Department of Environmental Conservation and manufacturers of gas powered leaf blowers to develop guidelines to reduce emissions and noise, promote nonpolluting alternatives and ask the American Medical Association to do the same (Attachment 7)
4. 2017 California Air Resources Board rule proposal – the CARB has proposed lowering emissions from small gas off-road engines (including the gas powered engine that leaf blowers use) by 85 percent by the end of 2030 (Attachments 8 and 9).
5. Quiet Communities, a non-profit based in Massachusetts "dedicated to protecting our health, environment, and quality of life from the excessive use of industrial

outdoor maintenance equipment" published a brochure describing the impacts of leaf blowers (Attachment 10)

6. The Bay Area Air Quality Management District (BAAQMD) - Alameda and Contra Costa Counties - and the South Coast Air Quality Management District have a leaf blower exchange program that will replace old gas units with zero-emission equipment (Attachment 11)

Noise

The City of Palm Springs recently approved a ban of gas powered leaf blowers. In their July 19, 2017 report, staff compiled a list of commercially available leaf blowers and their dB noise levels (Attachment 12).

Their review of the noise levels of both gas and electric powered models found that electric units were between 50-68 dB while gas units were between 67-77dB. As a rule of thumb, when a sound increased by 10dB is it assumed that its loudness has doubled.

Other Municipalities

A number of cities in California have regulated the use of leaf blowers beyond general noise abatement or time of use. Below is a chart of some of these communities, with the type of regulations they have adopted; municipalities were chosen to both reflect the diversity of approached in regulation, as well as some jurisdictions similar to Portola Valley:

Municipality	**Date**	**Regulations**[2]
Belvedere	1987	No person in City limits may operate any portable machine powered with a gasoline engine used to blow leaves, dirt and other debris
Berkeley	1982	No portable machine with a gasoline engine used to blow leaves, dirt and other debris may be used in the City, including City employees
Beverly Hills	1978	No portable machine powered with a gasoline engine used to blow leaves, dirt and other debris
Carmel	1975	Gas powered leaf blowers prohibited
Dana Point	1990	• Residential use limited to 9am-5pm, Monday – Saturday • No leaf blower can exceed 65 dBa • Debris cannot be blown or deposited on any adjacent land • Commercially-operated leaf blowers shall have business name, address and telephone number attached
Foster City	Prior to 2000	Leaf blowers within 100 feet of a residential district limited to 8am-5pm Monday-Friday, 9am-5pm Saturday, at 100 dBa
Hillsborough	1998	No leaf blowers allowed on weekends

[2] Municipal use of gas powered leaf blowers in emergencies is typically exempted.

Laguna Beach	2009	All leaf blowers, gas and electric powered, banned
Los Altos	1991	• Gas powered blowers banned • Electric powered leaf blowers allowed 8am-8p M-F, 9am-6pm Sat, 10am-6pm Sunday
Los Angeles	1998	Gas powered leaf blowers banned within 500 feet of a residence; electric powered leaf blowers allowed
Menlo Park	1999	• "Certified" leaf blowers (rated at 65 dBa at 50 ft.) can be used 8am-5pm M-F, 11am-3pm Sat • Only electric powered allowed
Palo Alto	2005	• Gas powered leaf blowers prohibited in Residential Zones, electric powered can be used 9am-5pm M-F, 10am-4pm Saturday at 75 dBa • Non-residential Zones allow gas and electric powered leaf blowers, at same times at 95 dBa • Commercial leaf blower operators must display on device training certificate • Devices should retain all mufflers and full extension tubes
Piedmont	1990	• Gas powered leaf blowers prohibited • Exception for public agency work on publicly-owned or operated facilities
Sacramento	2002	• Gas powered leaf blowers banned on residential property or within 200 feet of residential property at 65dBa at 50 feet • Allowed between 10am-4pm M-Sat
Santa Barbara	1997	• Gas powered leaf blowers prohibited • New leaf blowers cannot be sold in City that exceed 65 dBa • City will inspect all leaf blowers and issue a certification sticker
Santa Monica	1996	All motorized leaf blowers prohibited
Tiburon	2010	• Gas powered leaf blowers and hedge trimmers prohibited in residential areas • Gas powered leaf blowers and hedge trimmers allowed in non-residential areas from 9am-4pm M-F

Enforcement

Although many jurisdictions in California have passed more stringent leaf blower regulations, enforcement is typically difficult. Simply having resources to respond to complaints can be challenging for any municipality; additionally, having evidence that a violation has occurred when the violation may have already ended, with no evidence of said violation, may make it challenging to enforce.

Cost of Electric Powered Equipment
A cursory review of pricing found that a typical, residential-use electric powered leaf blower costs between $30-150, while a similar gas powered unit costs at least $75. Commercial units, more appropriate for larger lots, costs $175-$600. Very large properties may be more appropriate for walk-behind leaf blowers, but there are fewer electric powered models on the market than gas powered models – cost ranges from $150 up.

Town staff could develop a rebate/trade in program, similar to the BAAQMD's system, to provide incentives for the replacement of gas powered leaf blowers with electric units.

Council Direction
Staff seeks direction on the following questions:

1. Should the Town consider new regulations on leaf blowers? If yes:
    a. What committees should be utilized to further research leaf blower issues?
    b. Are there any parameters to the research the Council would like to consider before work starts?
2. Should the Town consider amending the Noise Ordinance to include penalties for leaf blower noise violations?
3. Should the Town consider a rebate program to encourage the replacement of gas powered leaf blowers with electric units?
4. Should the Town consider further regulations on other gas powered gardening or landscaping equipment, as defined as "domestic garden tools" in the Noise Ordinance?

FISCAL IMPACT
There is no fiscal impact resulting from this study session. Future actions on leaf blowers may result in direct costs to the Town related to equipment, and indirect costs to residents.

ATTACHMENTS
1. Portola Valley Noise Ordinance
2. Portola Valley Sustainability Element, page 5
3. Portola Valley Noise Element, page 13
4. 2010 Town GHG emissions report
5. 2000 CARB Report to State Legislature on Leaf Blowers
6. Edmunds Report
7. MSSNY Resolution
8. NPR Article, CARB
9. CARB Small Off Road Engines Fact Sheet
10. Quiet Communities Handout
11. Trade In Programs, Air Quality Management Districts

12. July 19, 2017 Palm Springs Leaf Blowers Noise Table

Approved by: Jeremy Dennis, Town Manager

ORDINANCE NO. 2009-380

ORDINANCE OF THE TOWN COUNCIL OF THE TOWN OF PORTOLA VALLEY AMENDING CHAPTER 9.10 [NOISE CONTROL] OF TITLE 9 [PUBLIC PEACE, MORALS AND WELFARE] OF THE PORTOLA VALLEY MUNICIPAL CODE

WHEREAS, the Town of Portola Valley ("Town") desires to amend Chapter 9.10 [Noise Control] of Title 9 [Public Peace, Morals and Welfare] of the Portola Valley Municipal Code.

NOW, THEREFORE, the Town Council of the Town of Portola Valley does **ORDAIN** as follows:

1. Amendment of Code. Chapter 9.10 [Noise Control] of Title 9 [Public Peace, Morals and Welfare] of the Portola Valley Municipal Code is hereby amended to read as follows:

9.10.010 Purpose

It is the policy of the town to protect its citizens from the harmful and annoying effects of excessive noise. This ordinance is established to implement the Noise Element of the General Plan and to regulate and control disturbing, excessive and offensive noise. The town encourages efforts by residents to address noise issues amicably through direct communication with their neighbors.

9.10.020 Definitions

Ambient Noise. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

A-Weighted Sound Level (dBA). The sound pressure level in decibels as measured on a sound level meter using the A-weighted network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a

manner similar to the response of the human ear and gives a good correlation with subjective reactions to noise. Also referred to in this Chapter as simply "sound level".

Construction, Grading and Clearing. Construction, demolition, or repair work on any building, structure, foundation, vegetation or project, which activities include, but are not limited to: the use of any mechanically powered saw, sander, drill, grinder, pneumatic jack hammer, electric jack hammer, chain saw, steam or electric hoist, hydraulic drill or shovel, "bob-cat", backhoe, bulldozer, dump truck, or other construction device; grading; clearing of land; delivery or removal of construction materials; or movement of construction materials from place to place on a site.

Decibel (dB). A unit for measuring the volume of a sound.

Demolition. Any dismantling, intentional destruction or removal of structures, utilities, public or private right-of-way surfaces, or property.

Domestic Garden Tools. Leaf blowers, weed whackers, lawn mowers, chippers, chain saws, or any other lawn or garden power tool.

Emergency. Any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demands immediate actions.

Equivalent A-Weighted Sound Level (L_{eq}). The sound level containing the same total energy as a time varying signal over a given sample period, typically one hour.

Holidays. January 1st, Martin Luther King, Jr. Day, President's Day, Memorial Day, July 4th, Labor Day, Veteran's Day, Thanksgiving and Christmas. If any holiday falls on a Sunday, the next Monday shall be considered a holiday.

Impulsive Sound. Sound of short duration, usually less than one second, with an abrupt onset and rapid decay, such as hammering.

Maximum Sound Level (L_{max}). The maximum sound level recorded during a noise event. To measure a constant sound, the "slow" sound level meter time constant setting shall be used; if the sound is impulsive, the "fast" setting shall be used.

Noise. Any sound that annoys or disturbs a reasonable person of normal sensitivities.

Noise Sensitive Land Use. Locations where there are greater sensitivities to excess noise, including but not limited to residences, hospitals, nursing homes, theaters, auditoriums, religious facilities, meeting halls, schools, libraries, museums and parks.

Non-Transportation Noise Source. Any source of noise that emanates from a particular fixed location. Examples include machinery, equipment, loudspeakers, truck loading areas, parking and waiting areas and places of entertainment.

Tonal Sound. A sound that can be distinctly heard as a single pitch usually characterized by a whine, screech or hum.

Transportation Noise Source. Any source of noise that emanates from vehicles in motion either associated with ground transportation (roadway) or with air traffic (airplane and helicopter).

9.10.030 Noise Standards

It is unlawful for any person in any location in the town from the effective date of this ordinance to create or cause to be created any noise that exposes properties in the vicinity to noise levels that exceed the levels indicated in Table 9.10-1, provided that, if the noise is generated by a structure or integral part of a structure, such compliance is required within twelve months after the effective date of the ordinance, August 21, 2009. Noises permitted by Sections 9.10.040 and 9.10.070 are not subject to Table 9.10-1.

Table 9.10-1 Non-Transportation Generated Noise Standards

Land Use Receiving the Noise	Hourly Noise-Level Descriptor	Exterior Noise-Level Standard In Any Hour (dBA)		Interior Noise-Level Standard In Any Hour (dBA)	
		Daytime (7am-10pm)	Nightime (10pm-7am)	Daytime (7am-10pm)	Nightime (10pm-7am)
Residential	L_{eq} L_{max}	50 65	40 55	40 55	30 45
Medical, convalescent	L_{eq} L_{max}	55 70	45 60	45 55	35 45
Theater, auditorium	L_{eq} L_{max}			35 50	35 50
Religious facility, meeting hall	L_{eq} L_{max}	55		40 55	40 55
Office Building	L_{eq}			45	

School, library, museum	L_{eq} L_{max}	55		40 55	
Playground, park	L_{eq}	55			

Notes:
a) The Residential standards apply to all residentially zoned properties.
b) Each of the noise levels specified above shall be lowered by 5 dBA for tonal noises characterized by a whine, screech, or hum, noises consisting primarily of speech or music, or recurring impulsive noises.
c) The exterior noise standards are measured at any point on the property on which sound is generated, or on a separate receiving property.
d) The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors, the thresholds are about 15 dBA higher. Steady noise of sufficient intensity, above 35 dBA, and fluctuating noise levels above about 45 dBA have been shown to affect sleep.

9.10.040 Permitted Sources of Noise

No person shall do, cause or suffer or permit to be done on any premises owned, occupied or controlled by such a person, any of the following acts except as provided below. All vehicles, equipment and machines associated with the enumerated activities shall incorporate design features in good operating order that meet current industry standards for noise muffling and noise reduction. Permitted sources of noise described in this section shall be subject to applicable conditional use permit conditions, construction program agreements, town noise reduction guidelines, and other forms of regulation.

A. Construction Activities. Commercial construction activities may take place between 8:00 am and 5:30 pm Monday through Friday. Any resident may personally (including with the help of immediate family members) undertake construction activities during the following hours: Monday through Friday between 8:00 am and 5:30 pm and Saturday and Sunday between 10:00 am and 5:00 pm. Commercial and resident construction activities are prohibited on holidays. Exceptions to these hours may be permitted in unusual circumstances pursuant to written authorization from the Director of Public Works. No radios or other amplified sound devices shall be audible beyond the property line of the construction site.

B. Domestic Garden Tools. Domestic garden tools may be used by commercial companies only Monday through Friday between 8:00 am and 5:30 pm and Saturday between 10:00 am and 5:00 pm; provided that chippers and chain saws may

not be used on Saturday. Any resident may personally (including with the help of immediate family members) use domestic garden tools during the following hours: Monday through Friday between 8:00 am and 5:30 pm and Saturday and Sunday between 10:00 am and 5:00 pm. Domestic garden tools may be used by property owners only for the purpose of removing seasonal grasses and plant materials that pose a fire hazard on all days, except holidays, between 8:00 am and 8:00 pm from April 15 to June 15; however, this provision does not allow the use of chain saws and chippers on Sundays. The commercial and resident use of domestic garden tools is prohibited on holidays.

C. Large Vehicle Delivery and Loading. For other than construction activities, the loading, unloading or delivery of goods, merchandise, vehicles or supplies by large trucks, tractor-trailers, or other similar vehicles is restricted to the hours between 8:00 am and 5:30 pm Monday through Friday, unless otherwise authorized by a conditional use permit.

D. Garbage Collection. Collection of garbage and other refuse is restricted to the hours between 8:00 am and 5:00 pm, Monday through Friday, unless authorized otherwise by a franchise agreement with the town.

E. Residential Emergency Generators. The testing of home generators used for emergency power is permitted only on weekdays, no more frequently than once a week and for a duration not exceeding 20 minutes restricted to the hours between 10:00 am and 4:00 pm. Home generators shall not be tested on holidays. Home generators shall not produce a sound exceeding 65 dBA when measured 22 feet from the generator, and shall have mufflers and generator enclosures in good condition and appropriate for the generator. Emergency generators shall be located as far as possible from adjoining properties.

9.10.050 Special Circumstances

While the noise standards in this Chapter are consistent with generally accepted community noise limitations, there may be circumstances where the standards do not reduce noise from non-transportation noise sources to a level appropriate for the use and the surrounding area. In such instances, and where the noise generator is controlled by a conditional use permit, the conditional use permit may establish conditions for such use to achieve noise levels that are lower than the standards in this Chapter.

9.10.060 Prohibited Sources of Noise

Notwithstanding any other provision of this Chapter, the following sources of noise are prohibited:

A. Animals and Fowl. The keeping of any animal, including but not limited to, dogs, fowl and crowing roosters, which by any persistent sound or cry disturbs a reasonable person owning, using, or occupying property in the neighborhood.

B. Sounding Horns and Signal Devices. The sounding of any horn or signal device on any automobile, motorcycle, bus, or other vehicle in any other manner or circumstance or of any other purpose than required or permitted by the California Vehicle Code or other laws of the state.

C. Racing Engine. The racing of an engine of any motor vehicle, except when necessary to do so in the course of repairing, adjusting or testing but not so that a reasonable person owning, using or occupying property in the neighborhood is disturbed.

D. Musical Instruments, Sound Amplifiers and Sounds in General. The making of any recurring and excessive sound or noise by any method so that the sound is plainly audible and a reasonable person owning, using, or occupying property in the neighborhood is disturbed. This prohibition includes, but is not limited to, the use or operation of any musical instrument or any device, machine, apparatus, or instrument for intensification or amplification of the human voice or music.

E. Outdoor Amplified Sound on Town Property. The use of amplified sound outdoors on property owned by the town for any purpose unless authorized in writing by the town.

F. Explosives, Firearms, and Similar Devices. The use or firing of explosives, firearms, or similar devices which create impulsive sound so as to cause a noise disturbance across a real property boundary or on a public space or right-of-way, except when part of a government-authorized honor guard.

G. Motor Vehicle Maintenance. Work on motor vehicles, at other than service facilities approved by the town, that is plainly audible and a reasonable person owning, using, or occupying property in the neighborhood is disturbed.

H. Leaf Blowers. Leaf blowers shall not produce a sound that exceeds 65 dBA when measured from a distance of fifty feet utilizing American National Standard Institute methodology. No person shall operate any leaf blower which does not bear an affixed manufacturer's label indicating the model number of the leaf blower and designating a noise level not in excess of 65 dBA. Any leaf blower that bears such a manufacturer's label shall be presumed to comply with any noise level limit of this Chapter provided that it is operated with all mufflers and full extension tubes supplied by the manufacturer for that leaf blower. No person shall operate any leaf blower without attachment of all mufflers and full extension tubes supplied by the manufacturer for that leaf blower. This requirement becomes effective one year after the adoption of this revised Chapter.

9.10.070 Exemptions

Sound or noise emanating from the following sources and activities are exempt from the provisions of this ordinance:

A. Emergencies, involving the execution of the duties of duly authorized governmental personnel and others providing emergency response to the general public, including but not limited to sworn peace officers, emergency personnel, utility personnel, and the operation of emergency response vehicles and equipment.

B. Emergencies that pose a threat to property or safety of persons or animals and require action by a resident, including with the help of immediate family members or a commercial company.

C. Safety, warning and alarm devices, including house and car alarms, and other warning devices that are designed to protect the health, safety, and welfare, provided such devices are well-maintained, and designed with automatic shut offs or a direct connection to a security service, both of which turn off the device after a reasonable time limit.

9.10.080 Other Noises

Noises not addressed in the Chapter shall adhere to the most relevant provisions in the ordinance as determined by town staff or on referral to the town Council.

2. Environmental Review. Based on information contained in the proposed Negative Declaration and presented at public hearings on the proposed ordinance, this Ordinance will not result in any potentially significant environmental impacts. The proposed Negative Declaration reflects the Council's independent judgment, and the Council hereby adopts the Negative Declaration.

3. Effective Date; Posting. This ordinance shall become effective thirty (30) days after the date of its adoption and shall be posted within the Town of Portola Valley in three (3) public places.

INTRODUCED: June 24, 2009

PASSED: July 22, 2009

AYES: Councilmember Derwin, Councilmember Driscoll, Councilmember Merk, Vice Mayor Toben and Mayor Wengert

NOES: None

ABSTENTIONS: None

ATTEST:

By: _____
Mayor

ATTEST:

_____
Town Clerk

APPROVED AS TO FORM:

_____
Town Attorney

facilities contributes to residents being able to accomplish several missions on a single trip and thereby reduce automobile traffic. A full range of trail and path facilities also serves this area. The town center helps instill a sense of pride in the community and its values which in turn can help lead to community consensus on sustainability programs.

Goals and Objectives

4420 A major goal of the community is to ensure the sustainability of our environment. The provisions of this element, in addition to the above-referenced provisions in other parts of the general plan, are intended to help the community realize this goal. The element includes broad goals and objectives. In addition, Sustainability Element Appendix 1 lists "Illustrative Policies and Practices" that the town could consider in furthering the goals and objectives of the element.

4421 Following are the goals and objectives. The goals address: reduction of greenhouse gas emissions in the air, green building for new and existing structures, protection of water resources, protection of the natural environment, and community education and involvement. Each of the categories involves activities that can increase sustainability. The major goals are not mutually exclusive since sustainability is affected by many activities that occur in the town.

Overarching Goals

1. To encourage and provide community education about sustainable principles and applications.

2. To encourage the use of renewable resources and minimize the use of nonrenewable resources.

3. To strive for an optimum balance among the activities of residents, the built environment and the natural environment so as to maintain and improve the condition of life for future generations.

4. To encourage and provide for enhanced resource efficiency and the use of sustainable materials in all building projects.

5. To employ the principles of "green" building.

6. To reduce carbon emissions to 1990 levels by the year 2020 and to 80% below 1990 levels by the year 2050.

- Cause the Ldn at noise-sensitive uses to increase by 3 dBA or more and exceed the "normally acceptable" level. See Figure 2 for the definition of "normally acceptable."

- Cause the Ldn at noise-sensitive uses to increase by 5 dBA or more and remain "normally acceptable."

Where a proposed transportation noise source is likely to produce noise levels that would exceed the above standards, an acoustical analysis shall be required as a part of project review or as part of the environmental review process so that noise mitigation may be included in the project design.

2. Noise created by new non-transportation noise sources shall be mitigated so as to not cause the land use receiving the noise to exceed interior and exterior noise level standards of Table 3. Where proposed non-transportation noise sources are likely to produce noise levels that would exceed the standards of Table 3, an acoustical analysis shall be required as a part of project review or as part of the environmental review process so that noise mitigation may be included in the project design.

3. All acoustical analyses shall:
   - Be the responsibility of the applicant for the project.
   - Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.
   - Include representative noise level assessments with sufficient sampling periods and locations to adequately describe local conditions.
   - Estimate existing and projected (20 years) noise levels in terms of Ldn and/or the standards of Table 3, and compare those levels to the policies of this Element.
   - Recommend mitigation to achieve compliance with the adopted policies and standards of this Element. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance.
   - Describe a post-project assessment program that could be used to evaluate the effectiveness of the proposed mitigation measures.

4319 Goal 4: Control Noise from Construction and Yard Maintenance Activities

1. Implement appropriate standard controls for all construction projects carried out by contractors or homeowners.

2. Implement appropriate standard controls for yard maintenance activities carried out by commercial companies and homeowners.

3. Require ASCC review for all construction projects scheduled for or lasting more than 24 months and submittal of construction staging, timing and noise management plans.

4. Develop a guidance manual to provide information to the public regarding noise control.

4320 Goal 5: Control Noise from Other Sources

1. Communicate with the FAA through the San Francisco International Airport (SFO) Airport Roundtable, and other government persons and agencies, to minimize the noise impact of commercial aircraft operations.

2. Work with local airports to promote a "fly neighborly" program to minimize noise resulting from low altitude aircraft operations and unnecessary general aviation aircraft over Portola Valley.

3. Revise the noise ordinance to address ongoing noise issues by using quantitative noise limits where appropriate and establishing comprehensive noise control measures.

4. Develop a "quiet neighbor" information program and distribute information to the community defining community norms.

5. Develop a program for dealing with chronic noise complaints.

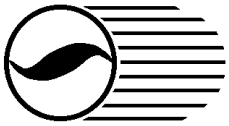
Appendix

The document "Noise Technical Report Supporting the Updates of the Portola Valley Noise Element and Noise Ordinance, June 18, 2008" prepared by Richard B. Rodkin, PE, is included as an appendix to the noise element.

Table 4

Sectors Included in the Baseline Inventory	2005 GHG Emissions (metric tons CO_2e)	2010 GHG Emissions (metric tons CO_2e)	Increase or Decrease in GHG Emissions (metric tons CO_2e)	Percentage of 2010 GHG Emissions
Residential	13,720	13,367	-353	41.5%
Commercial/Industrial	4,276	4,389	113	13.6%
Transportation – Local roads	12,880	12,310	-570	38.2%
Transportation – State highways	163	140	-23	0.4%
Transportation – Off-road equipment	1,411	1,462	51	4.5%
Solid Waste – Generated Waste	561	338	-223	1.0%
SUBTOTAL	**33,011**	**32,007**	**-1,004**	**99.3%**
New Sectors (not included in the Baseline Inventory)	**2005 GHG Emissions (metric tons CO_2e)**	**2010 GHG Emissions (metric tons CO_2e)**	**Increase or Decrease in GHG Emissions (metric tons CO_2e)**	**Percentage of 2010 GHG Emissions**
Wastewater	Not applicable	107	Not applicable	0.3%
Water		125		0.4%
SUBTOTAL		**232**		**0.7%**
GRAND TOTAL OF 2010 EMISSIONS	**32,239**		**metric tons CO2e**	
Total of 2005 Baseline Emissions	**33,079**		**metric tons CO2e**	
Total Decrease	**-840**		**metric tons CO2e**	

California Environmental Protection Agency



AIR RESOURCES BOARD

A REPORT TO THE CALIFORNIA LEGISLATURE ON THE POTENTIAL HEALTH AND ENVIRONMENTAL IMPACTS OF LEAF BLOWERS

Mobile Source Control Division

February 2000

State of California

AIR RESOURCES BOARD

A REPORT TO THE CALIFORNIA LEGISLATURE ON THE POTENTIAL HEALTH AND ENVIRONMENTAL IMPACTS OF LEAF BLOWERS

Public Hearing: January 27, 2000
Date of Revision: February 29, 2000

ACKNOWLEDGMENTS

This report on potential health and environmental impacts of leaf blowers was developed by the following Air Resources Board staff:

Mobile Sources Control Division:
Nancy L.C. Steele, D.Env. (Lead)
Scott Rowland
Michael Carter (Branch Chief)

Research Division:
Hector Maldonado
Cindy Stover

And with the assistance of additional staff: Cresencia Gapas-Jackson, Leslie Krinsk, Jeff Long, Keith Macias, Angela Ortega, Muriel Strand, John Swanton, Maggie Wilkinson, and Walter Wong.

The many other individuals who provided information and assistance for this report are listed in Appendix B.

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EXECUTIVE SUMMARY

Background and Overview

California Senate Concurrent Resolution No. 19 (SCR 19) requests the Air Resources Board (ARB) to prepare and submit a report to the Legislature on or before January 1, 2000, summarizing the potential health and environmental impacts of leaf blowers and including recommendations for alternatives to the use of leaf blowers and alternative leaf blower technology, if the ARB determines that alternatives are necessary. The goal of this report is to summarize for the California Legislature existing data on health and environmental impacts of leaf blowers, to identify relevant questions not answered in the literature, and suggest areas for future research.

The leaf blower was invented in the early 1970s and introduced to the United States as a lawn and garden maintenance tool. Drought conditions in California facilitated acceptance of the leaf blower as the use of water for many garden clean-up tasks was prohibited. By 1990, annual sales were over 800,000 nationwide, and the tool had become a ubiquitous gardening implement. In 1998, industry shipments of gasoline-powered handheld and backpack leaf blowers increased 30% over 1997 shipments, to 1,868,160 units nationwide.

Soon after the leaf blower was introduced into the U.S., its use was banned as a noise nuisance in two California cities, Carmel-by-the-Sea in 1975 and Beverly Hills in 1978. By 1990, the number of California cities that had banned the use of leaf blowers was up to five. There are currently twenty California cities that have banned leaf blowers, sometimes only within residential neighborhoods and usually targeting gasoline-powered equipment. Another 80 cities have ordinances on the books restricting either usage or noise level or both. Other cities have considered and rejected leaf blower bans. Nationwide, two states, Arizona and New Jersey, have considered laws at the state level, and five other states have at least one city with a leaf blower ordinance.

The issues usually mentioned by those who object to leaf blowers are health impacts from noise, air pollution, and dust. Municipalities regulate leaf blowers most often as public nuisances in response to citizen complaints. Two reports were located that address environmental concerns: the Orange County Grand Jury Report, and a series of reports from the City of Palo Alto City Manager's office. The City of Palo Alto reports were produced in order to make recommendations to the City Council on amending their existing ordinance. The Orange County Grand Jury took action to make recommendations to improve the quality of life in Orange County, and recommended that cities, school districts, community college districts, and the County stop using gasoline-powered leaf blowers in their maintenance and clean-up operations. The major findings of each are similar: leaf blowers produce exhaust emissions, resuspend dust, and generate high noise levels.

As per SCR 19, this report includes a comprehensive review of existing studies of the impacts of leaf blowers on leaf blower operators and on the public at large, and of the availability and actual use of protective equipment for leaf blowers. The receptors identified by the resolution are humans and the environment; sources of impacts are exhaust, noise, and dust. Because the Legislature specified that ARB use existing information, staff conducted no new studies. In order to locate existing data, staff searched the published literature, contacted potential resources and experts, and requested data from the public via mail and through a web page devoted to the leaf blower report. Two public workshops were held in El Monte, California, to facilitate further discussions with interested parties.

The methodology followed for this report depends on both the objectives of SCR 19 and available data. As staff discovered, in some areas, such as exhaust emissions, much is known; in other areas, such as fugitive dust emissions, we know very little. For both fugitive dust and noise, there are few or no data specifically on leaf blower impacts. For all hazards, there have been no dose-response studies related to emissions from leaf blowers, we do not know how many people are affected by those emissions, and no studies were located that address potential health impacts from leaf blowers. Therefore, staff determined to provide the Legislature with a report that has elements of both impact and risk assessments.

The body of the report comprises three components, following the introduction: hazard identification, review of health effects, and a characterization of the potential impacts of leaf blowers on operators and bystanders. In Section II, the emissions are quantified as to specific hazardous constituents, the number of people potentially exposed to emissions is discussed, and laws that seek to control emissions are summarized. Section III reviews health effects, identifying the range of potential negative health outcomes of exposure to the identified hazards. Section IV is a synthesis of hazard identification and health effects, characterizing potential health impacts that may be experienced by those exposed to the exhaust emissions, fugitive dust, and noise from leaf blowers in both occupational and non-occupational setting. Section V discusses recommendations. Additional information, including a discussion of research needs to make progress toward answering some of the questions raised by this report, a description of engine technologies that could reduce exhaust emissions and alternatives to leaf blowers, and a complete bibliography of materials received and consulted but not cited in the report, is found in the appendices.

Description of the Hazards

Hazard identification is the first step in an impact or risk assessment. Each of the three identified hazards are examined in turn, exhaust emissions, dust emissions, and noise. For each, the hazard is described and quantified, to the extent possible, and the number of people potentially exposed to the hazard is discussed. For exhaust emissions, the number of people potentially impacted is as high as the population of the state, differing within air basins. Fugitive dust emissions impact a varying number of people, depending on one's proximity to the source, the size of the particles, and the amount of time since the source resuspended the particles. Finally, we also discuss laws that control the particular hazard.

Exhaust emissions from leaf blowers consist of the following specific pollutants of concern: hydrocarbons from both burned and unburned fuel, and which combine with other gases in the atmosphere to form ozone; carbon monoxide; fine particulate matter; and other toxic air contaminants in the unburned fuel, including benzene, 1,3-butadiene, acetaldehyde, and formaldehyde. Exhaust emissions from these engines, while high compared to on-road mobile sources on a per engine basis, are a small part of the overall emission inventory. Emissions have only been controlled since 1995, with more stringent standards taking effect in 2000. The exhaust emissions from leaf blowers are consistent with the exhaust emissions of other, similar off-road equipment powered by small, two-stroke engines, such as string trimmers. Manufacturers have developed several different methods to comply with the standards and have done an acceptable job certifying and producing engines that are below the regulated limits. Electric-powered models that are exhaust-free are also available.

Data on fugitive dust indicate that the PM10 emissions impacts from dust suspended by leaf blowers are small, but probably significant. Previous emission estimates range from less than 1% to 5% of the statewide PM10 inventory. The ARB previously estimated statewide fugitive dust emissions to be about 5 percent of the total, the Sacramento Metropolitan AQMD estimated leaf blower fugitive dust emissions to be about 2 percent of the Sacramento county PM10 air burden, and AeroVironment estimated dust attributable to leaf blowers in the South Coast Air Basin to be less than 1% of all fugitive dust sources. Dust emissions attributable to leaf blowers are not part of the inventory of fugitive dust sources. ARB, therefore, does not have official data on the quantity of fugitive dust resuspended by leaf blowers. A more definitive estimate of leaf blower fugitive dust emissions will require verification of appropriate calculation parameters and representative silt loadings, measurement of actual fugitive dust emissions through source testing, and identification of the composition of leaf blower-generated fugitive dust.

Noise is the general term for any loud, unmusical, disagreeable, or unwanted sound, which has the potential of causing hearing loss and other adverse health impacts. While millions of Californians are likely exposed to noise from leaf blowers as bystanders, given the ubiquity of their use and the increasing density of California cities and towns, there is presently no way of knowing for certain how many are actually exposed, because of the lack of studies. In contrast, it is likely that at least 60,000 lawn and garden workers are daily exposed to the noise from leaf blowers. Many gardeners and landscapers in southern California are aware that noise is an issue and apparently would prefer quieter leaf blowers. Purchases of quieter leaf blowers, based on manufacturer data, are increasing. While little data exist on the noise dose received on an 8-hr time-weighted-average by operators of leaf blowers, data indicate that some operators may be exposed above the OSHA permissible exposure limit. It is unlikely that more than 10% of leaf blower operators and members of the gardening crew, and probably a much lower percentage, regularly wear hearing protection, thus exposing them to an increased risk of hearing loss. The sound quality of gasoline-powered leaf blowers may account for the high level of annoyance reported by bystanders.

Review of Health Effects

Potential health effects from exhaust emissions, fugitive dust, and noise range from mild to serious. Fugitive dust is not a single pollutant, but rather is a mixture of many subclasses of pollutants, each containing many different chemical species. Many epidemiological studies have shown statistically significant associations of ambient particulate matter levels with a variety of negative health endpoints, including mortality, hospital admissions, respiratory symptoms and illness, and changes in lung function. Carbon monoxide is a component of exhaust emissions which causes health effects ranging from subtle changes to death. At low exposures, CO causes headaches, dizziness, weakness, and nausea. Children and people with heart disease are particularly at risk from CO exposure. Some toxic compounds in gasoline exhaust, in particular benzene, 1,3-butadiene, acetaldehyde, and formaldehyde, are carcinogens. Ozone, formed in the presence of sunlight from chemical reactions of exhaust emissions, primarily hydrocarbons and nitrogen dioxide, is a strong irritant and exposures can cause airway constriction, coughing, sore throat, and shortness of breath. Finally, noise exposures can damage hearing, and cause other adverse health impacts, including interference with communication, rest and sleep disturbance, changes in performance and behavior, annoyance, and other psychological and physiological changes that may lead to poor health.

Potential Health and Environmental Impacts of Leaf Blowers

Health effects from hazards identified as being generated by leaf blowers range from mild to serious, but the appearance of those effects depends on exposures: the dose, or how much of the hazard is received by a person, and the exposure time. Without reasonable estimates of exposures, ARB cannot conclusively determine the health impacts from leaf blowers; the discussion herein clearly is about potential health impacts. The goal is to direct the discussion and raise questions about the nature of potential health impacts for those exposed to the exhaust emissions, fugitive dust, and noise from leaf blowers in both occupational and non-occupational settings.

For the worker, the analysis suggests concern. Bearing in mind that the worker population is most likely young and healthy, and that these workers may not work in this business for all of their working lives, we nonetheless are cautioned by our research. Leaf blower operators may be exposed to potentially hazardous concentrations of CO and PM intermittently throughout their work day, and noise exposures may be high enough that operators are at increased risk of developing hearing loss. While exposures to CO, PM, and noise may not have immediate, acute effects, the potential health impacts are greater for long term exposures leading to chronic effects. In addition, evidence of significantly elevated concentrations of benzene and 1,3-butadiene in the breathing zone of operators leads to concern about exposures to these toxic air contaminants.

Potential noise and PM health impacts should be reduced by the use of appropriate breathing and hearing protective equipment. Employers should be more vigilant in requiring and ensuring their employees wear breathing and hearing protection. Regulatory agencies should conduct educational and enforcement campaigns, in addition to exploring the extent of the use of protective gear. Exposures to CO and other air toxics are more problematic because there is no effective air filter. More study of CO and other air toxics exposures experienced by leaf blower

operators is warranted to determine whether the potential health effects discussed herein are actual effects or not.

Describing the impacts on the public at large is more difficult than for workers because people's exposures and reactions to those exposures are much more variable. Bystanders are clearly annoyed and stressed by the noise and dust from leaf blowers. They can be interrupted, awakened, and may feel harassed, to the point of taking the time to contact public officials, complain, write letters and set up web sites, form associations, and attend city council meetings. These are actions taken by highly annoyed individuals who believe their health is being negatively impacted. In addition, some sensitive individuals may experience extreme physical reactions, mostly respiratory symptoms, from exposure to the kicked up dust.

On the other hand, others voluntarily purchase and use leaf blowers in their own homes, seemingly immune to the effects that cause other people such problems. While these owner-operators are likely not concerned about the noise and dust, they should still wear protective equipment, for example, eye protection, dust masks, and ear plugs, and their exposures to CO are a potential problem and warrant more study.

Recommendations

The Legislature asked ARB to include recommendations for alternatives in the report, if ARB determines alternatives are necessary. This report makes no recommendations for alternatives. Based on the lack of available data, such conclusions are premature at this time. Exhaust standards already in place have reduced exhaust emissions from the engines used on leaf blowers, and manufacturers have significantly reduced CO emissions further than required by the standards. Ultra-low or zero exhaust emitting leaf blowers could further reduce public and worker exposures. At the January 27, 2000, public hearing, the Air Resources Board directed staff to explore the potential for technological advancement in this area.

For noise, the ARB has no Legislative mandate to control noise emissions, but the evidence seems clear that quieter leaf blowers would reduce worker exposures and protect hearing, and reduce negative impacts on bystanders. In connection with this report, the Air Resources Board received several letters urging that the ARB or another state agency set health-based standards for noise and control noise pollution.

A more complete understanding of the noise and the amount and nature of dust resuspended by leaf blower use and alternative cleaning equipment is suggested to guide decision-making. Costs and benefits of cleaning methods have not been adequately quantified. Staff estimates that a study of fugitive dust generation and exposures to exhaust emissions and dust could cost $1.1 million, require two additional staff, and take two to three years. Adding a study of noise exposures and a comparison of leaf blowers to other cleaning equipment could increase study costs to $1.5 million or more (Appendix H).

Fugitive dust emissions are problematic. The leaf blower is designed to move relatively large materials, which requires enough force to also blow up dust particles. Banning or restricting the use of leaf blowers would reduce fugitive dust emissions, but there are no data on fugitive dust emissions from alternatives, such as vacuums, brooms, and rakes. In addition, without a more complete analysis of potential health impacts, costs and benefits of leaf blower use, and potential health impacts of alternatives, such a recommendation is not warranted.

Some have suggested that part of the problem lies in how leaf blower operators use the tool, that leaf blower operators need to show more courtesy to passersby, shutting off the blower when people are walking by. Often, operators blow dust and debris into the streets, leaving the dust to be resuspended by passing vehicles. Interested stakeholders, including those opposed to leaf blower use, could join together to propose methods for leaf blower use that reduce noise and dust generation, and develop and promote codes of conduct by workers who operate leaf blowers. Those who use leaf blowers professionally would then need to be trained in methods of use that reduce pollution and potential health impacts both for others and for themselves.

I. INTRODUCTION

A. Background

California Senate Concurrent Resolution No. 19 (SCR 19) was introduced by Senator John Burton February 23, 1999, and chaptered May 21, 1999 (Appendix A). The resolution requests the Air Resources Board (ARB) to prepare and submit a report to the Legislature on or before January 1, 2000, "summarizing the potential health and environmental impacts of leaf blowers and including recommendations for alternatives to the use of leaf blowers and alternative leaf blower technology if the state board determines that alternatives are necessary." The Legislature, via SCR 19, raises questions and concerns about potential health and environmental impacts from leaf blowers, and requests that ARB write the report to help to answer these questions and clarify the debate. The goal of this report, then, is to summarize for the California Legislature existing data on health and environmental impacts of leaf blowers, to identify relevant questions not answered in the literature, and suggest areas for future research.

As per SCR 19, this report includes a comprehensive review of existing studies of the impacts of leaf blowers on leaf blower operators and on the public at large, and of the availability and actual use of protective equipment for leaf blowers. The receptors identified by the resolution are humans and the environment; sources of impacts are exhaust, noise, and dust. Because the Legislature specified that ARB use existing information, staff conducted no new studies. In order to locate existing data, staff searched the published literature, contacted potential resources and experts, and requested data from the public via mail and through a web page devoted to the leaf blower report.

B. History of the Leaf Blower and Local Ordinances

The leaf blower was invented by Japanese engineers in the early 1970s and introduced to the United States as a lawn and garden maintenance tool. Drought conditions in California facilitated acceptance of the leaf blower as the use of water for many garden clean-up tasks was prohibited. By 1990, annual sales were over 800,000 nationwide, and the tool had become a ubiquitous gardening implement (CQS 1999a). In 1998, industry shipments of gasoline-powered handheld and backpack leaf blowers increased 30% over 1997 shipments, to 1,868,160 units nationwide (PPEMA 1999).

Soon after the leaf blower was introduced into the U.S., its use was banned in two California cities, Carmel-by-the-Sea in 1975 and Beverly Hills in 1978, as a noise nuisance (CQS 1999a, Allen 1999b). By 1990, the number of California cities that had banned the use of leaf blowers was up to five. There are currently twenty California cities that have banned leaf blowers, sometimes only within residential neighborhoods and usually targeting gasoline-powered equipment. Another 80 cities have ordinances on the books restricting either usage or noise level or both. Other cities have considered and rejected leaf blower bans. Nationwide, two states,

Arizona and New Jersey, have considered laws at the state level, and five other states have at least one city with a leaf blower ordinance (IME 1999).

Many owners of professional landscaping companies and professional gardeners believe that the leaf blower is an essential, time- and water-saving tool that has enabled them to offer services at a much lower cost than if they had to use rakes, brooms, and water to clean up the landscape (CLCA 1999). A professional landscaper argues that the customer demands a certain level of garden clean-up, regardless of the tool used (Nakamura 1999). The issues continue to be debated in various public forums, with each side making claims for the efficiency or esthetics of leaf blower use versus rakes and brooms. Leaf blower sales continue to be strong, however, despite the increase in usage restrictions by cities.

C. Environmental Concerns

The issues usually mentioned by those who object to leaf blowers are health impacts from noise, air pollution, and dust (Orange County Grand Jury 1999). The Los Angeles Times Garden Editor, Robert Smaus (1997), argues against using a leaf blower to remove dead plant material, asserting that it should be left in place to contribute to soil health through decomposition. Municipalities regulate leaf blowers most often as public nuisances in response to citizen complaints (for example, City of Los Angeles 1999). Two reports were located that address environmental concerns: an Orange County Grand Jury report (1999), and a series of reports written by the City Manager of Palo Alto (1999a, 1998a, 1998b). The purpose of the City of Palo Alto reports is to develop recommendations to the City Council on amending its existing ordinance. The Orange County Grand Jury took action to make recommendations that would "improve the quality of life in Orange County," and recommended that cities, school districts, community college districts, and the County stop using gasoline-powered leaf blowers in their maintenance and clean-up operations. The major findings of each are similar (Table 1).

Table 1. Major Findings of the Orange County Grand Jury and City of Palo Alto

Orange County Grand Jury Report (1999)	City of Palo Alto City Manager's Report (1999a)
(1) Toxic exhaust fumes and emissions are created by gas-powered leaf blowers.	(1) Gasoline-powered leaf blowers produce fuel emissions that add to air pollution.
(2) The high-velocity air jets used in blowing leaves whip up dust and pollutants. The particulate matter (PM) swept into the air by blowing leaves is composed of dust, fecal matter, pesticides, fungi, chemicals, fertilizers, spores, and street dirt which consists of lead and organic and elemental carbon.	(2) Leaf blowers (gasoline and electric) blow pollutants including dust, animal droppings, and pesticides into the air adding to pollutant problems.

(3) Blower engines generate high noise levels. Gasoline-powered leaf blower noise is a danger to the health of the blower operator and an annoyance to the non-consenting citizens in the area of usage.	(3) Leaf blowers (gasoline and electric) do produce noise levels that are offensive and bothersome to some individuals.

As will be discussed in more detail later in this report, the findings in these two reports about exhaust emissions and noise are substantiated in the scientific literature. The report's findings regarding dust emissions, however, were not documented or based on scientific analysis of actual emissions, but were based on common sense knowledge. The City of Palo Alto continued to examine the issue, at the behest of council members, and reported revised recommendations for the use of leaf blowers in Palo Alto in September (City of Palo Alto 1999b) and January 2000 (City of Palo Alto 2000). The City of Palo Alto subsequently voted to ban the use of fuel-powered leaf blowers throughout the city as of July 1, 2001 (Zinko 2000).

D. Health and Environmental Impacts

SCR 19 asks ARB to summarize potential health and environmental impacts of leaf blowers, and thus our first task is to determine what information and analysis would comprise a summary of health and environmental impacts. The methodology followed for this report is dependent both on the objectives of SCR 19 and on the available data. As staff discovered, in some areas, such as exhaust emissions, we know much; in other areas, such as fugitive dust emissions, we know very little. For both fugitive dust and noise, there are few or no data specifically on leaf blower impacts. For all hazards, there have been no dose-response studies related to emissions from leaf blowers and we do not know how many people are affected by those emissions. Therefore, staff determined to provide the Legislature with a report that has elements of both impact and risk assessments, each of which is described below.

1. Life-cycle Impact Assessment

Life-cycle impact assessment is the examination of potential and actual environmental and human health effects related to the use of resources and environmental releases (Fava et al. 1993). A product's life-cycle is divided into the stages of raw materials acquisition, manufacturing, distribution/transportation, use/maintenance, recycling, and waste management (Fava et al. 1991). In this case, the relevant stage of the life-cycle is use/maintenance. Life-cycle impact assessment tends to focus on relative emission loadings and resources use and does not directly or quantitatively measure or predict potential effects or identify a causal association with any effect. Identification of the significance and uncertainty of data and analyses are important (Barnthouse 1997).

2. Risk Assessment

A traditional risk assessment, on the other hand, seeks to directly and quantitatively measure or predict causal effects. A risk assessment evaluates the toxic properties of a chemical or other hazard, and the conditions of human exposure, in order to characterize the nature of effects and determine the likelihood of adverse impacts (NRC 1983). The four components of a risk assessment are:

Hazard identification: Determine the identities and quantities of chemicals present, the types of hazards they may produce, and the conditions under which exposure occurs.
Dose-response assessment: Describe the quantitative relationship between the amount of exposure to a substance (dose) and the incidence of adverse effects (response).
Exposure assessment: Identify the nature and size of the population exposed to the substance and the magnitude and duration of their exposure.
Risk characterization: Integrate the data and analyses of the first three components to determine the likelihood that humans (or other species) will experience any of the various adverse effects associated with the substance.

The goal of risk assessment is the quantitative characterization of the risk, i.e., the likelihood that a certain number of individuals will die or experience another adverse endpoint, such as injury or disease. A risk assessment is ideally followed up by risk management, which is the process of identifying, evaluating, selecting, and implementing actions to reduce risk to human health and ecosystems (Omenn et al. 1997). While a risk assessment appears to be preferable because it allows us to assign an absolute value to the adverse impacts, a quantitative assessment is difficult, if not impossible, to perform when data are limited.

E. Public Involvement

To facilitate public involvement in the process of preparing the leaf blower report, staff mailed notices using existing mailing lists for small off-road engines and other interested parties, posted a leaf blower report website, met with interested parties, and held two public workshops, in June and September, 1999. In addition to face-to-face meetings and workshops, staff contacted interested parties through numerous telephone calls and e-mails. A list of persons contacted for this report is found in Appendix B. Letters and documents submitted to the Air Resources Board as of December 15, 1999, are listed in Appendix K. The vast majority of those contacted were very helpful, opening their files and spending time answering questions. ARB staff were provided with manufacturer brochures; unpublished data; old, hard-to-find reports and letters; and given briefings and demonstrations. Many reports have been posted on the Internet, for downloading at no cost, which considerably simplified the task of tracking down significant works and greatly reduced the cost of obtaining the reports.

F. Overview of this Report

The main body of this report comprises four additional sections, followed by the references cited and appendices. Section II describes the hazards, as identified in SCR 19, from leaf blowers. Hazardous components of exhaust emissions, fugitive dust emissions, and noise are covered in turn, along with who is exposed to each hazard and how society has sought to control exposure to those hazards through laws. Section III reviews health effects of each of the hazards, with exhaust emissions subdivided into particulate matter, carbon monoxide, ozone, and toxic constituents of burned and unburned fuel. Health effects from fugitive dust are covered in the subsection on particulate matter. Section IV discusses the potential health and environmental impacts of leaf blowers, synthesizing the information presented in Sections II and III. Section V discusses recommendations. Additional information, including a discussion of research needs to make progress toward answering some of the questions raised by this report, a description of engine technologies that could reduce exhaust emissions and alternatives to gasoline-powered leaf blowers, and a complete bibliography of materials received and consulted but not cited in the report, is found in the appendix.

II. DESCRIPTION OF THE HAZARDS

This section of the report describes the three potential hazards identified by SCR 19 as resulting from leaf blowers. This report examines the three hazards that have been of most concern of the public and the Legislature. Hazard identification is the first step in an impact or risk assessment. In this section, then, each of the three identified hazards are examined in turn, exhaust emissions, dust emissions, and noise. For each, the hazard is described and quantified, and the number of people potentially exposed to the hazard is discussed. For exhaust emissions, the number of people potentially impacted is as high as the population of the state, differing within air basins. Fugitive dust emissions impact a varying number of people, depending on one's proximity to the source, the size of the particles, and the amount of time since the source resuspended the particles. Finally, in this section we also discuss laws that control the particular hazard.

A. Exhaust Emissions

Exhaust emissions are those emissions generated from the incomplete combustion of fuel in an engine. The engines that power leaf blower equipment are predominantly two-stroke, less than 25 horsepower (hp) engines. This section describes the two-stroke engine technology prevalent in leaf blower equipment and associated emissions, reviews the leaf blower population and emission inventory data approved by the Board in 1998, and describes federal, state, and local controls on small off-road engines.

1. Characterization of Technology

Small, two-stroke gasoline engines have traditionally powered leaf blowers, and most still are today.[1] The two-stroke engine has several attributes that are advantageous for applications such as leaf blowers. Two-stroke engines are lightweight in comparison to the power they generate, and operate in any position, allowing for great flexibility in equipment applications. Multi-positional operation is made possible by mixing the lubricating oil with the fuel; the engine is, thus, properly lubricated when operated at a steep angle or even upside down.

A major disadvantage of two-stroke engines is high exhaust emissions. Typical two-stroke designs feed more of the fuel/oil mixture than is necessary into the combustion chamber. Through a process known as scavenging, the incoming fuel enters the combustion chamber as the exhaust is leaving. This timing overlap of intake and exhaust port opening can result in as much as 30% of the fuel/oil mixture being exhausted unburned. Thus, exhaust emissions consist of both unburned fuel and products of incomplete combustion. The major pollutants from a two-stroke engine are, therefore, oil-based particulates, a mixture of hydrocarbons, and carbon monoxide. A two-stroke engine forms relatively little oxides of nitrogen emissions, because the extra fuel absorbs the heat and keeps peak combustion temperatures low.

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[1]Unless otherwise referenced, this section makes use of material in the ARB's Small Off Road Engine staff report and attachments, identified as MSC 98-02; 1998a.

Hydrocarbon emissions, in general, combine with nitrogen oxide emissions from other combustion sources to produce ozone in the atmosphere. Thus ozone, although not directly emitted, is an additional hazard from leaf blower exhaust. In addition, some of the hydrocarbons in fuel and combustion by-products are themselves toxic air contaminants, such as benzene, 1,3-butadiene, acetaldehyde, and formaldehyde (ARB 1997). The major sources of benzene emissions are gasoline fugitive emissions and motor vehicle exhaust; about 25% of benzene emissions are attributed to off-road mobile sources. Most 1,3-butadiene emissions are from incomplete combustion of gasoline and diesel fuels from mobile sources (about 96%). Sources of acetaldehyde include emissions from combustion processes and photochemical oxidation. The ARB has estimated that acetaldehyde emissions from off-road motor vehicles comprise about 27% of the total emissions. Finally, formaldehyde is a product of incomplete combustion and is also formed by photochemical oxidation; mobile sources appear to contribute a relatively small percentage of the total direct emissions of formaldehyde. Data do not exist to allow reliable estimation of toxic air contaminant emissions from small, two-stroke engine exhaust.

A small percentage of blowers utilize four-stroke engines. These blowers are typically "walk-behind" models, used to clean large parking lots and industrial facilities, rather than lawns and driveways. Overall, the engines used in these blowers emit significantly lower emissions than their two-stroke counterparts, with significantly lower levels of hydrocarbons and particulate matter. These four-stroke blower engines have a significantly lower population than the traditional two-stroke blowers and only peripherally fit the definition or commonly-accepted meaning of the term "leaf blower." They are mentioned here only for completeness, but are not otherwise separately addressed in this report.

2. Exhaust Emissions

a. Leaf Blower Population

The best estimates available indicate that there are approximately 410,000 gasoline-powered blowers in use in the state today. Less than 5,000 of those use four-stroke engines; the remainder (99%) utilize two-stroke engines. These data have been developed from information gathered through the development and implementation of ARB's small off-road engine regulation. Since the small off-road engine regulation does not apply to blowers powered by electric motors, data regarding the number of electric blowers are not as extensive. However, information shared by the handheld power equipment industry indicates that approximately 60 percent of blowers sold are electric. This would indicate that there are approximately 600,000 electric blowers in California. It must be stressed that the majority of the blower population being electric does not imply that the majority of usage accrues to electric blowers. In fact, electric blowers are more likely to be used by homeowners for occasional use, whereas virtually all professional gardeners use engine-powered blowers.

b. Emission Inventory

California's emission inventory is an estimate of the amount and types of criteria pollutants and ozone precursors emitted by all sources of air pollution. The emission inventory method and inputs for small off-road engines, with power ratings of less than 25 hp, were approved by the Board in 1998 (ARB 1998b) (Table 2). Exhaust emissions from leaf blowers contribute from one to nine percent of the small-off road emissions, depending on the type of pollutant, based on the 2000 emissions data. Exhaust emission standards for small off-road engines, which will be implemented beginning in 2000, will result in lower emissions in the future. By 2010, for example, hydrocarbon emissions are expected to shrink by 40% statewide, while CO declines by 35% and PM10 drops 90%. The reductions reflect the replacement of today's blowers with cleaner blowers meeting the 2000 standards.

Table 2. Statewide Inventory of Leaf Blower Exhaust Emissions (tons per day)

	Leaf blowers 2000	**Leaf blowers 2010**	**All Lawn & Garden, 2000**	**All Small Off-Road, 2000**
Hydrocarbons, reactive	7.1	4.2	50.24	80.07
Carbon Monoxide (CO)	16.6	9.8	434.99	1046.19
Fine Particulate Matter (PM10)	0.2	0.02	1.05	3.17

3. Regulating Exhaust Emissions

a. State Regulations

The California Clean Air Act, codified in the Health and Safety Code Sections 43013 and 43018, was passed in 1988 and grants the ARB authority to regulate off-road mobile source categories, including leaf blowers. The federal Clean Air Act requires states to meet national ambient air quality standards (Appendix C) under a schedule established in the Clean Air Act Amendments of 1990. Because many air basins in California do not meet some of these standards, the State regularly prepares and submits to the U.S. EPA a plan that specifies measures it will adopt into law to meet the national standards. Other feasible measures not specified in the state implementation plan may also be adopted as needed.

In December 1990, the Board approved emission control regulations for new small off-road engines used in leaf blowers and other applications. The regulations took effect in 1995, and include exhaust emission standards, emissions test procedures, and provisions for warranty and production compliance programs. In March of 1998, the ARB amended the standards to be implemented with the 2000 model year (ARB 1998a). Table 3 illustrates how the standards compare with uncontrolled engines for leaf blower engines. Note that there was no particulate

matter standard for 1995-1999 model year leaf blowers, but that a standard will be imposed beginning with the 2000 model year.

Among other features of the small off-road engine regulations is a requirement that production engines be tested to ensure compliance. Examination of the certification data confirms that manufacturers have been complying with the emissions regulations; in fact, engines that have been identified as being used in blowers tend to emit hydrocarbons at levels that are 10 to 40 percent below the existing limits. This performance is consistent with engines used in string trimmers, edgers, and other handheld-type equipment, which are, in many cases, the same engine models used in leaf blowers.

Table 3
Exhaust Emissions Per Engine for Leaf Blowers
(grams per brake-horsepower-hour, g/bhp-hr)

	Uncontrolled Emissions	**1995-1999 Standards[2]**	**2000 and later Standards**
HC+NOx	283 + 1.0	180 + 4.0	54[3]
CO	908	600	400
PM	3.6	---[4]	1.5

b. Federal Regulations

Although the federal regulations for mobile sources have traditionally followed the ARB's efforts, the U.S. EPA has taken advantage of some recent developments in two-stroke engine technology. Specifically, compression wave technology has been applied to two-stroke engines, making possible much lower engine emissions. Bolstered by this information, the U.S. EPA (1999a) has proposed standards for blowers and other similar equipment that would be more stringent than the ARB standards. ARB plans a general review of off-road engine technology by 2001, and will consider the implications of this new technology in more detail then. A short description is included in Appendix I.

c. South Coast AQMD Emissions Credit Program

[2]Applicable to engines of 20-50 cc displacement, used by the vast majority of leaf blowers.

[3]For yr 2000, the HC + NOx standards have been combined.

[4]There was no particulate standard for this time period.

The South Coast Air Quality Management District (SCAQMD), an extreme non-attainment area for ozone, has promulgated Rule 1623 - Credits for Clean Lawn and Garden Equipment. Rule 1623 provides mobile source emission reduction credits for those who voluntarily replace old high-polluting lawn and garden equipment with new low- or zero-emission equipment or who sell new low- or zero-emission equipment without replacement. The intent of the rule is to accelerate the retirement of old high-polluting equipment and increase the use of new low- or zero-emission equipment. In 1990, volatile organic carbon emissions from lawn and garden equipment in the South Coast Air Basin were 22 tons per day (SCAQMD 1996). To date, no entity has applied for or received credits under Rule 1623 (V. Yardemian, pers. com.)

4. Summary

Exhaust emissions from leaf blowers consist of the following specific pollutants of concern: hydrocarbons from both burned and unburned fuel, and which combine with other gases in the atmosphere to form ozone; carbon monoxide; fine particulate matter; and other toxic air contaminants, including benzene, 1,3-butadiene, acetaldehyde, and formaldehyde. Exhaust emissions from these engines, while high compared to on-road mobile sources on a per engine basis, are a small part of the overall emission inventory. Emissions have only been controlled since 1995, with more stringent standards taking effect in 2000. The exhaust emissions from leaf blowers are consistent with the exhaust emissions of other, similar off-road equipment powered by small, two-stroke engines, such as string trimmers. Manufacturers have developed several different methods to comply with the standards and have done an acceptable job certifying and producing engines that are below the regulated limits. Electric-powered models that are exhaust-free are also available.

B. Fugitive Dust Emissions

“Blown dust” is the second of the hazards from leaf blowers specified in SCR 19. For the purposes of this report, we will use the term “fugitive dust,” which is consistent with the terminology used by the ARB. This section, in addition to defining fugitive dust emissions, characterizes fugitive dust resuspended by leaf blowers by comparing previous estimates of emission factors (amount emitted per hour per leaf blower) and emissions inventory (amount resuspended per day by all leaf blowers statewide) to a current estimate, developed for this report. In addition, the potential composition of leaf blower dust and fugitive dust controls at the state and local levels are described.

1. Definition of Fugitive Dust Emissions

From the Glossary of Air Pollution Terms, available on the ARB's website,[5] the following definitions are useful:

Fugitive Dust: Dust particles that are introduced into the air through certain activities such as soil cultivation, or vehicles operating on open fields or dirt roadways; a subset of fugitive emissions.

Fugitive Emissions: Emissions not caught by a capture system (often due to equipment leaks, evaporative processes, and windblown disturbances).

Particulate Matter (PM): Any material, except uncombined water, that exists in the solid or liquid state in the atmosphere. The size of particulate matter can vary from coarse, wind-blown dust particles to fine particle combustion products.

Fugitive dust is a subset of particulate matter, which is a complex mixture of large to small particles that are directly emitted or formed in the air. Current control efforts focus on PM small enough to be inhaled, generally those particles smaller than 10 micrometers (μm). So-called coarse particles are those larger than 2.5 μm in diameter, and are directly emitted from activities that disturb the soil, including construction, mining, agriculture, travel on roads, and landfill operations, plus windblown dust, pollen, spores, sea salts, and rubber from brake and tire wear. Those with diameters smaller than 2.5 μm are called fine particles. Fine particles remain suspended in the air for long periods and can travel great distances. They are formed mostly from combustion sources, such as vehicles, boilers, furnaces, and fires, with a small dust component. Fine particles can be directly emitted as soot or formed in the atmosphere as combustion products react with gases from other sources (Finlayson-Pitts & Pitts 1986).

Dust emissions from leaf blowers are not part of the inventory of fugitive dust sources. ARB, therefore, does not have official data on the quantity of fugitive dust resuspended by leaf blowers. No data on the amount and size distributions of resuspended dust from leaf blower activities have been collected, although estimates have been made. ARB evaluated three previous estimates (McGuire 1991, Botsford et al. 1996, Covell 1998) and developed a proposed methodology for estimating fugitive dust emissions from leaf blowers. The estimate presented below begins with the assumptions and calculations contained in the study conducted for the SCAQMD by AeroVironment (Botsford et al. 1996). Additional methodologies and data have been reviewed and derived from the U.S. EPA document commonly termed AP-42, and reports by the Midwest Research Institute; University of California, Riverside; and the Desert Research Institute.

[5] http://arbis.arb.ca.gov/html/gloss.htm

2. Calculating Leaf Blower Emissions

There are more than 400,000 gasoline-powered leaf blowers, plus approximately 600,000 electric leaf blowers, that are operated an estimated 114,000 hours per day in California. The fundamental premise in the calculations below is that leaf blowers are designed to move relatively large materials such as leaves and other debris, and hence can also be expected to entrain into the air much smaller particles, especially those below 30 μm diameter, which are termed total suspended particulate (PMtsp). Subsets of PMtsp include PM10, particulates with diameters less than or equal to 10 μm, and PM2.5, particulates with diameters less than or equal to 2.5 μm. Particles below 30 μm are not visible to the naked eye. Note that PM10 includes PM2.5 particles, and PMtsp includes PM10 and PM2.5 particles.

a. Generation of Fugitive Dust by Leaf Blowers

The leaf blower moves debris such as leaves by pushing relatively large volumes of air, typically between 300-700 cubic feet per minute, at a high wind speed, typically 150 to 280 miles per hour (hurricane wind speed is >117 mph). A typical surface is covered with a layer of dust that is spread, probably non-uniformly, along the surface being cleaned. While the intent of a leaf blower operator may not be to move dust, the high wind speed and volume result in small particles being blown into the air. In order to calculate how much fugitive dust is generated by the action of a blower, we assume that this layer of dust can be represented by a single average number, the silt loading. This silt loading value, when combined with the amount of ground cleaned per unit time and the estimated PM weight fractions, produces estimates of fugitive dust emissions from leaf blowers.

Staff have located no fugitive dust measurement studies on leaf blowers, but have found previous calculations of fugitive dust estimates from leaf blowers. Based on a review of those estimates, staff applied the latest knowledge and research in related fields in order to derive a second-order approximation. This section presents the best estimates using existing data, while recognizing that estimates are only approximations. Variables that would affect fugitive dust emissions, and for which ARB has little or no empirical data, include, for example:

(1) the specific surface types on which leaf blowers are used;
(2) the percentage of use on each specific surface type;
(3) effects of moisture, humidity, and temperature;
(4) silt loading values for surfaces other than paved roadways, shoulders, curbs, and gutters and in different areas of the state; and
(5) measurements of the amount of surface cleaned per unit time by the average operator.

Other variables are not expected to greatly influence fugitive dust emissions; the hurricane-force winds generated by leaf blowers are expected to overcome such influences, for example, as the roughness of relatively flat surfaces and the effect of particle static charge.

b. Size Segregation of Particulate Matter

PM emissions can be subdivided into the following three categories, operator emissions, local emissions, and regional emissions. They are differentiated as follows:

1) Operator emissions. PMtsp emissions approximate emissions to which the operator is exposed. The larger of these particles, between approximately 10 and 30 μm, have relatively short settling times, on the order of minutes to a couple of hours, maximum (Finlayson-Pitts & Pitts 1986, Gillies et al. 1996, Seinfeld & Pandis 1998). These would be emissions to which both the leaf blower operator and passersby would be exposed.

2) Local emissions. PM10 emissions will be used to estimate "local" PM emissions. PM10, which includes particles at or below 10 μm, may remain suspended for hours to days in the atmosphere (Finlayson-Pitts & Pitts 1986, Gillies et al. 1996, Seinfeld & Pandis 1998). These are emissions to which persons in the near-downwind-vicinity would be exposed, for example, residents whose lawns are being serviced and their neighbors, persons in commercial buildings whose landscapes are being maintained or serviced, and persons within a few blocks of the source.

3) Regional emissions. PM2.5 emissions may remain suspended for as long as a week or more (Finlayson-Pitts & Pitts 1986, Gillies, et al. 1996, Seinfeld & Pandis 1998). These particles are sized at or below 2.5 μm, and hence can be considered as contributors to regional PM emissions over a county or air basin because of their long residence time.

c. Calculation Assumptions and Limitations

The method presented uses the following assumptions.

1) Methods used for estimating wind blown dust for paved roads can be applied to estimating fugitive dust emissions from leaf blowers. That is, one can use an "AP-42" type (U.S. EPA 1997) of approach that calculates dust emissions based on the silt loading of the surfaces in question.

2) The typical leaf blower generates sufficient wind speed to cause sidewalk/roadway dust, in particular, particles 30 µm or less in aerodynamic diameter, to become airborne. The AeroVironment study (Botsford et al. 1996) assumed that nozzle air velocities ranged from 120 to 180 mph, and calculated that wind speed at the ground would range from 24 mph to 90 mph, sufficient to raise dust and equivalent, at the middle to high end speeds, to gale-force winds.

3) Currently available paved road, roadside shoulder, and gutter silt loadings (Venkatram & Fitz 1998) can be used to calculate emissions from leaf blowers, as there are no data on silt loadings on other surfaces. Observations and communications with landscapers indicate that leaf blowers are most commonly used to clean hardscape surfaces, such as sidewalks, after lawns and

flower beds have been trimmed and cuttings left on hardscapes. Debris is then frequently blown into the roadway before being collected for disposal.

4) The size fractions for particles for paved road dust can be used to calculate emissions from leaf blowers (G. Muleski, pers. comm.). The ratios of particle size multipliers, or "k" factors, are used to estimate the weight fraction of windblown dust for leaf blower usage. The "k" factor is a dimensionless value that represents the percentage of the total dust loading that is of a certain size fraction (MRI 1997).

5) Silt loading values and usage are assumed to be the same for residential and commercial leaf blower use. In an earlier draft, ARB staff had proposed different silt loading values for residential and commercial leaf blowers; comments were received that indicated that heavier-duty commercial leaf blowers were used in the same way in both residential and commercial settings. In addition, data on nozzle air speeds indicate that most electric leaf blowers, targeted at homeowners, have air speeds at or above 120 mph, the lowest air speed considered in the AeroVironment report (Botsford et al. 1996) as capable of raising dust.

6) The weight of total suspended particulates is equivalent to 100% of the silt loading, the weight fraction that comprises PM10 is 19% of the total, and the weight fraction comprising PM2.5 is 9% of the total (U.S. EPA 1997, MRI 1997, G. Muleski, pers. com). A recent study, however, found that 50-70% of the mass of PMtsp of paved road dust at three southern California locations is present in the PM10 fraction (Miguel et al. 1999), so more data would be helpful.

A final limitation is the recognition that emissions inventories are estimates of the unknown and unknowable actual emissions inventory. An earlier draft of this report was criticized as providing only estimates of emissions, and not actual emissions, when in fact all emissions inventories are based on models developed through scientific research on how the chemicals behave in the atmosphere, limited testing to determine emission factors, and industry-provided data on the population and usage of each particular source of air pollution. Each generation of emission inventories is an improvement over the one previous as assumptions are examined, tested, and modified. As discussed earlier, the estimate in this report builds on previous estimates.

d. Calculation Methodology

The proposed emissions estimation methodology uses measured silt loadings (Venkatram & Fitz 1998) and size fraction multipliers for PM10 and PM2.5 (U.S. EPA 1997, MRI 1997, G. Muleski, pers. com.).

$EF_{size} = (sL)\ (Q)\ (f_{size})$
where:
EF_{size} = PM30, or PM10, or PM2.5 emission factors;
sL = silt loading fraction, from ARB (1998b);

Q = amount of ground cleaned per unit time, estimated to be 1,600 m^2/hr, corresponding to a forward speed of 1 mph, with the operator sweeping the blower in a one meter arc;
f_{size}= fraction of PMtsp dust loading that comprises PM10 (0.19) or PM2.5 (0.09).

Silt loading values are the critical parameter in the calculation. ARB has chosen, for this emissions estimate, to use recent data from a study conducted for the ARB by a team at the University of California, Riverside (Venkatram & Fitz 1998) (Table 4). As data were collected only in Riverside County, it is not known how representative they are of other areas of the state or of substrates cleaned by leaf blowers. The data are, however, the most complete we have to date. Because the data are not normally distributed, the median and 95% percentile samples for silt loading are used to represent the data set in calculations.

Table 4
Silt Loading Values, Riverside County
(grams per square meter, g/m^2)

Roadway Type	Material Loading, Median	Silt Loading, Median (95%)	Range of Silt Loading Values
Paved Road	108.44	0.16 (6.34)	0.003-107.596
Roadway Shoulders	481.08	3.33 (15.73)	0.107-23.804
Curbs and Gutters	144.92	3.39 (132.94)	0.97-556.65

3. Characterization of Fugitive Dust Emissions

This section includes results from this present analysis, as well as results from previous estimates prepared by the ARB and others for comparison.

a. Emission Factors - This Study

Possible emission factors have been calculated for leaf blower use on paved roadways, roadway shoulders, and curbs and gutters (Table 5). Two emission factors are presented for each surface and particle size, based on the median and 95th percentile of the empirical silt loading data. The resulting range for PM10 is from 48.6 to 1030.6 g/hr for PM10, for example, depending on the surface cleaned. Cleaning of curbs and gutters generates the highest emission factors, whereas paved roadways and shoulders are lower. As discussed before, staff have no data on which to base emission factors for sidewalks, driveways, lawns, or flower beds.

Table 5. Leaf Blower Estimated Emission Factors, This Study (grams per hour, g/hr)

Emission Factor	Paved Roadway, Median (95%)	Shoulders, Median (95%)	Curbs/Gutters, Median (95%)
Total Suspended Particulate	256.0 (10,144.0)	5,328 (25,168)	5,424 (212,704)
PM10	48.6 (1,927.4)	1,012.3 (4,781.9)	1,030.6 (40,413.8)
PM2.5	23.0 (913.0)	479.5 (2,265.0)	488.2 (19,143.4)

b. Statewide Emissions Inventory - This Study

Three potential statewide emissions inventory values (Table 6), in tons per day (tpd), have been calculated by multiplying the median emissions factors, shown above, by the hours of operation for each of three different substrates: paved roadways, paved shoulders, and paved curbs/gutters, based on the Riverside data. From the statewide emissions inventory, the total number of hours of operation in the year 2000 are estimated to be 113,740 hr/day, or 97,302 hr/day for gasoline-powered leaf blowers plus 16,438 hr/day for electric leaf blowers.[6]

Table 6. Leaf Blower Emissions, Possible Statewide Values, This Study (tons per day, tpd)

Emissions Inventory	Paved Roadway, Median	Shoulders, Median	Curbs/Gutters, Median
Total Suspended Particulates	32.1	667.4	679.4
PM10	6.1	126.8	129.1
PM2.5	2.9	60.1	61.2

The goal in developing an emissions inventory is to derive one statewide emissions inventory number for each category of particulate sizes, which can then be subdivided by air basin or air district. Ideally, ARB would have developed emissions factors for each surface cleaned by leaf blowers, and apportioned the emissions based on the percentage of hours spent cleaning each surface annually. Table 6, however, presents an array of values because staff have no data on the percentage of time spent cleaning various surfaces. For comparison, the 1996 statewide PM10

[6]On a per-unit basis, electric blowers are assumed to be used 10 hr/yr.

estimated emission inventory was 2,400 tpd; estimates for paved road dust, unpaved road dust, and fugitive windblown dust were 400, 610, and 310 tpd, respectively. Based on the estimates in Table 6, then, PM10 emissions impacts from leaf blower use could range from insignificant (0.25%) to significant (5.4%), on a statewide basis. Additional study is required to refine the analysis and develop a statewide emission inventory.

c. Previous Emissions Estimates: ARB, 1991

The ARB's Technical Support Division, in a July 9, 1991 response to a request from Richard G. Johnson, Chief of the Air Quality Management Division at the Sacramento Metropolitan Air Quality Management District, prepared a leaf blower emissions estimate in grams per hour of dust (McGuire 1991). PM10 emissions were reported as being 1,180 g/hr, or 2.6 lb/hr, which is the same order of magnitude as the present study's calculated emission factors for roadway shoulders and curbs/gutters (Table 5). If this emission factor is combined with current statewide hours-of-operation data of 113,740 hr/day of leaf blower usage, this would produce an emission inventory of 147.8 tpd of PM10, similar to the present study's inventory for shoulders and curbs/gutters (Table 6).

d. Previous Emissions Estimates: SMAQMD

Sacramento Metropolitan Air Quality Metropolitan District (SMAQMD) staff (Covell 1998) estimated that "Dust Emissions (leaf blowers only)" are 3.2 tpd in Sacramento County. The memo included commercial and residential leaf blower populations (1,750 commercial and 15,750 residential), and hours of use (275 hr/yr for commercial and 10 hr/yr for residential). Using these values one can calculate the assumed g/hr emission factor for particulate matter. The resulting emission factor is 1,680 g/hr, or 3.7 lb/hr. The resulting statewide emission inventory is 210.4 tpd, higher than this study’s estimates (Tables 5 & 6).

e. Previous Emissions Estimates: AeroVironment

The South Coast AQMD commissioned AeroVironment to determine emission factors and preliminary emission inventories for sources of fugitive dust previously uninventoried; leaf blowers were one of the categories examined (Botsford et al. 1996). The study focused on PM10, and did not include field measurements. The study assumed that each leaf blower was used, at most, one day per week to clean 92.9 m^2 (1000 ft^2) of ground. Silt loading was assumed to be 1.42 g/m^2. Combining these two values yields an emission factor of 5.5 g/hr. With an estimated 60,000 leaf blowers in the South Coast Air Basin, AeroVironment calculated an emission inventory of 8.6 tpd, just for the South Coast AQMD, more than double the basin-wide inventory calculated for the Sacramento Metropolitan AQMD (above). The obvious difference between this estimate and the others summarized herein is the assumption that each leaf blower is used for no more than one day per week and is used to clean an area equivalent to only one front yard (20 ft by 50 ft); as commercial gardeners could not make a living cleaning one front yard once per week, this figure is obviously much too low. It is, however, coincidentally similar to the present study's estimate for paved roadways (Table 6).

4. Particulate Composition

Substances such as fecal material, fertilizers, fungal spores, pesticides, herbicides, pollen, and other biological substances have been alleged to make up the dust resuspended by leaf blower usage (Orange County Grand Jury 1999), and thus staff looked for data on the composition of particulate matter. Little information is available. Suspended paved road dust is a major contributor to airborne particulate matter in Los Angeles and other cities (Miguel et al. 1999). Staff considered, therefore, size-segregated chemical speciation profiles for paved road dust to chemically characterize leaf blower PM emissions. The chemical speciation profiles for paved road dust show small percentages of the toxic metals arsenic, chromium, lead, and mercury. In addition to soil particles, paved road dust emissions may contain contributions from tire and brake wear particles. Paved road dust chemical speciation, however, characterizes the dust by elemental composition, and was not useful in estimating health impacts for this assessment. ARB's chemical speciation profile for paved road dust is presented in Appendix D for information.

Recently, however, researchers published a study on allergans in paved road dust and airborne particles (Miguel et al. 1999). The authors found that biologic materials from at least 20 different source materials known to be capable of causing or exacerbating allergenic disease in humans are found in paved road dust, including pollens and pollen fragments, animal dander, and molds. Allergen concentrations in the air are increased above the levels that would otherwise occur in the absence of suspension by passing traffic. The authors conclude that paved road dust is a ubiquitous mixed source of allergenic material, resuspended by passing traffic, and to which virtually the entire population is exposed. The applicability of this study to particulate matter resuspension by leaf blower usage is unknown, but it is likely that leaf blowers would be as effective at resuspending paved road dust as automobiles. Information on the characteristics of other sources of resuspended particulates, for example lawns and gardens, is unfortunately lacking.

5. Regulating Fugitive Dust Emissions

Fugitive dust emissions are generally regulated as a nuisance, although PM10 and PM2.5 are specifically addressed through the state planning process as criteria air pollutants. There are no explicit federal, state, or local regulations governing leaf blower fugitive dust emissions.

a. State and Federal PM10 and PM2.5 Standards

The California and Federal ambient air quality standards for PM10 and PM2.5 are located in Appendix C. Any state that has air basins not in attainment with the standards must submit a plan to U.S. EPA on how they will achieve compliance. For California, most of the state violates the PM10 standard; attainment status has not yet been determined for the new PM2.5 standard (promulgated July 18, 1997 and under challenge in the courts). California, and its air districts, is therefore required to control sources of PM10, including fugitive dust.

b. Local District Regulations

Many air districts have a fugitive dust control rule that prohibits activities that generate dust beyond the property line of an operation. For example, the SCAQMD Rule 403 states: "A person shall not cause or allow the emissions of fugitive dust from any active operation, open storage pile, or undisturbed surface area such that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source." In addition, rules may place limits on the amount of PM10 that can be detected downwind of an operation that generates fugitive dust; for SCAQMD that limit is 50 $\mu g/m^3$ [SCAQMD Rule 403]. The Mojave AQMD limits PM emissions to 100 $\mu g/m^3$ [Mojave AQMD Rule 403]. Others, such as the San Joaquin Unified APCD, define and limit visible emissions (40% opacity) from activities that generate fugitive dust emissions [SJUAPCD Rule 8020]. Finally, another approach is to simply request individuals take reasonable precautions to prevent visible particulate matter emissions from moving beyond the property from which the emissions originate [Great Basin Unified APCD Rule 401].

6. Summary

Data on fugitive dust indicate that the PM10 emissions impacts from dust suspended by leaf blowers are small, but probably significant. Previous emission estimates range from less than 1% to 5% of the statewide PM10 inventory. The ARB previously estimated statewide fugitive dust emissions to be about 5 percent of the total, the Sacramento Metropolitan AQMD estimated leaf blower fugitive dust emissions to be about 2 percent of the Sacramento county PM10 air burden, and AeroVironment estimated dust attributed to leaf blowers in the South Coast Air Basin to be less than 1% of all fugitive dust sources. Dust emissions attributable to leaf blowers are not part of the inventory of fugitive dust sources. ARB, therefore, does not have official data on the quantity of fugitive dust resuspended by leaf blowers. A more definitive estimate of leaf blower fugitive dust emissions will require research to verify appropriate calculation parameters, determine representative silt loadings, measure actual fugitive dust emissions through source testing, and identify the chemical composition of leaf blower-generated fugitive dust.

C. Noise Emissions

The third of the hazards from leaf blowers identified in SCR 19 is noise. This section defines noise, describes the physical properties of sound and how sound loudness is measured, discusses noise sources, the numbers of Californians potentially exposed to noise, and how noise is regulated at the federal, state, and local levels, and addresses specific sound loudness and quality from leaf blowers. In addition, the incidence of the use of hearing protection, and other personal protective equipment, by leaf blower operators is described.

1. Defining Noise

Noise is the general term for any loud, unmusical, disagreeable, or unwanted sound. In addition to damaging hearing, noise causes other adverse health impacts, including interference with communication, rest and sleep disturbance, changes in performance and behavior, annoyance, and other psychological and physiological changes that may lead to poor health (Berglund & Lindvall 1995). In this report, noise will be used to refer both to unwanted sounds and sounds that damage hearing. The two characteristics, although related, do not always occur together.

The effects of sound on the ear are determined by its quality, which consists of the duration, intensity, frequency, and overtone structure, and the psychoacoustic variables of pitch, loudness, and tone quality or timbre, of the sound. Long duration, high intensity sounds are the most damaging and usually perceived as the most annoying. High frequency sounds, up to the limit of hearing, tend to be more annoying and potentially more hazardous than low frequency sounds. Intermittent sounds appear to be less damaging than continuous noise because the ear appears to be able to recover, or heal, during intervening quiet periods. Random, intermittent sounds, however, may be more annoying, although not necessarily hazardous, because of their unpredictability (Suter 1991).

The context of the sound is also important. While certain sounds may be desirable to some people, for example, music at an outdoor party, others may consider them noise, for example, those trying to sleep. Even desirable sounds, such as loud music, may cause damage to hearing and would be considered noise in this context. Thus, not only do loudness, pitch, and impulsiveness of sound determine whether the sound is noise, but also the time of day, duration, control (or lack thereof), and even one's personality determine whether sounds are unwanted or not.

The physical and psychoacoustic characteristics of sound, and thus noise, are described in more detail in Appendix E. The discussion is focused on information necessary for the reader to understand how sound is measured, and clarify measures of leaf blower sound. The interested reader is referred for more information to any physics or acoustic reference book, or the works referred to herein.

2. Measuring the Loudness of Sound

The weakest intensity of sound a health human ear can detect has an amplitude of 20 millionths of a Pascal[7] (20 μPa). The loudest sound the human ear can tolerate, the threshold of pain, has an amplitude ten million times larger, or 200,000,000 μPa. The range of sound intensity between the faintest and the loudest audible sounds is so large that sound pressures are expressed using a logarithmically compressed scale, termed the decibel (dB) scale. The decibel is simply a unit of comparison between two sound pressures. In most cases, the reference sound pressure is the acoustical zero, or the lower limit of hearing. The decibel scale converts sound pressure levels (SPL) to a logarithmic scale, relative to 20 μPa (Figure 1).

$$\text{SPL, dB} = 10 \log_{10} (P^2/P_o^2)$$

Where P is the pressure fluctuation in Pascals,
P_o is the reference pressure; usually 20 μPa.

Thus, from this relationship, each doubling of sound pressure levels results in an increase of 6 dB. From the relationship between sound intensity and distance (Appendix E), we find also that doubling the distance between the speaker (source) and listener (receiver), drops the level of the sound by approximately 6 dB. Sound pressure levels are not directly additive, however, but must first be expressed as mean square pressures before adding (Berglund & Lindvall 1995). The equation is as follows:

$$\text{SPL} = 10 \log_{10} [10^{\text{SPL}_1/10} + 10^{\text{SPL}_2/10} + ... + 10^{\text{SPL}_x/10}]$$

For example, if two sound sources have SPLs of 80 dB and 90 dB, then the resulting sound pressure is 90.4 dB. Adding two sounds with the same SPL, for example 90 dB, increases the total SPL by 3 dB, to 93 dB.

a. Loudness Description

Sound pressure level, however, does not completely describe loudness, which is a subjective perception of sound intensity. Loudness increases with intensity, but is also dependent on frequency. Thus the human ear may not perceive a six dB increase as twice as loud. In general, people are more sensitive to sounds in the middle of the range of hearing, from around 200 Hz to 5000 Hz. Fletcher and Munson (1933) first established the 1000-Hz tone as the standard sound against which other tones would be judged for loudness. Later, Stevens (1955) proposed that the unit of loudness be termed the sone, and that one sone be ascribed to a 1000-Hz tone set at a SPL

[7]Other units used to represent an equivalent sound pressure include 0.0002 μbar, 0.0002 dyne/cm^2, and 20 μN/m^2.

of 40 dB under specified listening conditions. On the sone scale, a sound twice as loud as one sone would be two sones, four times as loud would be four sones, and so on.

Equal loudness contours, identified in units of phons, demonstrate how the SPL, in dB, of a tone must be varied to maintain the perception of constant loudness. Ideally, sound measurement meters would give a reading equal to loudness in phons, but because phons are based on human perception, and perception process will vary from individual to individual, this has not been practical until recently (Berglund & Lindvall 1995). Loudness is still measured in decibels, however, following past practices. Various filters have been devised to approximate the frequency characteristics of the human ear, by weighting sound pressure level measurements as a function of frequency. Several weighting systems have been developed, but the one in most common use is the A-weighted filter, with sound pressure levels commonly expressed as dBA. Loudness levels range from about 20 dB (24-hr average) in very quiet rural areas, to between 50 and 70 dB during the daytime in cities. Additional examples of typical loudness measures are illustrated in Figure 1.

Perceived Sound Level	Sound Level dB	Sound Level μPa	Examples	Leaf Blower Reference
	dB	μPa		
PAINFULLY LOUD	160	$2x10^9$	fireworks at 3 feet	
	150		jet at takeoff	
	140	$2x10^8$	threshold of pain	OSHA limit for impulse noise
UNCOMFORTABLY LOUD	130		power drill	
	120	$2x10^7$	thunder	
	110		auto horn at 1 meter	90-105 dB leaf blower at operators ear
	100	$2x10^6$	snowmobile	
VERY LOUD	90		diesel truck, food blender	90 dB OSHA permissible exposure limit
	80	$2x10^5$	garbage disposal	
	70		vacuum cleaner	62-75 dB Leaf blower at 50 feet
MODERATELY LOUD	60	$2x10^4$	ordinary conversation	
	50		average home	
QUIET	40	$2x10^3$	library	
	30		quiet conversation	
VERY QUIET	20	$2x10^2$	soft whisper	
	10		rustling leaves	
BARELY AUDIBLE	0	$2x10^1$	threshold of hearing	dB= decibels μPa= micro Pascals

Fig. I. Comparison of sound levels in the environment

b. Sound Level Measurement

The ANSI B175 Accredited Standard Committee, a group that includes government officials, Underwriters Laboratories, leaf blower manufacturers, and trade associations, and which is accredited by the American National Standards Institute, Inc. (ANSI), developed a method for measuring the sound levels from leaf blowers (Appendix F). The purpose of the standard method is to establish sound level labeling requirements for leaf blowers applicable to noise received by bystanders. The standard also includes requirements for safety precautions to be included in manuals for use by operators. The ANSI standard specifies a test area in a field in which natural ground cover does not exceed three inches in height and which is free of any large reflecting surfaces for a minimum of 100 ft from the blower. The sound level meter must be set for slow response and the A-weighting network. Once the blower is adjusted and running properly, the receiver (microphone) is set up 50 ft from the operator and 4 ft above ground. Sound level readings are taken in a circle every 45 degrees for a total of eight readings, as either the operator rotates or the microphone is moved. The eight readings are then averaged and reported to the nearest decibel.

In wide use, the method has been criticized as sometimes generating unreproducible results. Typical comments expressed in meetings with ARB staff were to the effect that the manufacturer-reported sound levels for leaf blowers can be significantly different than those obtained by some third party testers. The standard has been revised (Dunaway 1999) and approved February 11, 2000, which may address the issue of reproducibility. Other comments about the method criticize the fundamental requirements for testing in an open field, with no reflecting surface for 100 ft, and the receiver 50 ft away, as being unrealistic and unrepresentative of real-world use on residential properties (Allen 1999a). A standardized method, however, usually does not reflect real-world conditions, but rather is useful for comparing sound levels from different blowers tested under the same conditions. The complexity and precision required by the method does appear to render it unsuitable as a field enforcement standard (Zwerling 1999).

While the ANSI method yields sound level exposures for a bystander, the noise level exposure for the operator is measured using an audiodosimeter. For occupational exposures, a dosimeter can report the noise dose as a percentage relative to the permissible exposure level of 90 dBA (8 CCR General Industry Safety Orders, Article 105, Appendix A; 29 CFR 1910.25). The eight-hour time-weighted-average sound level experienced by the worker is then calculated from the dose, using a formula specified in regulations. Additional details can be found in the OSHA and Cal/OSHA Technical Manuals.[8]

[8]OSHA's Technical Manual is available on their website (www.osha.gov) and noise measurement is in Section III, Chapter 5. Cal/OSHA's manual is available from Cal/OSHA.

3. Noise in California

a. Noise Sources

By all accounts, noise exposure is increasing both as the number of sources increases and as existing sources get noisier (Berglund & Lindvall 1995). We drive our cars more and take more airplane trips, increasing noise from what have been the two major sources of noise for at least the last two decades; sales of engine-powered lawn and garden equipment continue to increase; and movie theaters and video arcades use noise to increase excitement (Consumer Reports 1999, PPEMA 1999, U.S. EPA 1981). The major sources of noise are transportation, from road, air, and rail traffic, which impact the most people of all noise sources; industrial machinery and facilities; construction; building services and maintenance activities; domestic noise from one's neighbors; and self-inflicted noise from leisure activities, which may quality as domestic noise to one's neighbors (Berglund & Lindvall 1995).

b. Numbers of People Potentially Exposed: the Public

It is not possible to state with any certainty how many people in California are exposed to noise from leaf blowers. Indeed, the most recent nationwide estimate of the number of people exposed to noise from various sources dates from 1981. In that study, the U.S. EPA estimated that 730,000 people were exposed to noise from leaf blowers above the day-night average sound level of 45 dBA (U.S. EPA 1981). The use of leaf blowers has grown tremendously since 1980, however, and thus these numbers cannot be reliably scaled for an estimate of the number of Californians exposed to leaf blower noise today.

As California's population has grown almost 41% since 1970 (CDF 1998, CDF 1999), population density, and thus noise exposure, has increased. California classifies counties as being metropolitan or non-metropolitan, based on the Bureau of the Census categorization of standard metropolitan statistical areas as containing or being close to a large city. As of January 1, 1999, the thirty-four metropolitan counties comprise 96.7% of California's population, or about 32.67 million people. The population of Californians who live in non-metropolitan counties, while small at 3.3% of the total, or 1.11 million people, has increased faster than the population in metropolitan counties (47.1% increase versus 40.5% increase, 1970-1999) and thus even noise exposures in the lowest populated counties have likely increased over the past thirty years.

Unfortunately, without a comprehensive and current survey of noise exposures in California, it is not possible to determine, from available data, how many Californians are exposed to noise, and in particular exposed to noise from leaf blowers. The only conclusion is that the number of people affected by noise is likely increasing as population density increases even in non-metropolitan areas of the state. How many people are exposed to, and annoyed by, noise from leaf blowers is a question for future research.

c. Numbers of People Potentially Exposed: the Operator

In southern California, about 80% of lawn and landscape contracting firms use leaf blowers (Anon 1999), thus one can assume that most gardeners are exposed to the noise from leaf blowers, either as an operator or from working in close proximity to the operator. From the California database of employees covered by unemployment insurance, in the fourth quarter of 1998 there were 59,489 workers reported by 6790 firms, in the SIC Code 0782, Lawn and Garden Services (M. Rippey, pers. com). This number is assumed to be the lower bound of those exposed, as there are an unknown number of self-employed gardeners, who may not report their earnings or be covered by unemployment insurance. Future research could test the hypothesis that all lawn and garden service workers are exposed, as operators or from working in close proximity, to the noise from leaf blowers.

4. Regulating Noise

a. Federal Law

The Noise Control Act of 1972 established a statutory mandated national policy "to promote an environment for all Americans free from noise that jeopardizes their public health and welfare." The Office of Noise Abatement and Control was established within the U.S. EPA to carry out the mandates of the Noise Control Act. The Office of Noise Abatement and Control published public health and welfare criteria; sponsored an international conference; examined dose-response relationships for noise and its effects; identified safe levels of noise; promulgated noise regulations; funded research; and assisted state and local offices of noise control; until funding for the office was removed in 1981-1982 (Suter 1991; Shapiro 1991). In its almost ten years of operation, U.S. EPA produced several documents that are still relevant and were consulted from this report.

The hearing of workers is protected by regulations promulgated under the Occupational Safety and Health Act of 1970. As California employers fall under California's equivalent program, hearing protection law will be covered below under state law.

b. State Law

California enacted the Noise Control Act of 1973 to "establish a means for effective coordination of state activities in noise control and to take such action as will be necessary..." [HSC 46000(g)]; the office was established within the California Department of Health Services. One of the primary functions of the office was to provide assistance to local governmental entities that develop and implement noise abatement procedures, and several guidelines were written. Funding for the office, however, ended beginning in the 1993-1994 fiscal year; no relevant reports or guidelines were located for this report.

California's counterpart to OSHA, the Cal/OSHA, has a General Industry Safety Order [8 CCR Article 105 5095-5100] for the control of noise exposure that is very similar to the federal

OSHA regulations. When sound level exposure exceeds 85 dBA for an 8-hour time-weighted average, employers are required to provide a hearing conservation program at no cost to employees. The hearing conservation program includes audiometric testing of hearing, provision of hearing protectors, training, and record keeping. Employers are required to provide employees with hearing protection when noise exposure exceeds 90 dBA in an eight-hour work day; as noise levels increase, the allowable exposure duration also decreases. The permitted duration for an employee exposed to 103 dBA, for example, is one hour and nineteen minutes in a work day [8 CCR 5096 (a)(b)]. Employers are allowed to use personal protective equipment to reduce sound level exposures if administrative or engineering controls are not feasible or fail to reduce sound levels within permissible levels.

c. Local Ordinances

In contrast to the low level of activity on noise control at the federal and state levels, local California cities and counties have been very active in regulating and enforcing noise standards. About twenty cities have banned the use of gasoline-powered, or gasoline- and electric-powered leaf blowers, from use within their city limits (City of Palo Alto 1999a). Including the recent Los Angeles ban on use within 500 ft of residences, about 13% of Californians live in cities that ban the use of leaf blowers, and six of the ten largest California cities have ordinances that restrict or ban leaf blowers. All together, about one hundred California cities have ordinances that restrict either leaf blowers specifically or all gardening equipment generally, including the cities with bans on leaf blower use (IME 1999).

The restrictions on leaf blowers fall into four basic categories, with many cities employing a combination of approaches: time of day/day of week, noise levels, specific areas, and educational (City of Palo Alto 1999a). Time of day/day of week ordinances are the most common and are used to control when leaf blowers can be operated. Typically, hours of use are restricted to times between 7:00 a.m. and 7:00 p.m., and days of use are either Monday through Friday or Monday through Saturday, and sometimes including Sunday, with shorter hours on the weekend, based on the assumption that leaf blower noise is most offensive during the evening and night time hours, and on the weekend. There may be exceptions for homeowners doing their own yard work and for work in commercial areas. Time of day/day of week ordinances are relatively easy to enforce. A problem with these ordinances, however, is that they ignore the needs for quiet during the day of babies, young children, and their caretakers; day-sleepers; the ill; the retired; and a growing population of those who work in a home office.

Some cities regulate leaf blower use based on noise levels recorded at a specified distance from the operator. Palos Verdes Estates and Davis, for example, set the noise level at 70 dBA at 50 ft, and Newport Beach and San Diego have a 65 dBA at 50 ft restriction. Davis allows single-family homeowners to avoid the restriction if the leaf blower is operated for less than ten minutes. Palos Verdes Estates requires blowers to be tested and certified by the city. Otherwise, a noise level restriction is very difficult to enforce as the enforcement officer must be trained in the use of sound level meters, carry the meter, and record the sound level before the operator turns off the

leaf blower or moves on. These rules target the control of noise from blowers, and could protect those who are home during the day, if they could be effectively enforced.

Recognizing that leaf blowers are often perceived as most offensive when used in residential areas, many cities stipulate usage restrictions only in residential areas, or within a certain distance of residential areas. The residential use distance restrictions prohibiting the use of leaf blowers range from 100 ft, in Foster City, to 500 ft, in Los Angeles. This type of ordinance protects those who are at home and in need of quiet during the day, but does not address issues of those who work and recreate in commercial or other non-residential areas.

Cities sometimes couple area restrictions with user guidelines, such as prohibitions on blowing debris onto adjacent properties, and require operators be educated on the proper use of leaf blowers so as to minimize noise levels and environmental issues. These educational approaches are generally not oriented towards enforcement, but seek to change operator behavior. Educational approaches are often endorsed by landscapers and manufacturers, who believe that much of the discord over leaf blower usage originates with the few gardeners who use them incorrectly or inconsiderately. For example, an organization calling itself LINK, or Landscapers Involved With Neighborhoods and Kids, promotes educating operators to use their leaf blowers at half-throttle within 150 ft of homes (LINK 1999).

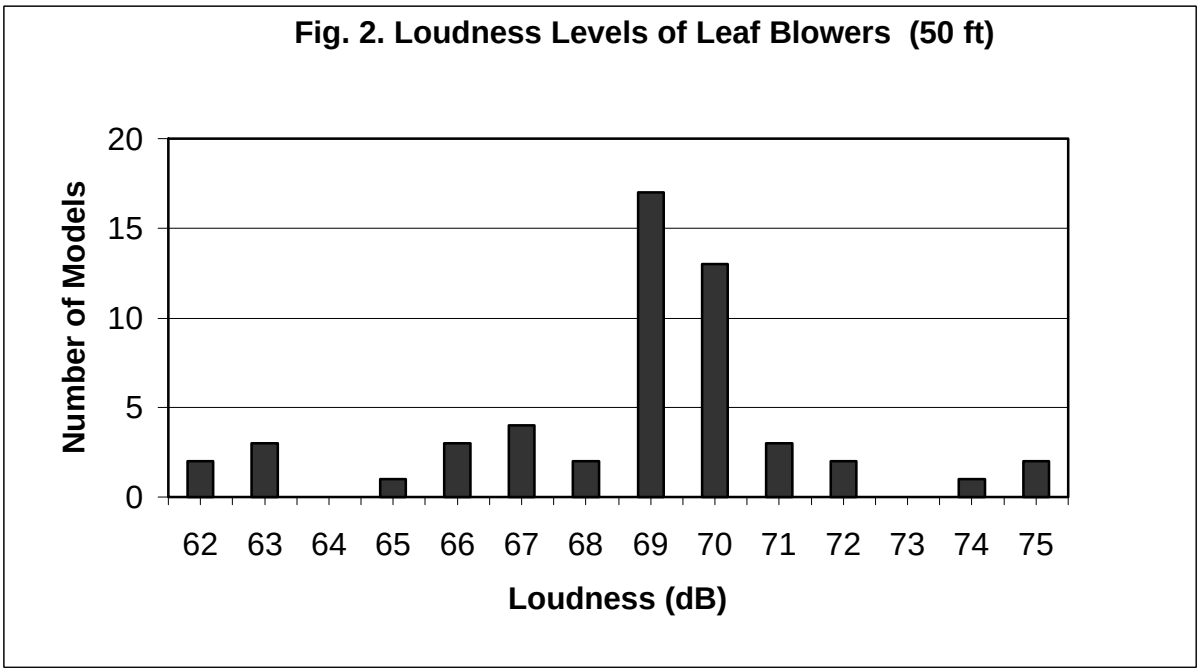
5. Noise From Leaf Blowers

In a survey of Southern Californian gardeners by a consumer products manufacturer (Anon 1999), the top two ranked attributes of a desirable leaf blower were, in order, “powerful” and “quiet.” Important features were identified as “backpack mounted,” “noise below legal limits,” and “variable speed.” When asked what they dislike about their leaf blowers, the most commonly cited problem was “noise.” Taken together, these answers suggest that loud noise from leaf blowers is not only an issue for the public, but is also a major issue of concern for the gardeners who use them, at least in Southern California. On the other hand, a major manufacturer has indicated that low noise does not even show up in their survey of desirable leaf blower features (Will 1999b), so perhaps low noise is only a concern of California gardeners.

a. Bystander noise exposure

Manufacturer-reported noise levels from leaf blowers are summarized in Appendix G; all reported noise levels are assumed to represent bystander exposure, with the receiver 50 ft from the blower, unless otherwise noted. The reported levels are based on statements in promotional literature or personal communications with manufacturers; some manufacturers did not report the sound levels of most of their models in materials available to the ARB. For backpack and hand held blowers, sound levels range from 62 dBA to 75 dBA, with more than half registering between 69 and 70 dBA (Figure 2). Bearing in mind the logarithmic decibel scale, the difference in a leaf blower at 62 dBA and one at 75 dBA, a 13 dBA range, represents more than a quadrupling of the sound pressure level, and would be perceived by a listener as two to three

times as loud. The rule of thumb is that when a sound level increases by ten dB, the subjective perception is that loudness has doubled (MPCA 1987).



There are presently two gasoline-powered backpack and three hand held electric leaf blowers that are reported by their manufacturers to be very quiet. Maruyama and Toro have the two quietest backpack blowers, and Poulan/Weedeater, Stihl, and Toro have produced the quietest hand held blowers. Echo, Inc., which sells slightly under one-third of the total number of backpack blowers, has a model rated at 65 dB, the PB-46LN. In 1996, the most popular Echo backpack leaf blower, based on sales, was the Echo PB-400E, which is also one of the noisiest at 74 dBA. By 1999, however, the quieter PB-46LN had surpassed the PB-400E in sales (Will, L., pers. com.).

b. Operator Noise Exposure

Data on noise levels at the leaf blower operator's ear are limited. The League for the Hard of Hearing (1999) publishes a fact sheet in which the noise level of a leaf blower is listed as 110 dBA. Clark (1991) reported that one model by Weedeater emitted a maximum level of 110-112 dBA and an equivalent A-weighted sound level (L_{eq}) of 103.6 dBA. This leaf blower model, however, is no longer available and these data may not be comparable to today's leaf blowers. Other than Clark's report, no other published report could be located, but unpublished data were found.

Schulze and Lucchesi (1997), in an unpublished conference presentation, reported the range and average sound pressure level from four leaf blowers. The four leaf blowers were

unidentified models from Craftsman, Weedeater, and Shop Vac.[9] The authors reported that 3 ft from the leaf blower the sound pressure levels ranged from 80 to 96 dBA, with an average value of 88 dBA, and concluded that leaf blower noise did not violate the OSHA permissible noise exposure limit. Sound pressure levels, however, were not measured at the operator's ear, and thus usefulness of the data is limited. In addition, whether or not the OSHA noise exposure limits are violated depends on the amount of time the listener is exposed, as the action level is an eight-hour time-weighted average. At least one of the leaf blowers had an SPL above the Permissible Exposure Limit of 90; at 96 dBA, the operator would be restricted to a 3 hr, 29 minute daily exposure without hearing protection.

The Portable Power Equipment Manufacturers Association (Hall 1999) conveyed limited, blinded data to the ARB on operator exposures. With no information as to data collection methods (some pages were marked "ISO 7182"), manufacturers, models, or maximum and minimum sound levels, these data are of limited quality. Reported operator sound levels, some of which were identified as "full open throttle" or "full load," ranged from 91.5 dBA to 106 dBA.

A consultant with James, Anderson & Associates, Inc. (Hager 1999), provided ARB with data collected as a part of comprehensive noise exposure studies by the firm (Table 7). As with the PPEMA data, ARB was not given the make or models of leaf blowers tested. Sound levels were recorded in the hearing zone of groundskeepers while they were operating leaf blowers, along with the amount of time the groundskeeper operated the leaf blower in an 8-hr day. Sound levels were measured in dBA per federal OSHA requirements. As shown, duration of use ranged from 15 minutes to 7.6 hours (average 2.1 hr) during the day. Operator exposure ranged from 88.6 to 101.3 dBA. In this data set, only one of the six individuals monitored would have exceeded the protective levels, based on leaf blower use for 7.6 hrs.

[9]ARB was not able to obtain the specific models tested or actual SPLs for each model leaf blower.

Table 7. Leaf Blower Operator Noise Exposures and Duration of Use (Hagar 1999)

Average SPL, dBA	Minimum SPL, dBA	Maximum SPL, dBA	Duration of Leaf Blower use (hr)
99.5	96.4	101.3	0.75
92.0	N/R	N/R	1.0
101.2	N/R	101.9	2.3
101.3	98.3	105.7	7.6
95.9	92.0	97.0	0.25
88.6	85.0	90.4	0.5

N/R = not reported

Eric Zwerling of the Rutgers Noise Technical Assistance Center, along with Les Blomberg, Executive Director of the Noise Pollution Clearinghouse, recently conducted studies of operator exposure and the sound quality of leaf blowers (Zwerling 1999). While the data are still being analyzed, preliminary results were made available to the ARB. Three backpack and one handheld leaf blowers were tested using ANSI B175.2-1996 test method for the bystander exposure and using personal dosimetry for operator exposures (Table 8). All equipment used for tests was certified and calibrated. Zwerling and Blomberg used a 3 dB exchange rate for the operator dosimetry, as recommended by NIOSH, but noted that the data can be reasonably compared to data derived with the OSHA mandated 5 dB exchange rate because of the steady sound emissions of the leaf blowers. Because of this, the OSHA permissible exposure durations, which are based on the 5 dB exchange rate, are noted in Table 8. The difference is most important for the worker, who is allowed, for example, a 1 hr exposure (unprotected) at 105 dB by OSHA, but only 4 min, 43 sec exposure (unprotected) under the more conservative NIOSH-recommended 3 dB exchange rate.

**Table 8. Sound Levels of Some Leaf Blowers,
E. Zwerling & L. Blomberg**

Make/Model	Type	Condition	Bystander Exposure, dB	Operator Exposure,* Leq	OSHA Permissible Exposure Duration (approx)
Stihl BR 400	Backpack	New	73.89	105.7, 105.8, 105.5	52 min
Stihl BR 400	Backpack	Used	74.5, 74.63	103.3, 102.9	1 hr, 19 min
Kioritz DM9	Backpack	Used	76.0	102.0	1 hr, 31 min
Stihl BR 75	Handheld	New	68.4	98.4, 97.9	2 hr, 38 min

*Samples ranged from 5-10 minutes; each reported value is a distinct sample. The microphone was attached to the cap above the operator's ear.

Finally, the Echo *Power Blower Operator's Manual* advises operators to wear hearing protection whenever the unit is used. The user is instructed that "OSHA requires the use of hearing protection if this unit is used 2 hours per day or more." This statement indicates that the operator may be exposed to an SPL of 100 dBA or more during use.

6. Use of Hearing Protectors and Other Personal Protection Gear

When this study was initiated, there were no studies found that documented the incidence of personal protective equipment usage among operators of leaf blowers. Hearing protectors are widely available, and some manufacturers provide an inexpensive foam ear plug set with the purchase. More expensive custom molded ear plugs and ear muffs provide better protection than the moldable foam ear plugs, but again no data were available on usage. Two studies did examine the incidence of usage of hearing protection in other industries. In one study of 524 industrial workers, although 80.5% were provided with hearing protection devices, only 5.1% wore them regularly (Maisarah & Said 1993). In another study of metal assembly workers who worked in a plant where the average noise level was 89 dBA, only 39% of the men reported wearing hearing protection always or almost always (Talbott et al. 1990).

By the end of September 1999, however, three studies were delivered to the ARB that included information on the use of hearing protection by leaf blower operators. Two of the studies consisted of direct observations of operators; the third was a survey that asked people who hire gardeners to recall the use of personal protection gear by their gardeners. Following are summaries of each of the studies.

a. Zero Air Pollution Study (1999)

The goal of this study was to "observe 100 yard maintenance workers to determine the percentage of workers who followed the safety instruction while operating gas powered leaf blowers." Workers were observed from August to October, 1997 in the western portions of the City of Los Angeles, including the San Fernando Valley. Of 100 leaf blower operators observed, none wore hearing protection, one (1%) wore breathing protection (dust mask), and 22 (22%) wore eye protection of some kind. Of the workers observed, 27 (27%) were interviewed; seven of those claimed hearing impairment as a result of using leaf blowers and two claimed to have breathing problems which they attributed to using leaf blowers. Ten of those interviewed (37%) said they were aware of manufacturers' safety instruction but did not feel it was necessary to follow the instructions. The remaining 17 (63%) were unaware of manufacturers' safety instructions.

b. Citizens for a Quieter Sacramento Study (1999b)

The goal of this study, as for the Zero Air Pollution study, was to determine the percentage of leaf blower operators who wear personal protective equipment when using blowers. A total of 64 observations were made during August and September 1999; 12 in Sacramento, 47 in the Los Angeles area, and 5 in other cities. Most (88%) of the observations were of blowers being used on residential properties. Of the 64 observations, there were four (6%) individuals observed wearing hearing protection, 41 (64%) were not wearing hearing protection, and in the remaining cases the observer could not tell whether or not hearing protection was used. Eye protection use was lower, only 3 (5%) operators were wearing glasses, but breathing protection incidence was higher, seven (11%) wore dusk masks. Observations were also made of the incidence of personal protection of other workers, when the crew was larger than one person. Of the 38 observations of other workers, two (5%) were using hearing protection, two (5%) were using eye protection, and two (5%) wore dusk masks.

c. Survey99 Report (Wolfberg 1999)

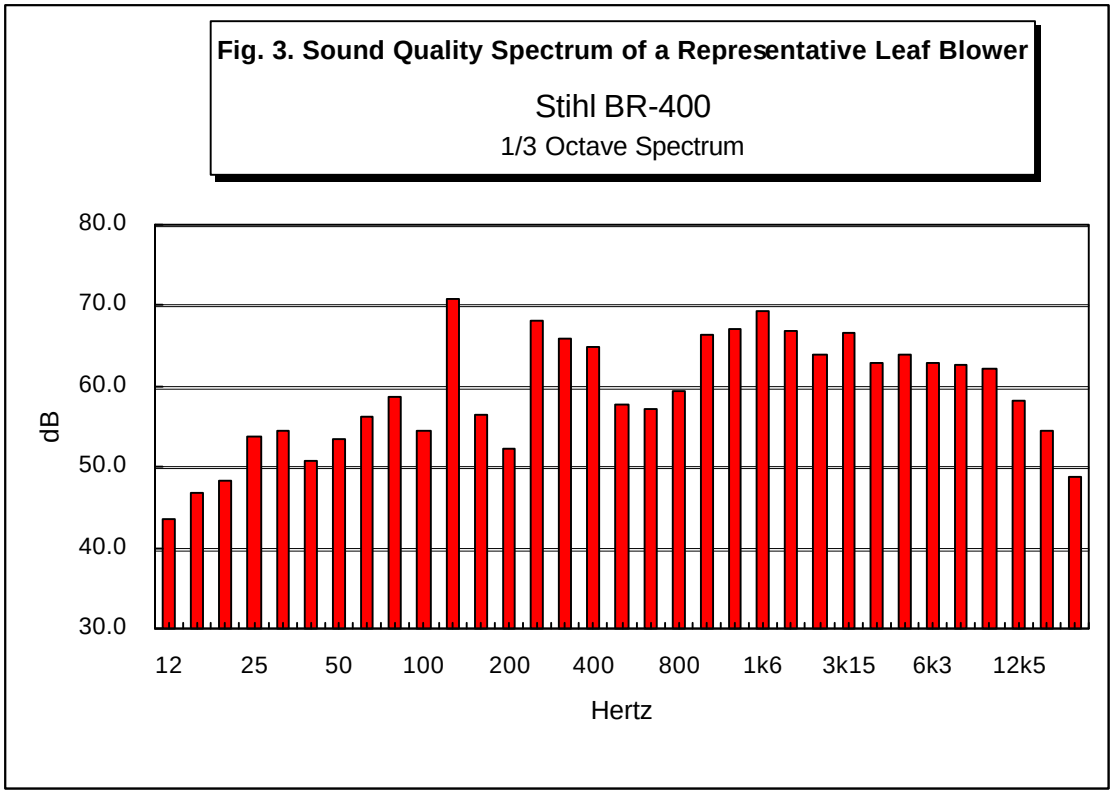
The third study provided to the ARB was authored by Mrs. Diane Wolfberg, Chair of the Zero Air Pollution Education Committee and Mr. George Wolfberg. Although the authors are members of Zero Air Pollution, the study was distinct from the 1997 study summarized above. The goal of this study was to determine "opinions and perceptions of California residents regarding the use of leaf blowers . . . for residential landscape maintenance." Mainly residents of Los Angeles were surveyed. Survey takers asked residents a variety of questions related to the use of leaf blowers on residential properties; in addition, respondents were asked about the incidence of personal protective equipment use by leaf blower operators. Because the data are based on recall rather than direct observations, their usefulness is limited. Data are summarized here, nevertheless, for completeness.

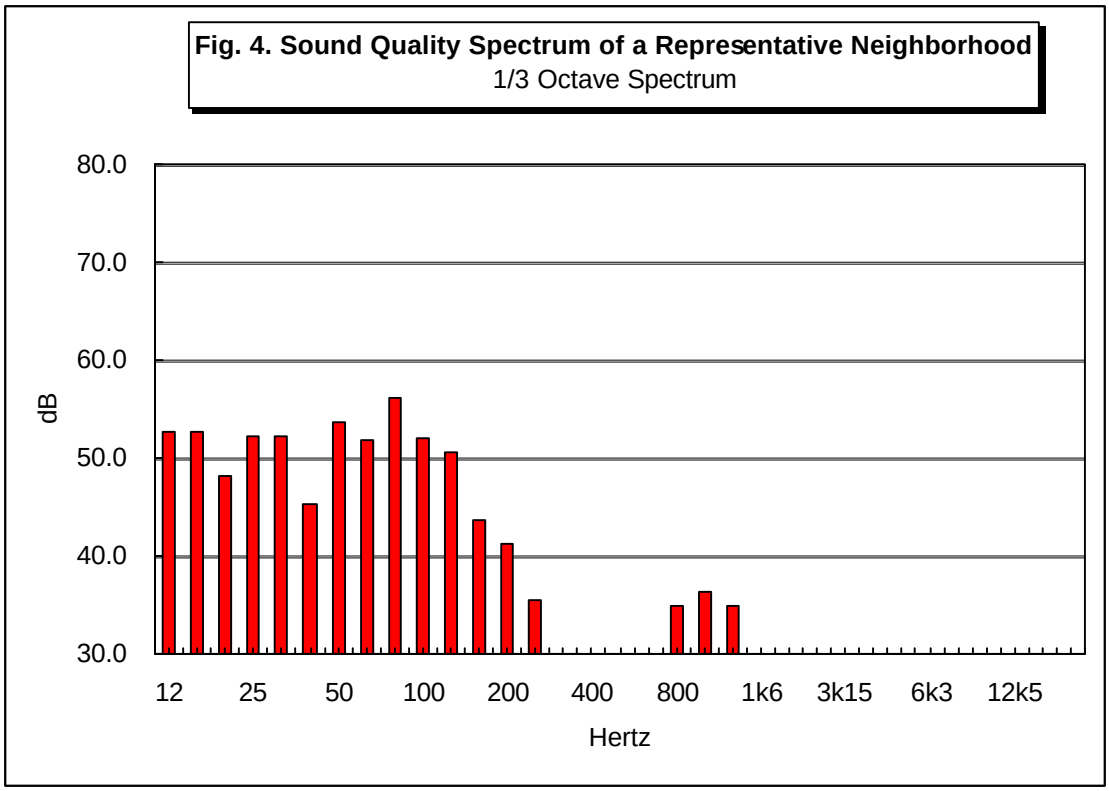
Of respondents who have had leaf blowers used on their properties in the previous 12 months, 53% reported that leaf blower operators never use a face mask, 62% never use eye

protection, and 69% never wear hearing protection. On the positive side, however, respondents reported that 13% of operators always wear a face mask, 19% always wear eye protection, and 9% always wear hearing protection. These percentages are much higher than found in the two direct observation studies.

7. Sound Quality

As discussed earlier, the perceived loudness of noise is dependent on both sound pressure level and frequency, which is termed the sound quality. One study examined sound quality from leaf blowers (Zwerling 1999). While this study is unpublished and data are still being analyzed, the authors have made data and preliminary findings available to the ARB. Figures 3 and 4 illustrate sample sound spectra from a leaf blower and ambient sound, respectively. As shown in Figure 3, the sound spectrum of the gasoline-powered leaf blower contains a significant amount of high intensity and high frequency emissions. In a quiet residential neighborhood (Figure 4), there are few or no natural sources of sound at these high frequencies. Therefore, the sound emissions of gasoline-powered leaf blowers are not only more intense than the ambient sound levels, their spectra are noticeably different than the spectrum for ambient sounds. The high frequency emissions are, therefore, not masked by other sounds and are more noticeable, perhaps accounting for the high level of annoyance reported by bystanders. These data and their implications for annoyance should be confirmed by further study.





8. Summary

Noise is the general term for any loud, unmusical, disagreeable, or unwanted sound, which has the potential of causing hearing loss and other adverse health impacts. While millions of Californians are likely exposed to noise from leaf blowers as bystanders, given the ubiquity of their use and the increasing density of California cities and towns, there is presently no way of knowing for certain how many are actually exposed, because of the lack of studies. In contrast, it is likely that at least 60,000 lawn and garden workers are daily exposed to the noise from leaf blowers. Many gardeners and landscapers in southern California are aware that noise is an issue and apparently would prefer quieter leaf blowers. Purchases of quieter leaf blowers, based on manufacturer data, are increasing. While little data exist on the noise dose received on an 8-hr time-weighted-average by operators of leaf blowers, data indicate that some operators may be exposed above the OSHA permissible exposure limit. It is unlikely that more than 10% of leaf blower operators, and probably a much lower percentage, regularly wear hearing protective gear, thus exposing them to an increased risk of hearing loss. The sound quality of gasoline-powered leaf blowers may account for the high level of annoyance reported by bystanders.

III. REVIEW OF HEALTH EFFECTS

Leaf blower noise, exhaust and fugitive dust emissions, as discussed in previous sections of this report, are health concerns. The goal of this section is to present information on health effects of identified hazards from leaf blowers; this section does not present exposure information or data tying identified hazards to specific health effects in leaf blower operators or bystanders. The following discussion addresses the health effects of particulate matter, carbon monoxide, unburned fuel, and noise. Particulate matter, carbon monoxide, and unburned fuel are components of exhaust emissions; particulate matter is also the major constituent of fugitive dust. Ozone is a pollutant that is formed in the atmosphere through chemical reactions of hydrocarbons (unburned fuel) and nitrogen oxides in the presence of ultraviolet light. Although not directly emitted, ozone is a pollutant of concern because leaf blowers emit hydrocarbons, which react to form ozone. The health effects of nitrogen oxides are not discussed as these emissions from leaf blowers are relatively low, and any health effects would be negligible.

National Ambient Air Quality Standards have been set by the federal government to protect public health and welfare. In addition, California has State ambient air quality standards. These standards include a margin of safety to protect the population from adverse effects of chronic pollutant exposure. The National Ambient Air Quality Standards and California standards are intended to protect certain sensitive and probable risk groups of the general population (Appendix C).

A. Particulate Matter

Fugitive dust is not a single pollutant, but rather is a mixture of many subclasses of pollutants, collectively termed particulate matter (PM), each containing many different chemical species (U.S. EPA 1996). Particles of 10 μm and smaller are inhalable and able to deposit and remain on airway surfaces. The smaller particles (2.5 μm or less) are able to penetrate deep into the lungs and move into intercellular spaces. The respirable particles owe their negative health impacts, in part, to their long residence time in the lung, which allows chemicals time to interact with body tissues. ARB staff could not locate data on the specific chemical and physical make-up of leaf blower dust, although some data are available on paved road dust, thus only generic effects from the respirable fraction (particles 10 μm and smaller) are addressed.

Many epidemiological studies have shown statistically significant associations of ambient PM levels with a variety of negative human health endpoints, including mortality, hospital admissions, respiratory symptoms and illness measured in community surveys, and changes in pulmonary mechanical function. Associations of both short-term, usually days, and long-term, usually years, PM exposure with most of these endpoints have been consistently observed. Thus, the public health community has a great deal of confidence that PM is significantly associated with negative health outcomes, based on the findings of many studies.

There remains uncertainty, however, regarding the magnitude and variability of risk estimates for PM. Additional areas of uncertainty include the ability to attribute observed health effects to specific PM constituents, the time intervals over which PM health effects are manifested, the extent to which findings in one location can be generalized to other locations, and the nature and magnitude of the overall public health risk imposed by ambient PM exposure. While the existing epidemiology data provide support for the associations mentioned above, understanding of underlying biologic mechanisms is incomplete (U.S. EPA 1996).

B. Carbon Monoxide

A component of exhaust, carbon monoxide (CO) is a colorless, tasteless, odorless, and nonirritating gas that is a product of incomplete combustion of carbon-containing fuels. With exposure to CO, subtle health effects can begin to occur, and exposure to very high levels can result in death. The public health significance of CO in the air largely results from CO being absorbed readily from the lungs into the bloodstream, forming a slowly reversible complex with hemoglobin, known as carboxyhemoglobin. The presence of significant levels of carboxyhemoglobin in the blood reduces availability of oxygen to body tissues (U.S. EPA 1999b).

Symptoms of acute CO poisoning cover a wide range depending on severity of exposure, from headache, dizziness, weakness, and nausea, to vomiting, disorientation, confusion, collapse, coma, and at very high concentrations, death. At lower doses, central nervous system effects, such as decreases in hand-eye coordination and in attention or vigilance in healthy individuals, have been noted (Horvath et al. 1971, Fodor and Winneki 1972, Putz et al. 1976, 1979, as cited in U.S. EPA 1999b). These neurological effects can develop up to three weeks after exposure and can be especially serious in children.

National Ambient Air Quality Standards have been set to protect public health and welfare and are intended to protect certain sensitive and probable risk groups of the general population. The sensitive and probable risk groups for CO include anemics, the elderly, pregnant women, fetuses, young infants, and those suffering from certain blood, cardiovascular, or respiratory diseases. People currently thought to be at greatest risk from exposure to ambient CO levels are those with ischemic heart disease who have stable exercise-induced angina pectoris (cardiac chest pain) (ARB 1992, U.S. EPA 1999b). In one study, high short-term exposures to CO were found in people operating small gas-powered garden equipment (ARB 1992).

C. Unburned Fuel

Some toxic compounds are present in gasoline and are emitted to the air when gasoline evaporates or passes through the engine as unburned fuel (ARB 1997). Benzene, for example, is a component of gasoline. Benzene is a human carcinogen and central nervous system depressant. The major sources of benzene emissions in the atmosphere are from both unburned and burned gasoline. The amount of benzene in gasoline has been reduced in recent years through the

mandated use of California Reformulated Gasoline (ARB undated fact sheet[10]). Other toxic compounds that are emitted from vehicle exhaust include formaldehyde, acetaldehyde, and 1,3-butadiene. Acetaldehyde is a probable human carcinogen (Group B2) and acute exposures lead to eye, skin, and respiratory tract irritation. 1,3-Butadiene is classified as a probable human carcinogen, is mildly irritating to the eyes and mucous membranes, and can cause neurological effects at very high levels. Formaldehyde is highly irritating to the eyes and respiratory tract and can induce or exacerbate asthma. It is classified as a probable human carcinogen (Group B1).

D. Ozone

Ozone is a colorless, odorless gas and is the chief component of urban smog. It is by far the state's most persistent and widespread air quality problem. Ozone is formed from the chemical reactions of hydrocarbons and nitrogen dioxide in the presence of sunlight. Leaf blowers emit substantial quantities of hydrocarbons, primarily from unburned fuel, which can react to form ozone. Ozone is a strong irritant and short-term exposures over an hour or two can cause constriction of the airways, coughing, sore throat, and shortness of breath. Ozone exposure may aggravate or worsen existing respiratory diseases, such as emphysema, bronchitis, and asthma. Chronic exposure to ozone can damage deep portions of the lung even after symptoms, such as coughing, disappear. Over time, permanent damage can occur in the lung, leading to reduced lung capacity.

E. Noise

The literature on health effects of noise is extensive. Exposure of adults to excessive noise results in noise-induced hearing loss that shows a dose-response relationship between its incidence, the intensity of exposure, and duration of exposure. Noise-induced stimulation of the autonomic nervous system reportedly results in high blood pressure and cardiovascular disease (AAP 1997). In addition there are psychological effects. The following subsections will first discuss noise-induced hearing loss and physiological stress-related effects. Adverse impacts on sleep and communication, effects of performance and behavior, annoyance, and effects on wildlife and farm animals are also described. These are not perfect divisions between discreet affects: nighttime noises can cause sleep-deprivation, for example, which can lead to stress, elevated blood pressure, and behavioral changes, especially if the effect is repeated and uncontrollable. But first, before discussing effects, the reader should have an understanding of how the ear functions.

[10]http://arbis.arb.ca.gov/cbg/pub/cbgbkgr1.htm

1. Hearing and the Ear

A detailed discussion of the ear's anatomy and the mechanism by which we hear is beyond the scope of this report, but a basic level of understanding is necessary so that later discussions of damage to hearing will be better understood. For further information, the reader is referred to any basic acoustics or biology text.

The ears are paired sensory organs that serve two functions, to detect sound and to maintain equilibrium; only sound detection will be addressed in this report. The ears are composed of the external ear, middle ear, and the inner ear. With the assistance of the external ear in collecting and focusing sound, vibrations are transmitted to the middle ear via the ear canal and the eardrum. The vibrations of the eardrum are transmitted by the bones of the middle ear to the fluid-filled sensory organ of the inner ear, the cochlea. As the fluid of the inner ear vibrates, the hair cells located in the cochlea bend, stimulating sensory receptors, and leading to nerve impulses being transmitted to the brain via the auditory nerve. The greater the hair cell displacement, the more sensory receptors and neurons are stimulated, resulting in the perception of an increase in sound intensity.

Hearing loss can result from damage or growths in any portion of the ear and the part of the brain that processes the nerve impulses. Damage to the outer and middle ear result in conductive hearing loss, in which case the vibrations can still be perceived and processed if they can be transmitted by another means to the inner ear. Damage to the inner ear and auditory nerve result in sensorineural hearing loss. Sensorineural hearing loss can be temporary, if the body's mechanisms can repair the damage, but cumulative inner ear damage will result in permanent hearing loss. Aging, diseases, certain medications, and noise cause the majority of sensorineural hearing loss, which is not reversible by surgery or medication, and is only partially restored by hearing aids.

2. Noise-Induced Hearing Loss

Roughly 25% of all Americans aged 65 and older suffer from hearing loss. Contrary to common belief, hearing loss is not part of the natural aging process, but is caused by preventable, noise-induced wear and tear on the auditory system (Clark & Bohne 1999). Noise-induced hearing loss develops gradually over years and results from damage to the inner ear. Sensory cells within the cochlea are killed by exposure to excessive noise. These cells do not regenerate but are replaced with scar tissue. After weeks to years of excessive noise, the damage progresses to the point where hearing loss occurs in the high-frequency range and is detectable audiometrically; speech comprehension is not usually affected and so at this level hearing loss is goes unnoticed by the individual. Eventually, with continued exposure, the hearing loss spreads to the lower pitches necessary to understand speech. At this point, the impairment has proceeded to the level of a handicap and is quite noticeable. The damage is not reversible and is only poorly compensated for by hearing aids.

There is considerable variability among individuals in susceptibility to hearing loss. Based on major field studies conducted in the late 1960s and early 1970s, the U.S. EPA suggested that a 24-hour equivalent sound level of 70 dBA would protect 96% of the population, with a slight margin of safety, from a hearing loss of less than five dBA at 4000 Hz (U.S. EPA 1974). This 24-hour, year-round equivalent sound level is based on a forty-year work-place noise level exposure (250 working days per year) of 73 dBA for eight hours and 60 dBA for the remaining 16 hours.

The National Institute for Occupational Safety and Health reviewed the recommended occupational noise standard recently (NIOSH 1996) and reaffirmed its recommended exposure limit of 85 dBA for occupational noise exposure. The report concluded that the excess risk of developing occupational noise-induced hearing loss for a 40-hr lifetime exposure at 85 dBA is 8%. In comparison, the OSHA regulation [29 CFR 1910.95] allowing a 90 dBA permissible exposure limit results in a 25% excess risk of developing hearing loss. The OSHA regulation, however, has not been changed to reflect the recommendation of the National Institute for Occupational Safety and Health.

NIOSH also recommended changing the exchange rate, which is the increment of decibels that requires the halving or doubling of exposure time, from the OSHA mandated 5 dBA to 3 dBA. This would mean that if the worker was permitted to be exposed to 85 dBA unprotected for 8 hr, then a noise exposure level of 88 dBA would be limited to 4 hr per day. The 3-dBA exchange rate is supported by acoustics theory, and by national and international consensus. OSHA, however, continues to mandate a 5 dBA exchange rate in its regulations. In addition, the American Academy of Pediatrics (1997) has asked the National Institute of Occupational Safety and Health to conduct research on exposure of the fetus to noise during pregnancy and recommends that the OSHA consider effects on the fetus when setting occupational noise standards.

3. Non-Auditory Physiological Response

In addition to hearing loss, other physiologic and psychological responses resulting from noise have been noted and are termed non-auditory effects. Noise is assumed to act as a non-specific biological stressor, eliciting a “fight or flight” response that prepares the body for action (Suter 1991). Research has focused on effects of noise on blood pressure and changes in blood chemistry indicative of stress. Despite decades of research, however, the data on effects are inconclusive. While many studies have shown a positive correlation between hearing loss, as a surrogate for noise exposure, and high blood pressure, others have shown no correlation (Suter 1991; Kryter 1994). The National Institutes of Occupational Safety and Health (1996) has called for further research to define a dose-response relationship between noise and non-auditory effects, such as hypertension and psychological stress.

4. Interference with Communication

The inability to communicate can degrade the quality of living directly, by disturbing social and work-related activities, and indirectly, by causing annoyance and stress. The U.S. EPA (1974), in developing its environmental noise levels, determined that prolonged interference with speech was inconsistent with public health and welfare. Noise that interferes with speech can cause effects ranging from slight irritation to a serious safety hazard (Suter 1991), and has been shown to reduce academic performance in children in noisy schools, as reviewed by Kryter (1994). The U.S. EPA, therefore, developed recommended noise levels that are aimed at preventing interference with speech and reduced academic performance. An outdoor yearly average day-night sound level of 55 dBA permits adequate speech communication at about 9-10 ft, and also assures that outdoor noise levels will not cause indoor levels to exceed the recommended level of 45 dBA.

5. Interference with Sleep

It is common experience that sound rouses sleepers. Noise that occurs when one is trying to sleep not only results in repeated awakenings and an inadequate amount of sleep, but is also annoying and can increase stress. Noise that is below the level that awakens, however, also changes the sleep cycle, reduces the amount of "rapid eye movement" sleep, increases body movements, causes cardiovascular responses, and can cause mood changes and performance decreases the next day (Suter 1991). The U.S. EPA recommended an indoor average yearly day-night level of 45 dBA, which translates into a night time average sound level of 35 dBA, to protect most people from sleep disturbance.

An average sound level, however, does not adequately account for peak sound events that can awaken and disturb sleep. Continuous noise has a significantly smaller sleep disturbance effect than intermittent noise. Research has found that subjects in sleep laboratory experiments will gradually reduce the number of awakenings throughout the night in response to noise, but other physiological changes, including a momentary increase in heart rate, indicative of arousal do not change. The question is whether physiological arousal, short of awakening, has a negative health effect. While study results are inconclusive on this issue, it is clear that noise above a certain level, about 55 dBA L_{eq} according to Kryter (1994), will awaken people, even after long periods of repeated exposures. Repeated awakenings reduce feelings of restedness and cause feelings of annoyance, leading to stress responses and associated health disorders.

6. Effects on Performance and Behavior

The working hypothesis in this area has been that noise can cause adverse effects on task performance and behavior at work, in both occupational and non-occupational settings. Results of studies, however, have not always been as predicted. Sometimes noise actually improves performance, and sometimes there are no measurable differences in performance between noisy and quiet conditions (Suter 1991). Kryter (1994) concluded that masking by noise of other

auditory signals is the only inherent auditory variable responsible for observed effects of noise on mental and psychomotor tasks.

The effect of noise on “helping behavior” in the presence and absence of noise is more clear. Mathews and Canon (1975) tested the hypothesis that high noise levels may lead to inattention to the social cues that structure and guide interpersonal behavior. In a laboratory study in which subjects did not know they were being studied, they found that fewer persons were willing to help someone who had “accidentally” dropped materials when background noise levels were 85 dB than when they were 65 dB or 48 dB. In a subsequent field study, similar results were demonstrated with background noise from a lawn mower. Initially, subjects were tested as to their willingness to help a man who had dropped books and papers while walking from his car to a house; in this test, helping behavior was low both in ambient (50 dB) and high (87 dB) noise conditions. When the test was repeated with a cast on the arm of the man who dropped the books, helping behavior was high under ambient noise (80%) and low under high noise (15%) conditions. These and other studies lead to the conclusion (Suter 1991) that even moderate noise levels can increase anxiety, decrease the incidence of helping behavior, and increase the likelihood of hostile behavior.

7. Annoyance and Community Response

Annoyance is a response to noise that has been extensively studied for years. Various U.S. government agencies began investigating the relationships between aircraft noise and its effect on people in the early 1950's. Annoyance is measured as an individual response to survey questions on various environmental factors, including as noise (Suter 1991). The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints, and possibly adverse health effects. Fidell et al. (1991) reviewed and synthesized the relationship between transportation noise and the prevalence of annoyance in communities based on over 30 studies. The relationship is an exponentially increasing function, with less than 10% of respondents reporting themselves to be highly annoyed at noises under an average day-night sound level of 56 dB. Fifty percent responded they were highly annoyed at sound levels approaching 79 dB, and nearly every person was highly annoyed at sound levels above 90 dB.

Suter (1991) concluded that throughout decades of study, community annoyance has been positively correlated with noise exposure level, and that although variables such as ambient noise level, time of day, time of year, location, and socioeconomic status are important, the most important variable is the attitude of the affected residents. Kryter (1994) further elaborates that interference by noise, and the associated annoyance, depends on the activity of an individual when the noise event occurs, and the intensity and duration of the noise. People have different beliefs about noise, which are also important. Those most annoyed share similar beliefs that the noise may be dangerous, is probably preventable, are aware that non-auditory effects are associated with the noise source, state they are sensitive to noise, and believe that the economic benefit represented by the source is not important for the community (Fields 1990).

8. Effects of Noise on Animals

Kryter (1994) reviewed studies on the effects of noise both on wildlife and farm animals. None of these studies examine noise-induced hearing loss, but rather looked at effects of noise on litter size, prevalence of wildlife, and milk production. Most of the studies were conducted to examine the effects of airport noise, including noise from landings and takeoffs and sonic booms near commercial and military airports, and noise from construction activities during laying of pipelines across wilderness areas. Negative impacts on wildlife and farm animals, due to noise, were not supported by the studies. In the airport studies, the absence of human activities in the areas surrounding the high noise exposure zones appeared to be more important than noise, resulting in abundant wildlife. Farm animals exposed to frequent sonic booms showed little or no negative effects, again using such criteria as reproduction, milk production, and growth rate. No study, however, has examined the effects of leaf blower noise on animals.

IV. POTENTIAL HEALTH AND ENVIRONMENTAL IMPACTS OF LEAF BLOWERS

This section of the report synthesizes the information presented in the two previous sections, hazard identification and health effects, and characterizes the potential health impacts of leaf blowers on operators and bystanders. As discussed previously, there are no studies of the health impacts of leaf blowers, and essential information is missing that prevents ARB from preparing a quantitative risk characterization. There is, for example, no information on the quantitative relationship between exposure to hazards from leaf blowers and adverse effects. The size of the exposed population and the magnitude and duration of exposures are also unknown. The goal of this section, then, is to point the discussion in directions dictated by the findings of the two previous sections, and to raise questions about the nature of health impacts that may be experienced by those exposed to the exhaust emissions, fugitive dust, and noise from leaf blowers in both occupational and non-occupational settings.

Leaf-blower operators and bystanders have two different types of exposures to exhaust and fugitive dust emissions: exposures that occur on a regional basis and exposures that occur when one is within a short distance of the leaf blower. Regional exposures are those exposures to air pollution that occur as a result of leaf blowers contributing to the basin-wide inventory of ozone, carbon monoxide, particulates, and toxic air pollutants. While leaf blowers contribute a small percentage to the basin-wide air pollution, they are nonetheless a source of air pollution that can be, and is, controlled through exhaust emission standards.

The second type of exposure is of greater concern. Lawn and landscape contractors, homeowners using a leaf blower, and those in the immediate vicinity of a leaf blower during and shortly after operation, are exposed to potentially high exhaust, fugitive dust, and noise emissions from leaf blowers on a routine basis. While ARB staff have not located conclusive data on how often, how long, and at what concentrations exposures occur, the ARB off-road model assumes that each commercial leaf blower is used for 275 hr/yr, and each residential leaf blower is used for 10 hr/yr. These figures do not tell us, however, how long each leaf blower operator is exposed.

Because of the highly speculative nature of the data on operator and bystander exposure time, staff have been unable to develop estimates of the quantities of chemicals individuals could be exposed to per amount of time. Instead, impacts are presented somewhat qualitatively, with recommendations for appropriate personal protection or controls from hazards that staff have found to be significant.

A. The Leaf Blower Operator

In this section, data are presented that apply to the commercial leaf blower operator, a person who regularly uses the leaf blower in the course of a landscaping or gardening job. Staff assume that a commercial leaf blower operator will use equipment with a higher horsepower than a residential, or homeowner, operator.

1. Exhaust Emissions

The typical leaf blower owned and operated by commercial lawn and landscape contractors, with an average horsepower of three and a load factor of 50% based on the ARB off-road emissions model, produces the estimated average emissions for a one hour usage as shown in Table 9. Actual operator usage apparently ranges from 15 minutes to a full work day (Table 7). To illustrate the magnitude of potential exhaust and fugitive dust emissions, staff have compared the estimated leaf blower emissions to the emissions from one hour of operation of two different types of light duty vehicles, one new and one old. A comparison of emissions from leaf blowers to vehicle engines is relevant to provide some sense of the relative quantities of pollutants.

Table 9. Commercial Leaf Blower Emissions Compared to Light Duty Vehicle Emissions
3 hp average, 50% load factor, 1999 emissions data

	Exhaust Emissions, g/hr	Exhaust Emissions, new light duty vehicle,* g/hr	Exhaust Emissions, older light duty vehicle,** g/hr
Hydrocarbons	199.26	0.39	201.9
Carbon Monoxide	423.53	15.97	1310
Particulate Matter	6.43	0.13	0.78
Fugitive Dust	48.6-1031	N/A	N/A

*New light duty vehicle represents vehicles one year old, 1999 or 2000 model year, driven for one hour at 30 mph.
**Older light duty vehicle represents vehicles 1975 model year and older, pre-catalytic vehicle, driven for one hour at 30 mph.

For CO (Table 9), the estimated 423 g emitted by one hour of leaf blower use is approximately 26 times the amount emitted by a new vehicle, but approximately one-third of the CO emissions of an older vehicle. While not implying that the operator will inhale this amount of CO, these data do suggest concern about the relatively large amount of CO emitted directly into the air space surrounding the operator. For particulate matter exhaust emissions, the leaf blower emits eight to 49 times the particulates of a light duty vehicle, primarily because of the large amount of unburned fuel directly released by the two-stroke engine.

Another way to visualize the data is to compare emissions for a given amount of leaf blower operation to miles traveled by car. The Air Resources Board regularly publishes such emissions benchmarks. Thus, for the average 1999 leaf blower and car data presented in Table 9, we calculate that hydrocarbon emissions from one-half hour of leaf blower operation equal about 7,700 miles of driving, at 30 miles per hour average speed. The carbon monoxide emission benchmark is signficantly different. For carbon monoxide, one-half hour of leaf blower useage

(Table 9) would be equivalent to about 440 miles of automobile travel at 30 miles per hour average speed.

Exposure data are necessary to determine potential health impacts of the pollutants. Since few exposure data exist, staff have developed a model that estimates potential exposures based on 10 minutes of leaf blower operation and compares those emissions to the amount of still air in which emissions would need to be mixed to avoid a transitory, local exceedance of the ambient air quality standards, which are health-based standards. Details of the model and results are presented in Appendix J.

The exposure scenario suggests that 10 minutes of leaf blower usage could expose the operator to a significant, potentially harmful dose of CO, assuming a worst case exposure, in which there is no dispersion of pollutants out of the immediate area. In this case, the operator could be exposed to potentially harmful amounts of carbon monoxide. The best case would be that all emissions and fugitive dust from the leaf blower would be blown out of the immediate area, resulting in little or no exposure to the operator. Actual exposures would most likely be somewhere in between these two assumptions and would vary greatly with weather conditions, wind, use or nonuse of protective gear, walking speed of the operator, and type of machine used. In addition, for carbon monoxide exposures, whether or not the operator has heart disease would be important in determining potential risk. Exposure studies would need to be conducted to obtain more reliable estimates of operator exposure, and staff recommend further research.

On December 27, 1999, ARB was mailed a redacted copy of a 1995 report on operator exposure levels for several chemicals that are present in handheld gasoline-powere equipment exhaust emissions. The report summarized breathing zone measurements during operation of chain saws, a string trimmer, and a leaf blower, but all data pertaining to equipment other than the leaf blower was blacked-out. The study and its limitations are discussed in some detail in Appendix H, but it is relevant to note here that ARB has received two measurements from one leaf blower of breathing zone concentrations of carbon monoxide, toluene, benzene, 1,3-butadiene, acetaldehyde, and formaldehyde. As reported in the study, concentrations of carbon monoxide, benzene, and 1,3-butadiene were high enough as to reinforce concern over operator exosures for the commercial leaf blower operator.

2. Fugitive Dust

Estimated fugitive dust emissions cannot be compared to light duty vehicle exhaust. The worst case exposure scenario, however, suggests that ten minutes of use of a commercial blower would exposure the operator to significant amounts of PM (Appendix J). While leaf blower operators would not be expected to spend significant amounts of time within such a particulate cloud, the day-in-day-out exposure to this much PM10 could result in serious, chronic health consequences in the long-term. Short-term exposures of one to two days to high levels of PM can lead to coughing and minor throat irritation. Long-term exposures have shown statistically significant associations of ambient PM levels with a variety of negative human health outcomes, as discussed previously. These data strongly suggest that professional leaf blowers operators, and

those regularly working within the envelope described above, should wear a face mask effective at filtering PM from the air, and further research is warranted.

3. Noise

The potential health impacts of leaf blowers on workers from noise center on noise-induced hearing loss. Two factors contribute to an increased risk of hearing loss in typical career gardeners: the high sound pressure levels emitted by leaf blowers at the level of the operator's ear, and the infrequent use of hearing protection. While we cannot estimate the percentage of workers who will experience noise-induced hearing loss without additional data, these two factors are likely to be responsible for hearing loss in an unknown percentage of workers, although individuals may not notice any hearing loss until many years have passed. In order to reduce potential hearing loss, employers should ensure that employees use hearing protection. State and local health and enforcement agencies should promote hearing protection in campaigns targeted at professional landscapers and gardeners. Hearing loss is gradual, and may become obvious only years after the exposure has ceased.

B. The Public-at-Large

Those who are not working in landscaping and gardening fall into two categories: homeowners doing their own gardening and bystanders. Homeowners who chose to use a leaf blower likely experience relatively low-level exposures which they control. Bystanders may experience low or high exposures, depending on the nature of the exposure. Bystanders, however, almost never have chosen to be exposed to the exhaust, dust, and noise emissions of the leaf blower. Thus their attitude toward the leaf blower is likely very negative and they may be highly annoyed by the exposure.

In addition, staff have received letters, and read testimonials on Internet web-sites, concerning acute symptoms, such as asthma and allergies, exhibited by sensitive individuals to relatively limited exposures. These symptoms have not been evaluated in this report as they are anecdotal and unable to be substantiated. The recent study by Miguel et al. (1999), however, lends support to those who claim that exposure to leaf blower-generated dust causes allergic and asthmatic symptoms. It is also important to acknowledge that some individuals may be very sensitive to the emissions from leaf blowers and unable to tolerate exposures that do not seem to bother other individuals.

In addition to homeowner-leaf blower operators and bystanders who are in the vicinity of leaf blower operation, everyone is exposed to a small degree to air pollution that results from exhaust and dust emissions from leaf blowers. This report does not quantify those exposures, but the ARB does regulate exhaust emissions from leaf blowers, as from most other sources of air pollution. All sources of air pollution need to be reduced in order that Californians can breathe clean air.

1. Exhaust Emissions

The typical leaf blower owned and operated by a homeowner for private residential use is assumed to have an average horsepower of 0.8 and a load factor of 50%, based on the ARB off-road emissions model. Emissions from one hour of operation are compared to exhaust emissions from two different age light duty vehicles (Table 10). There are few data available on the length of time a homeowner runs a leaf blower, but it is likely that the homeowner uses a leaf blower for less than one hour, which would reduce the potential exposures and impacts.

Table 10. Homeowner Leaf Blower Emissions Compared to Light Duty Vehicle Emissions 0.8 hp average, 50% load factor, 1999 emissions data

	Exhaust Emissions, g/hr	Exhaust Emissions, new light duty vehicle,* g/hr	Exhaust Emissions, older light duty vehicle,** g/hr
Hydrocarbons	56.73	0.39	201.9
Carbon Monoxide	119.2	15.97	1310
Particulate Matter	1.44	0.13	0.78
Fugitive Dust	48.6-1031	N/A	N/A

*New light duty vehicle represents vehicles one year old, 1999 or 2000 model year, driven for one hour at 30 mph.
**Older light duty vehicle represents vehicles 1975 model year and older, pre-catalytic vehicle, driven for one hour at 30 mph.

As with the heavier-duty commercial leaf blower, CO and particulate matter emissions from the lighter-duty leaf blower are many times higher than emissions of the same pollutants from vehicles (Table 10). CO emissions from a leaf blower that might be used by a typical homeowner are significantly lower than those from a commercial leaf blower (Table 9) and it is likely that homeowners use leaf blowers for much less than one hour at a time. The exposure scenario for homeowner usage (Appendix J) estimates a correspondingly lower potential exposure. The homeowner is, therefore, less likely to be exposed to potentially harmful amounts of carbon monoxide, although sensitive individuals should be cautioned. For all exhaust emissions, exposures are considerably lower in a residential setting than in a commercial setting. In the best case, all emissions and fugitive dust from the leaf blower would be blown out of the operator's immediate area, resulting in little or no exposure. Actual exposures would most likely be somewhere in between these two assumptions and would vary greatly with weather conditions, wind, use or nonuse of protective gear, walking speed of the operator, and type of machine used. Exposure studies would need to be conducted to obtain more reliable estimates of operator exposure, and staff recommend further research.

As discussed in Section IV. A. 1., another way to visualize the data is to compare emissions for a given amount of leaf blower operation to miles traveled by car. The Air Resources Board regularly publishes such emissions benchmarks. Thus, for the average 1999 homeowner-type leaf blower and car data presented in Table 10, we calculate that hydrocarbon emissions from one-half hour of leaf blower operation equal about 2,200 miles of driving, at 30 miles per hour average speed. The carbon monoxide emission benchmark is signficantly different. For carbon monoxide, one-half hour of a homeowner-type leaf blower useage (Table 10) would be equivalent to about 110 miles of automobile travel at 30 miles per hour average speed.

2. Fugitive Dust Emissions

For fugitive dust, because the homeowner is likely using leaf blowers for a very short time each week, the potential risk from exposure is much lower than for commercial gardeners. Still, based on estimates in the exposure scenario (Appendix J), staff recommends that even homeowners wear a dust filtering mask when using a leaf blower.

3. Noise

The homeowner who uses a leaf blower for a brief amount of time each week or two is unlikely to experience noise-induced hearing loss. The cumulative exposure to many recreational sources of noise, such as recreational power tool use, lawn care, shooting, boating, concert-going, and other activities that expose one to loud noises, however, is likely to be great enough to impact hearing (Clark 1991). Those who regularly use noisy power equipment should be in the habit of using hearing protection to reduce their overall exposure to potentially damaging noise.

The likelihood of a bystander exposed to leaf blower noise on an irregular basis experiencing hearing loss is low. The potential health impacts from leaf blowers on bystanders that are likely more important include interference with communication, sleep interruption, and annoyance. Each of these impacts may in turn lead to stress responses, although research has not conclusively tied chronic exposures with any particular adverse health outcome. Although interference with communication, sleep interruption, and annoyance may not seem to be serious impacts, they are important health and quality of life issues for many people. At least 100 municipalities in California have restricted or banned the use of leaf blowers within city limits in response to people who object to the loud noise of leaf blowers interrupting their lives.

C. Summary of Potential Health Impacts

Health effects from hazards identified as being generated by leaf blowers ranging from mild to serious, but the appearance of those effects depends on exposures: the dose, or how much of the hazard is received by a person, and the exposure time. Without reasonable estimates of exposures, ARB cannot conclusively determine the health impacts from leaf blowers; the discussion herein clearly is about potential health impacts. The goal is to direct the discussion and raise questions about the nature of potential health impacts for those exposed to the exhaust emissions, fugitive dust, and noise from leaf blowers in both occupational and non-occupational settings.

For the worker, the analysis suggests concern. Bearing in mind that the worker population is most likely young and healthy, and that these workers may not work in this business for all of their working lives, we nonetheless are cautioned by our research. Leaf blower operators may be exposed to potentially hazardous concentrations of CO and PM intermittently throughout their work day, and noise exposures may be high enough that operators are at increased risk of developing hearing loss. While exposures to CO, PM, and noise may not have immediate, acute effects, the potential health impacts are potentially greater for chronic effects. In addition, evidence of significantly elevated concentrations of benzene and 1,3-butadiene in the breathing zone of workers leads to concern about exposures to these two toxic air contaminants.

Potential noise and PM effects should be reduced by the use of appropriate breathing and hearing protective equipment. Employers should be more vigilant in requiring and ensuring their employees wear breathing and hearing protection. Regulatory agencies should conduct educational and enforcement campaigns, in addition to exploring the extent of the use of protective gear. Exposures to CO and other air toxics are more problematic because there is no effective air filter for these air pollutants. More study of CO and other air toxics exposures to leaf blower operators is warranted to determine whether the potential health effects discussed herein are actual effects or not.

Describing the impacts on the public-at-large is more difficult than for workers because people's exposures, and reactions to those exposures, are much more variable. Bystanders are clearly annoyed and stressed by the noise and dust from leaf blowers. They can be interrupted, awakened, and may feel harassed, to the point of taking the time to contact public officials, complain, write letters and set up web sites, form associations, and attend city council meetings. These are actions taken by highly annoyed individuals who believe their health is being negatively impacted. In addition, some sensitive individuals may experience extreme physical reactions, mostly respiratory symptoms, from exposure to the kicked up dust.

On the other hand, others voluntarily purchase and use leaf blowers in their own homes, seemingly immune to the effects that cause other people such problems. While these owner-operators are likely not concerned about the noise and dust, they are should still wear protective equipment, for example, eye protection, dust masks, and ear plugs, and their exposures to CO are a potential problem and warrant more study.

V. RECOMMENDATIONS

The Legislature asked ARB to include recommendations for alternatives in the report, if ARB determines alternatives are necessary. This report makes no recommendations for alternatives. Based on the lack of available data, such conclusions are premature at this time. Exhaust standards already in place have significantly reduced exhaust emissions from the engines used on leaf blowers, and manufacturers have reduced CO emissions further than required by the standards. Ultra-low or zero exhaust emitting leaf blowers could further reduce public and worker exposures. At its January 27, 2000, public hearing, the Air Resources Board directed its staff to explore the potential for technological advancement in this area.

For noise, the ARB has no Legislative mandate to control noise emissions, but the evidence seems clear that quieter leaf blowers would reduce worker exposures and protect hearing, and reduce negative impacts on bystanders. In connection with this report, the Air Resources Board received several letters urging that ARB or another state agency set health-based standards for noise and control noise pollution.

A more complete understanding of the noise and the amount and nature of dust resuspended by leaf blower use and alternative cleaning equipment is suggested to guide decision-making. Costs and benefits of cleaning methods have not been adequately quantified. Staff estimates that a study of fugitive dust generation and exposures to exhaust emissions and dust could cost $1.1 million, require two additional staff, and take two to three years. Adding a study of noise exposures and a comparison of leaf blowers to other cleaning equipment could increase study costs to $1.5 million or more (Appendix H).

Fugitive dust emissions are problematic. The leaf blower is designed to move relatively large materials, which requires enough force to also blow up dust particles. Banning or restricting the use of leaf blowers would reduce fugitive dust emissions, but there are no data on fugitive dust emissions from alternatives, such as vacuums, brooms, and rakes. In addition, without a more complete analysis of potential health impacts, costs and benefits of leaf blower use, and potential health impacts of alternatives, such a recommendation is not warranted.

Some have suggested that part of the problem lies in how leaf blower operators use the tool, that leaf blower operators need to show more courtesy to passersby, shutting off the blower when people are walking by. Often, operators blow dust and debris into the streets, leaving the dust to be resuspended by passing vehicles. Interested stakeholders, including those opposed to leaf blower use, could join together to propose methods for leaf blower use that reduce noise and dust generation, and develop and promote codes of conduct by workers who operate leaf blowers. Those who use leaf blowers professionally would then need to be trained in methods of use that reduce pollution and potential health impacts both for others and for themselves.

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Leaf Blower's Emissions Dirtier than High-Performance Pick-Up Truck's, Says Edmunds' InsideLine.com

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Leaf Blower's Emissions Dirtier than High-Performance Pick-Up Truck's, Says Edmunds' InsideLine.com

SANTA MONICA, Calif. — December 6, 2011 — A consumer-grade leaf blower emits more pollutants than a 6,200-pound 2011 Ford F-150 SVT Raptor, according to tests conducted by Edmunds' InsideLine.com, the premier online resource for automotive enthusiasts.
The tests found that a Ryobi 4-stroke leaf blower kicked out almost seven times more oxides of nitrogen (NOx) and 13.5 times more carbon monoxide (CO) than the Raptor, which InsideLine.com once dubbed "the ultimate Michigan mudslinger." An Echo 2-stroke leaf blower performed even worse, generating 23 times CO and nearly 300 *times* more non-methane hydrocarbons (NMHC) than the Raptor.

"The hydrocarbon emissions from a half-hour of yard work with the two-stroke leaf blower are about the same as a 3,900-mile drive from Texas to Alaska in a Raptor," said Jason Kavanagh, Engineering Editor at Edmunds.com. "As ridiculous as it may sound, it is more 'green' to ditch your yard equipment and find a way to blow leaves using a Raptor."

The InsideLine.com test also found that the Raptor, which was chosen to represent the extreme heavy-duty end of the light vehicle spectrum, actually *reduced* the amount of hydrocarbons in the air in the test lab. The ambient air measured prior to the test contained 2.821 parts per million (ppm) of total hydrocarbons, and the amount of total hydrocarbons coming out the Raptor's tailpipe measured 2.639 ppm.

InsideLine also tested a subcompact 2012 Fiat 500 for comparison and found that the Fiat actually emitted more hydrocarbons and oxides of nitrogen but dispatched less carbon monoxide than the Raptor. But like the Raptor, the 500 tested much cleaner than the leaf blowers.

Edmunds' InsideLine.com FTP 75 Emissions Test Results (in grams per minute)

	Non-Methane Hydrocarbons(NMHC)	Oxides of Nitrogen (NOx)	Carbon Monoxide (CO)
2011 Ford Raptor	0.005	0.005	0.276
2012 Fiat 500	0.016	0.010	0.192
Ryobi 4-stroke leaf blower	0.182	0.031	3.714
Echo 2-stroke leaf blower	1.495	0.010	6.445

To compare the emissions of these vehicles and the leaf blowers, Edmunds' InsideLine.com staff conducted FTP 75 emissions tests — one of the primary yardsticks in the U.S. certification of light-duty vehicle emissions and fuel economy — at the American Automobile Association's (AAA) Automotive Research Center in Diamond Bar, CA. The test simulates 11.04 miles driven over 31.2 minutes and includes idle periods, accelerations, decelerations and cruising. The leaf blowers were adjusted to full speed during the cruise periods defined by the FTP 75 and observed the same designated idling periods.

For more details and video of Edmunds' InsideLine.com's experiment, please visit http://www.insideline.com/features/photos/emissions-test-car-vs-truck-vs-leaf-blower-gallery.html.

InsideLine.com's experiment comes just weeks after the Obama administration proposed new Corporate Average Fuel Economy (CAFE) standards for 2017-2025 model year vehicles. For a better understanding on how these proposed changes will affect the automotive marketplace, please visit Edmunds.com's FAQ at http://www.edmunds.com/fuel-economy/faq-new-corporate-average-fuel-economy-standards.html.

2016 HOUSE OF DELEGATES ACTIONS

PUBLIC HEALTH AND EDUCATION

150 Tobacco Products in Pharmacies and Healthcare Facilities
Introduced by the Committee on Preventive Medicine and Family Health
ADOPTED

RESOLVED, that the Medical Society of the State of New York support the position that the sale of any tobacco or vaporized nicotine products be prohibited where healthcare is delivered or where prescriptions are filled; and be it further

RESOLVED, that the Medical Society of the State of New York submit a copy of this resolution to the American Medical Association for its consideration .

151 NYS DOH Regulation Concerning Operating Room Attire
Introduced by Nassau County Medical Society
SUBSTITUTE RESOLUTION ADOPTED

RESOLVED, that the Medical Society of the State of New York encourage hospitals to use evidence-based guidelines for perioperative attire and inform the physicians and staff of the policy that the hospital adopted.

152 Banning the Use of Gasoline Powered Leaf Blowers
Introduced by Suffolk County Medical Society
SUBSTITUTE RESOLUTION ADOPTED

RESOLVED, that the Medical Society of the State of New York call upon the New York State Department of Environmental Conservation and the manufacturers of the gas leaf blowers develop guidelines that would dramatically reduce the toxic emissions and noise level of gas leaf blowers; and be it further

RESOLVED, that the Medical Society of the State of New York also encourage that New York State and other governmental entities promote the use of non-polluting alternatives to gas leaf blowers; and be it further

RESOLVED, that a copy of this resolution be transmitted to the American Medical Association for consideration at its House of Delegates.

153 Banning the Distribution of Plastic Carryout Bags in Retail Sales
Introduced by Suffolk County Medical Society
SUBSTITUTE RESOLUTION NOT ADOPTED

RESOLVED, that the Medical Society of the State of New York support legislation/regulation that would prohibit the use of plastic carryout bags in retail stores.

ENVIRONMENT

California Weighs Tougher Emissions Rules For Gas-Powered Garden Equipment

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February 28, 2017 · 5:34 PM ET
Heard on All Things Considered

DAVID GORN

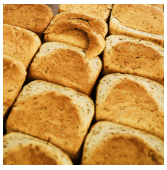
California is looking into ways to reduce the use of gas-powered lawn and gardening equipment because they will soon surpass cars as the biggest polluters in the state.

stoncelli/Getty Images/iStockphoto

Those gas-powered leaf blowers, hedge trimmers and mowers you hear in your neighborhood aren't just annoying — they make a lot of pollution, too.

In California, they're about to pass cars as the worst air polluters, spewing out formaldehyde, benzene and particulate matter. According to Michael Benjamin at the California Air Resources Board, in just three years' time, the biggest single ozone polluter in the state is going to be all this gardening equipment.

"We expect that ozone-contributing pollutants from small off-road engines will exceed those same emissions from cars around the 2020 time frame," Benjamin says.



THE SALT

What's The Environmental Footprint Of A Loaf Of Bread? Now We Know

It sounds hard to believe: More pollution from leaf blowers than cars. But in California and across the country, regulations on car exhaust have gotten tighter and tighter over the years, substantially reducing their ozone-damaging emissions. Not so with small gas engines, Benjamin says. And with 16 million of them cranking up across California, all that pollution adds up.

"Unless ARB adopts more stringent controls, emissions from this category are going to really become much more significant relative to cars," he says.

Some states and regional air-quality districts do have incentive programs in place to try to get homeowners to switch from gas to electric machinery.

But California — which currently goes by federal standards for its emissions regulations of small off-road gas engines — is considering requiring tougher emissions standards for small gas engines and to offer major incentives for landscaping businesses to change over to electric.

ENVIRONMENT

As Obama Clean Power Plan Fades, States Craft Strategies To Move Beyond It

David Clegern of the California Air Resources Board says he is unaware of any other states pursuing programs other than exchanges for residential lawn and garden

equipment or of other states lobbying the federal Environmental Protection Agency to adopt more stringent standards.

Making the switch

At an expansive backyard in western Los Angeles, one business is already starting to make appeals to landscapers with electric equipment. Dan Mabe runs American Green Zone Alliance, and he's trying to reach small, mostly-Latino landscape crews. Here, he has a lawn full of equipment spread out for landscaper Noe Bautista and his workers to test.

Bautista has tried to get his crew to wear face masks, but most young Latino workers won't use them — partly because, he says, there's really no way to keep out those fumes.

ENVIRONMENT

How The EPA Became A Victim Of Its Own Success

"You can feel the gas smell right away. You have a headache right away with all that smoke," he says.

Mabe says this is more than an air quality issue. And it even goes beyond the respiratory problems of many gardening workers.

"You can call it environmental justice. It was a demographic that wasn't really being addressed," Mabe says.

As head of this crew, Bautista, for one, is ponying up the cash now and making the switch — not only for health reasons — but since electric equipment means no more buying gas, he thinks he may even save a little money.

PARALLELS

The Burning Problem Of China's Garbage

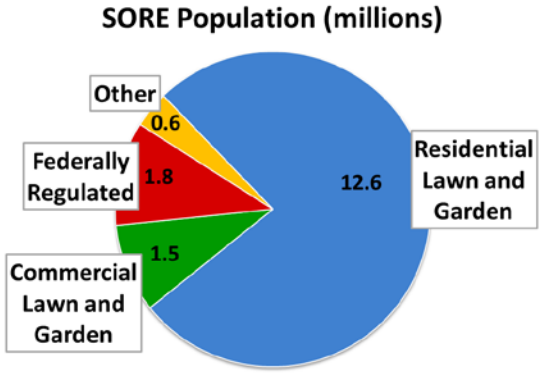
Small Engine Fact Sheet

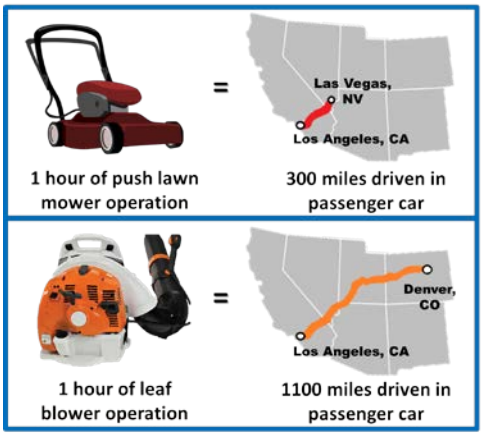
June 2017

California Environmental Protection Agency
Air Resources Board

Small engines in California

Small off-road engines (SORE) are spark-ignition engines rated at or below 19 kilowatts. Engines in this category are primarily used for lawn, garden, and other outdoor power equipment. The population of small engines in California (16.5 million) is greater than that of light-duty passenger cars (13.7 million) and is comprised of 76% residential lawn and garden equipment, 9% commercial lawn and garden equipment, 11% federally regulated construction/farming equipment, and 4% other equipment types (e.g. generators utility carts).



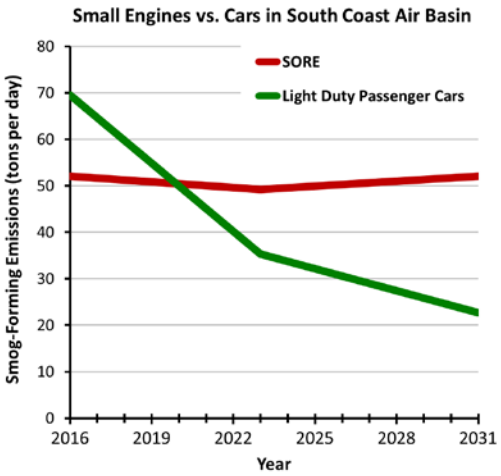


Emissions are significant

Today, operating the best-selling commercial lawn mower for one hour emits as much smog-forming pollution as driving the best-selling 2016 passenger car, a Toyota Camry, about 300 miles – approximately the distance from Los Angeles to Las Vegas. For the best-selling commercial leaf blower, one hour of operation emits smog-forming pollution comparable to driving a 2016 Toyota Camry about 1100 miles, or approximately the distance from Los Angeles to Denver.

The need for additional controls

The California Air Resources Board (ARB) adopted emissions standards for small engines in 1990 and was the first agency in the world to control emissions from these engines. Due to the regulations put in place by ARB, small engines are 40-80% cleaner today than they were before the program began. In the early 2020s, however, total smog-forming emissions from small engines are projected to exceed those from passenger cars in the South Coast Air Basin because passenger car emissions will continue to decrease. By 2031, small engine emissions will be more than twice those from passenger cars.



ARB actions to reduce emissions

Because of California's ongoing air quality challenges, additional emissions reductions are needed from small engines. In 2020, ARB will consider new emission standards to achieve additional reductions from small engines to help California meet its goal of reducing smog-forming pollutant emissions from mobile sources by 80 percent in 2031. Significant emission reductions will be achieved through a combination of regulatory and incentive approaches, and a major shift to zero-emission electric equipment will be needed to meet the 80 percent reduction goal.

For more information please contact the Air Resources Board's Public Information Office at (916) 322-2990, or (800) 242-4450 toll-free (USA only).

Impacts of Leaf Blowers and Gas-Powered Landscape Maintenance
(and what you can do about it)

The US landscape maintenance industry depends on gas-powered equipment – 2-stroke engines (eg, leaf blowers, edgers, trimmers) and 4-stroke engines (mowers). They generate deafening noise and clouds of toxic, carcinogenic air pollution around our neighborhoods, schools, and public spaces. Leaf blowers are often used in ways that violate industry guidelines (eg, simultaneous use of multiple machines) and state environmental protection laws. These practices come with high costs for our health and environment.

- The 2-stroke engines of blowers, trimmers, and edgers burn an oil-gas mixture that generates high levels of ozone-forming chemicals and fine particulate matter (PM) at ground level where they are easily inhaled. A head-to-head study showed that just 30 minutes of leaf blower operation produced as much pollution as a 6,200 lb Ford Raptor truck driven 3,900 miles – the distance from Texas to Alaska! [1]
- Ozone and fine PM are well known causes / contributors to early death, heart attack, stroke, congestive heart failure, asthma, chronic obstructive pulmonary disease, cancer, [2-7] and other serious health conditions, including possibly childhood autism [8]. Even short term exposure can be harmful. Workers, children, seniors, and people with chronic illness, are at greatest risk.
- Noise from leaf blowers ranges from 95–115 decibels at the ear of the operator [9-10]. These levels are orders of magnitude (decibels are on a logarithmic scale) beyond those deemed safe for workers or those in close proximity [11-13]. Health effects range from agitation to heart disease [14]. A recent study estimates more than 100 million Americans are at risk for noise-related health problems at a cost of $3.9 billion/year [15].
- Every year lawn and garden equipment consumes 1.6 billion gallons of gasoline [16], generates tens of millions of tons of carbon dioxide, spills at least 17 million gallons of gasoline into the ground and storm drains [17], and adds millions of pounds of toxic and non-recyclable waste to our landfills.
- The high velocity air jets of leaf blowers – 150-280 mph – can destroy nests and habitats, desiccate pollen, sap, other natural plant substances, and injure or destroy birds, small mammals, and beneficial insects. High chronic noise levels decrease biodiversity in affected areas [18].
- Instead of nurturing our landscapes, leaf blowers damage plants, remove beneficial topsoil and mulch, desiccate and compact soil, diminish plant health and contribute to the spread of invasives. This increases dependence on use of fertilizers, herbicides and pesticides.

The good news is there are alternatives. Landscape companies are emerging in locations around the country to provide clean, quiet, healthy landscape maintenance. Innovative products and approaches are being developed and communities are starting to take action. We need to do more. ***Join us. Become part of the movement.***

quiet communities
clean. green. serene.

Actions You Can Take

- **Use quieter, greener, healthier alternatives - lithium battery powered equipment, manual tools.** Insist that your contractor do the same.
- **Find a Quiet Landscaper** who uses quiet, zero emissions equipment by contacting your local landscape professional association or the Ecological Landscaping Alliance.
- **Start a Green Zone** and become certified by the American Green Zone Alliance.
- **Speak to town officials and others** about the noise and air pollution caused by gas-powered leaf blowers and other equipment. **Distribute this fact sheet.**
- **Contact us at** info@quietcommunities.org with your stories or questions.

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17. *Steinberg, T. Lawn and landscape in World Context, 1945-2000. Accessed 3/5/15 at http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/151670_print.html?type=popup*
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BAY AREA AIR QUALITY MANAGEMENT DISTRICT (/)

A HEALTHY BREATHING ENVIRONMENT FOR EVERY BAY AREA RESIDENT

Commercial Lawn & Garden Equipment Exchange Program

reduce air pollution, the Bay Area Air Quality Management District's (Air District) ommercial Lawn & Garden Equipment Exchange Program provides funding for the change of new, battery-powered, zero-emission electric lawn and garden quipment after turning in operable gasoline-powered lawn and garden equipment r scrapping. This replacement program provides real emission benefits by changing conventional, high-polluting, gasoline-powered commercial lawn and arden equipment with zero-emission equipment.

nly School Districts and Municipal Agencies in Alameda & Contra Costa Counties)

is exchange project will replace commercial lawn and garden equipment in Alameda and Contra sta Counties. Funding for this project was made available through a mediation process that required at penalties be paid to improve air quality in Alameda and Contra Costa Counties, near and where e air pollution infraction occurred.

ong the equipment targeted are lawn mowers, leaf blowers, sweepers, chainsaws, line trimmers, d hedge trimmers. In addition to funding the purchase of equipment, funds will be available for the rchase of two batteries for each piece of electric equipment and one battery charger. The gasoline-wered lawn and garden equipment, to be replaced by battery-powered equipment, must be apped at a licensed metal recycling facility.)

e current round of funding is only for school districts and municipal agencies in Alameda and Contra sta Counties. Applications are being accepted on a first-come, first-served basis until all available nds have been exhausted. The application must be accompanied by a Letter of Commitment or a ard Resolution in support of the proposal. Among the eligible equipment that can be funded under

s solicitation are commercial lawn and garden products manufactured by Green Station, Mean
een Products, Stihl, and TMC, as well as other commercial grade, battery-powered lawn and garden
uipment.)

llowing are documents that you will assist you in learning more about the program and submitting an
plication:

plication (/~/media/files/strategic-incentives/lawn-and-garden/nfwf-application-draft-final-pdf.pdf?
=en) (415 Kb PDF, 4 pgs, revised 07/08/15) – Complete this form and submit to Air District (see
tructions at bottom of form)
mplate Letter of Commitment (/~/media/files/strategic-incentives/lawn-and-garden/commercial-l-
d-g-letter-of-commitmenttemplate-pdf.pdf?la=en) (179 Kb PDF, 1 pg, revised 12/31/15)
ebinar Presentation (/~/media/files/strategic-incentives/lawn-and-garden/webinar-presentation-
mmercial-lawn-and-garden-equipment-exchange-pdf.pdf?la=en) (226 Kb PDF, 9 pgs, revised 12/31/15)
ndor Information
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lf.pdf?la=en) (201 Kb PDF, 1 pg, revised 07/08/15)
eenworks (/~/media/files/strategic-incentives/lawn-and-garden/gs_price032015-
lf.pdf?la=en) (261 Kb PDF, 4 pgs, revised 07/08/15)
ean Green (/~/media/files/strategic-incentives/lawn-and-
rden/meangreenretailpricejan2015-pdf.pdf?la=en) (204 Kb PDF, 3 pgs, revised 07/08/15)
ihl (/~/media/files/strategic-incentives/lawn-and-garden/stihlequipmentlist-pdf.pdf?
=en) (223 Kb PDF, 1 pg, revised 07/08/15)
MC (/~/media/files/strategic-incentives/lawn-and-
rden/bpbl24vspecsheetpricing032715-pdf.pdf?la=en) (894 Kb PDF, 2 pgs, revised 07/08/15)

If you have questions about the program you can contact:

Michael Kent, Contra Costa County – (925) 313-6587 or
Michael.Kent@hsd.cccounty.us
Brenda Rueda-Yamashita, Alameda County – (510) 577-7081 or
Brenda.Yamashita@acgov.org

375 Beale Street, Suite 600
San Francisco, CA 94105
415.749.5000 | 1.800.HELP AIR

Lawn Equipment

OVERVIEW

The South Coast Air Quality Management District (SCAQMD) has two annual programs that help clean the air through the exchange of lawn and garden equipment:

- The public can turn in an old, operable gasoline-powered lawn mower and purchase a new cordless electric lawnmower that produces zero emissions at reduced cost.
- Commercial landscapers and gardeners operating within the South Coast Air Basin can exchange an old, noisy, high-polluting backpack leaf blowers for new backpack blowers that have significantly reduced emission and noise levels.

All the gas mowers and leaf blowers that are turned in for this program are scrapped and the metal recycled. To date, SCAQMD has scrapped more than 55,000 highly polluting gasoline mowers, removing almost 114 tons of smog-forming pollutants from the Southland's air. Similarly, the total number of old, polluting leaf blowers that have been scrapped exceeds 13,000.

NEW!
ELECTRIC LAWN MOWER REBATE PROGRAM

Thank you for your interest in Mowing Down Air Pollution!

The Electric Lawn Mower Program has been redesigned to be available year-round as a rebate to provide the public with the opportunity to purchase a cordless, battery-electric lawnmower from a variety of eligible manufacturers. For additional information on the Electric Lawn Mower Rebate Program, please click here (/home/programs/community/electric-lawn-mower-rebate-program). Para información en español oprime aqui (/home/programs/community/electric-lawn-mower-rebate-program-(spanish)).

Consumers can purchase their new mower from a local retailer or online distributor. The Program will provide after-purchase rebates for $150, $200 or $250, depending on the retail cost of the new electric mower (excluding delivery and sales tax). Residents of SCAQMD's four-county jurisdiction would be eligible to participate in the Program.

NEW! Please Note: If you do not have access to a computer, printer or email we can mail you a copy of the Lawn Mower Rebate Application Form and Scrapper Verification Form. You would complete these forms, include a copy of your sales receipt and mail these documents to: SCAQMD, Lawn Mower Rebate Program, 21865 Copley Dr., Diamond Bar, CA 91765. Please call 888-425-6247 (Tuesday-Friday) if you require assistance.

LEAF BLOWER
COMMERCIAL LEAF BLOWER EXCHANGE PROGRAM

NEW! Registration for the 2017 Commercial Leaf Blower Exchange Program will close on Thursday, August 10. Exchange events will be held on August 14 - 31 at various locations throughout our 4-county region. For the City of Los Angeles, two exchange events (/docs/default-source/Lawn-Equipment/leaf-blower-exchange-2017---la.pdf?sfvrsn=6) (PDF, 149KB) will be held in Van Nuys on August 15th and in North Hollywood on August 21st.

For additional information, please click here (/docs/default-source/Lawn-Equipment/leafblower-brochure.pdf?sfvrsn=30) for the Leaf Blower Exchange Program flyer (/docs/default-source/Lawn-Equipment/leafblower-brochure.pdf?sfvrsn=30) (PDF, 164KB). For the Spanish version of the flyer, please click here (/docs/default-source/Lawn-Equipment/leaf-blower-brochure---spanish.pdf?sfvrsn=6) (PDF, 148KB).

This year we will be offering the following leaf blowers as part of the exchange program. Eligible participants include professional gardeners and landscapers, school districts, cities and county governments and other local agencies.

Leaf Blower Make	Model	Cost to Consumer

DeWalt	DCBL790X1 Hand-held, battery-powered leaf blower/7.5 Ah lithium-ion battery/standard charger	$150 with trade-in of a working gasoline-powered back-pack leaf blower
DeWalt	DCBL590X2 Back-pack, battery powered leaf blower/two 7.5 Ah lithium-ion batteries/standard charger	$250 with trade-in of a working gasoline-powered back-pack leaf blower
STIHL	BR500 (gasoline-powered) Back-pack leaf blower	$250 with trade-in of a working gasoline-powered back-pack leaf blower
STIHL	BGA 85, Hand-held, battery-powered leaf blower/AP300 advanced lithium-ion battery/AL300 quick charger	$200 with trade-in of a working gasoline-powered back-pack leaf blower
STIHL	BGA 100, Back-pack, battery powered leaf blower/AR900 backpack battery/AL500 high-speed charger	$500 with trade-in of a working gasoline-powered back-pack leaf blower

For additional information of commercial leaf blower specifications, please click here (/docs/default-source/Lawn-Equipment/commercial-leaf-blower-specifications.pdf?sfvrsn=6) (PDF, 73KB).

To add your name to a list serve please visit www.aqmd.gov/sign-up (http://www.aqmd.gov/sign-up), enter your email address and select Leaf Blower Exchange Program.

Pre-registration will be required to secure your preferred leaf blower. For more information you can call 888-425-6247 (Tuesday-Friday) or email leafblower@aqmd.gov (mailto:leafblower@aqmd.gov)

OVERVIEW

SCAQMD sponsors an annual Leaf Blower Exchange Program that helps clean the air through the exchange of backpack leaf blowers. Commercial landscapers and gardeners operating within the South Coast Air Basin can exchange old, noisy, high-polluting backpack leaf blowers for new low-emission/low-noise backpack leaf blowers available at a discounted price.

Since the Leaf Blower Exchange Program began in 2006, 12,000 old leaf blowers have been replaced, reducing 138,729 pounds of hydrocarbon and NOx emissions per year. The Program has also reduced smog-forming pollutants by 88,282 pounds per year in the Southland. All old leaf blowers that are retired through this program are scrapped and recycled.

Trending

SCAQMD Rule Book (/home/regulations/rules/scaqmd-rule-book)
Proposed Rules (/home/regulations/rules/proposed-rules)
AQ-SPEC Sensor Conference 2017 (/aq-spec/conference-2017)
Rules (/home/regulations/rules)
Air Quality (/home/tools/air-quality)

Related Topics

Related Programs

Non-Toxic Dry Cleaners (/home/programs/community/community-detail?title=non-toxic-dry-cleaners)
Old Vehicle Scrapping (/home/programs/community/community-detail?title=ovs)
Participation (/home/programs/community/community-detail?title=participation)
Clean Air Choices Links (/home/programs/community/community-detail?title=clean-air-choices-links)
Green Painter's Guide (/home/programs/community/community-detail?title=green-painter)
Wood Stove & Fireplace Change-Out Incentive Program (/home/programs/community/community-detail?title=wood-device-incentive-program)

More Information

Contact

Staff has completed a general comparison of leaf blowers commercially sold by a national hardware chain and the noise generated by each, as shown in the following Table 4:

Model Number	Type	Size	Noise Level	Meets Code?
PB580T	Back Pack / Gas	215 MPH, 510 CFM	70.0 dB	Yes/No[1]
PB7704	Back Pack / Gas	234 MPH, 756 CFM	70.0 dB	Yes/No[1]
RYO8420A	Back Pack / Gas	185 MPH, 510 CFM	73.4 dB	Yes/No[1]
PB755ST	Back Pack / Gas	233 MPH, 651 CFM	74.0 dB	Yes/No[1]
BHX2500CA	Hand Held / Gas	145 MPH, 356 CFM	67.0 dB	Yes/No[2]
LB1M16	Hand Held / Gas	155 MPH, 1250 CFM	77.0 dB	No
S1988	Hand Held / Gas	150 MPH, 460 CFM	77.1 dB	No
WG509	Electric	210 MPH, 350 CFM	50.0 dB	Yes
GW24072	Electric	235 MPH, 380 CFM	60.0 dB	Yes/No[2]
51585 (#4)	Electric	160 MPH, 155 CFM[3]	63.5 dB	Yes/No[2]
LB6004	Electric	145 MPH, 600 CFM	64.0 dB	Yes/No[2]
LB5302 (#1)	Electric	110 MPH, 530 CFM[4]	64.0 dB	Yes/No[2]
UT42100B	Electric	150 MPH, 233 CFM	65.0 dB	Yes/No[2]
LSWV36	Electric	120 MPH, 90 CFM	65.0 dB	Yes/No[2]
P2105 (#5)	Electric	120 MPH, 120 CFM[5]	67.0 dB	Yes/No[2]
51618 (#3)	Electric	225 MPH, 330 CFM[6]	67.0 dB	Yes/No[2]
51619 (#2)	Electric	250 MPH, 350 CFM[7]	68.0 dB	Yes/No[2]

Table 4 – Leaf Blower Noise Levels

Based on staff's cursory review of the various models of leaf blowers commercially sold by Home Depot, very few leaf blowers operated with a noise level at or below 58 dB, the adjusted maximum noise level allowed in low density residential zones from 7AM to 6PM. If leaf blower operations is limited to 5 minutes per hour, the adjusted maximum noise level increases to 61 dB, and if leaf blower operations is limited to 2 minutes per hour, the adjusted maximum noise level increases to 65 dB, which would allow for use of many more electrical/battery-powered leaf blowers.

[1] Adjusted Maximum of 78 dB is allowed in Industrial Zones only from 7AM to 6PM; this product could be used in that Zone only

[2] Adjusted Maximum of 68 dB is allowed in High Density Residential Zones and Commercial Zones from 7AM to 6PM, and would also be allowed in Industrial Zones, but not Low Density Residential Zones which has adjusted maximum of 58 dB allowed.

[3] This model is the fourth highest rated and popular blower sold at Home Depot.

[4] This model is the highest rated and popular blower sold at Home Depot.

[5] This model is the fifth highest rated and popular blower sold at Home Depot.

[6] This model is the third highest rated and popular blower sold at Home Depot.

[7] This model is the second highest rated and popular blower sold at Home Depot.

#7

There are no written materials for Council Liaison Committee and Regional Agencies Reports

#8

There are no written materials for Town Manager Report

TOWN COUNCIL WEEKLY DIGEST

Friday – August 25, 2017

1. Agenda (Action) – Town Council – Wednesday, August 23, 2017
2. Agenda – Architectural & Site Control Commission – Monday, August 28, 2017
3. Agenda (Special) – Sustainability and Environmental Resources Committee - Wednesday, August 30, 2017

Attached Separates (Council Only)

(placed in your town hall mailbox)

1. Invitation to Mount Umunhum Grand Opening Brunch – Saturday, September 16, 2017

TOWN OF PORTOLA VALLEY

7:00 PM – Regular Meeting of the Town Council
Wednesday, August 23, 2017
Historic Schoolhouse
765 Portola Road, Portola Valley, CA 94028

REGULAR MEETING AGENDA

7:00 PM - CALL TO ORDER AND ROLL CALL

Councilmember Derwin, Councilmember Aalfs, Councilmember Wengert, Vice Mayor Richards and Mayor Hughes

All Present (Councilmember Aalfs arrived at 7:12 pm)

ORAL COMMUNICATIONS

Persons wishing to address the Town Council on any subject may do so now. Please note however, that the Council is not able to undertake extended discussion or action tonight on items not on the agenda.

None

CONSENT AGENDA

The following items listed on the Consent Agenda are considered routine and approved by one roll call motion. The Mayor or any member of the Town Council or of the public may request that any item listed under the Consent Agenda be removed and action taken separately.

1. **Approval of Minutes** – Town Council Meeting of July 26, 2017
2. **Approval of Warrant List** – August 23, 2017

Items 1 & 2 approved 4-0

REGULAR AGENDA

STAFF REPORTS AND RECOMMENDATIONS

3. **Recommendation by Planning Director** – Removal of Deed Restriction for 245 Grove Drive
   (a) Adoption of a Resolution of the Town Council of the Town of Portola Valley Terminating a 2010 Deed Restriction Regarding Accessory Structure at 245 Grove Drive (Resolution No. __)

Approved 4-0

4. **Staff Presentation** – One Concern Earthquake Software

Council was presented with One Concern, a new software the Town co-purchased with Woodside Fire Protection District and the Town of Woodside. One Concern is an earthquake prediction software that also functions with an actual earthquake event.

5. **Oral Report from Town Manager** – Update on Rodenticides

Council approved continuation of pilot program (July 1, 2017 through June 30, 2018) to collect data but agreed that playing fields must be kept safe and in good condition.

6. **Recommendation by Town Manager** – Neighborhood Watch Signs

Council approved the installation of signs at the three town entrances, medium size sign at ALPR locations. Staff to create the parameters of a neighborhood sign and return to Council with a template, approved by the ASCC. Neighborhoods that desire a sign will then be provided the approved template to create a sign unique to their neighborhood.

7. **COUNCIL LIAISON COMMITTEE AND REGIONAL AGENCIES REPORTS**

   Report by Town Council Members – Brief announcements or reports on items of significance for the entire Town Council arising out of liaison appointments to both in-town and regional committees and initiatives. *There are no*

written materials and the Town Council does not take action under this agenda item.

Councilmember Derwin -
Attended the July Council of Cities hosted by the City of San Carlos. Councilmember Derwin and Town Manager Dennis met with three professionals to converse about the increasing number of young boys struggling with addiction and depression difficulties. Attended a C/CAG Resource Management and Climate Protection Committee meeting. Attended a C/CAG Finance Committee meeting with Councilmember Wengert.

Councilmember Aalfs –
Attended the August 16th Planning Commission meeting. He also attended a Geologic Safety Committee meeting and Trails & Paths Committee meeting that discussed the newly installed bike gate at Toyon Trail.

Councilmember Wengert –
Attended the August 14 ASCC meeting and the August 16 San Francisco Roundtable meeting that reviewed the FAA report.

Vice Mayor Richards –
Attended the August 10 Cultural Arts Committee meeting and a Conservation Committee special meeting held on August 15.

Mayor Hughes –
Attended the August 2nd Bicycle, Pedestrian and Traffic Safety Committee meeting.

8. **TOWN MANAGER REPORT**

The morning of August 2nd staff participated in a half day EOC training and spent the afternoon looking at improving space and storage at town hall. Town Manager Dennis will bring back another Study Session on marijuana due to recent change in state legislation. He met with representatives from SILVAR Realtors. Staff will meet next week with Accela and OpenGov to continue implementation of the software. Class Instructor Kathy Waddell organized a staff appreciation lunch. Staff held its annual lunch with the Mayor and Vice Mayor. This Friday is first round interviews for communication position and second round interviews are scheduled for next Tuesday.

WRITTEN COMMUNICATIONS

9. **Town Council Digest** – July 28, 2017
Councilmember Derwin pulled #6 – Place as consent item on next Council agenda

10. **Town Council Digest** – August 4, 2017
Vice Mayor Richards pulled #6 – Has seen multiple comments online about water quality. Town Manager Dennis noted that staff contacts CalWater directly when water issues arise.

11. **Town Council Digest** – August 11, 2017
None

12. **Town Council Digest** – August 18, 2017
None

ADJOURNMENT: 9:30 pm

ASSISTANCE FOR PEOPLE WITH DISABILITIES

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AVAILABILITY OF INFORMATION

Copies of all agenda reports and supporting data are available for viewing and inspection at Town Hall and at the Portola Valley Library located adjacent to Town Hall. In accordance with SB343, Town Council agenda materials, released less than 72 hours prior to the meeting, are available to the public at Town Hall, 765 Portola Road, Portola Valley, CA 94028.

SUBMITTAL OF AGENDA ITEMS

The deadline for submittal of agenda items is 12:00 Noon WEDNESDAY of the week prior to the meeting. By law no action can be taken on matters not listed on the printed agenda unless the Town Council determines that emergency action is required. Non-emergency matters brought up by the public under Communications may be referred to the administrative staff for appropriate action.

PUBLIC HEARINGS

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TOWN OF PORTOLA VALLEY

Meetings of the Architectural Site Control Commission (ASCC)
Monday, August 28, 2017
7:00 PM – Regular ASCC Meeting
Historic Schoolhouse
765 Portola Road, Portola Valley, CA 94028

SPECIAL ASCC FIELD MEETING

4:00 PM 465 and 501 Wayside Road – Study Session for conceptual design of two new residences

REGULAR MEETING AGENDA

7:00 PM - CALL TO ORDER AND ROLL CALL
Commissioners Breen, Koch, Wilson, Vice Chair Sill and Chair Ross

ORAL COMMUNICATIONS
Persons wishing to address the Architectural and Site Control Commission on any subject may do so now. Please note however, that the Architectural and Site Control Commission is not able to undertake extended discussion or action tonight on items not on the agenda.

OLD BUSINESS
1. Architectural Review and Site Development Permit for a New Residence, File # 32-2017, 16 Santa Maria Avenue, Dolmatch/Acree Residence (Staff: C. Richardson)

NEW BUSINESS
2. Study Session for review of conceptual design of two new residences, File #PLN_ARCH 33-2017, 465 and 501 Wayside Road, Norfleet/Williams Residences(Staff: C. Richardson)

COMMISSION, STAFF, COMMITTEE REPORTS AND RECOMMENDATIONS

APPROVAL OF MINUTES
3. ASCC Meeting of August 14, 2017

ADJOURNMENT

AVAILABILITY OF INFORMATION

For more information on the projects to be considered by the ASCC at the Special Field and Regular meetings, as well as the scope of reviews and actions tentatively anticipated, please contact Carol Borck in the Planning Department at Portola Valley Town Hall, 650-851-1700 ex. 211. Further, the start times for other than the first Special Field meeting are tentative and dependent on the actual time needed for the preceding Special Field meeting.

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TOWN OF PORTOLA VALLEY
Special Sustainability & Environmental Resources Committee Meeting
Wednesday, August 30, 2017 10:30AM to 12:30 PM
Town Hall - Conference Room
765 Portola Road, Portola Valley, CA 94028

AGENDA

1. **Call To Order**
2. **Oral Communications**
3. **Presentation by Chris Hunt – Plug Loads**
4. **Approval of Minutes – June 19, 2017**
5. **Old Business:**
   a. **Updates from Brandi**
6. **New Business:**
   a. **Updates from Sub-Committees**
7. **Announcements**
8. **Set Date and Topics for Next Meeting**
   a. **Monday, September 18th at 10:30 am**
9. **Adjournment**

TOWN COUNCIL WEEKLY DIGEST

Friday – September 1, 2017

1. Agenda (Cancellation) – Parks & Recreation Committee – Monday, September 4, 2017
2. Agenda – Bicycle, Pedestrian & Traffic Safety Committee – Wednesday, September 6, 2017
3. Agenda – Planning Commission – Wednesday, September 6, 2017
4. Town Hall Closed in observance of Labor Day – Monday, September 4, 2017
5. Invitation to September Council of Cities Dinner Meeting – Friday, September 29, 2017

Attached Separates (Council Only)

(placed in your town hall mailbox)

1. Invitation from Silicon Valley Community Foundation – 2017 Regional Meeting – Thursday, October 12, 2017

Town of Portola Valley
Parks & Recreation Committee Meeting
Monday, September 4, 2017 – 7:30 pm
Historic Schoolhouse
765 Portola Road, Portola Valley, CA

PARKS & RECREATION COMMITTEE MEETING

CANCELATION NOTICE

The regular meeting of the Parks & Recreation Committee, scheduled for Monday, September 4, 2017, has been canceled. The next regularly scheduled meeting is October 2, 2017.

TOWN OF PORTOLA VALLEY
Bicycle, Pedestrian and Traffic Safety Committee Meeting
Wednesday, September 6, 2017 – 8:15 AM
Historic Schoolhouse
765 Portola Road, Portola Valley, CA

MEETING AGENDA

1. Roll Call
2. Oral Communications
3. Approve minutes of August 2nd Meeting
4. Sheriff's Report –
    1) Accidents and Citations
    2) Updated requests for law enforcement presence, as required
5. Public Works Report:
    1) Road and shoulder widening (Portola Rd at Town Center)
    2) Resurfacing
6. Ongoing Committee Business for 2017
    1) Updates on Windy Hill Parking Summer season
    2) Autumn evening meeting of October 5th at 7 pm. Call for agenda items and special notice to PV Forum
7. 2017 Outreach:
    1) Coordination with Trails Committee, MROSD on outreach to mountain bike trail users
    2) Suggestions please
8. Matters Arising:
9. Time & Date for October 2017 meeting:
    Special meeting, 7pm Thursday October 5, 2017
10. Adjournment

TOWN OF PORTOLA VALLEY

7:00 PM – Regular Meeting of the Planning Commission
Wednesday, September 6, 2017
Historic Schoolhouse
765 Portola Road, Portola Valley, CA 94028

SPECIAL JOINT ASCC/PLANNING COMMISSION FIELD MEETING

3:30 PM 838 Portola Road – Preliminary review for a Conditional Use Permit, Variance, Architectural Review and Site Development Permit

REGULAR MEETING AGENDA

7:00 PM - CALL TO ORDER AND ROLL CALL

Commissioners Goulden, Hasko, Von Feldt, Vice-Chair Targ, Chair Gilbert

ORAL COMMUNICATIONS

Persons wishing to address the Planning Commission on any subject may do so now. Please note however, that the Planning Commission is not able to undertake extended discussion or action tonight on items not on the agenda.

OLD BUSINESS

1. Architectural Review and Site Development Permit for a New Residence, 200 Goya Road, Anderson Residence, File # 26-2017 (Staff: A. Cassidy)

2. Amendment of a Conditional Use Permit, Spring Down Equestrian Center, 725 Portola Road, File # PLAN_USE 6-2017 (Staff: A. Cassidy)

NEW BUSINESS

3. Preliminary review for a Conditional Use Permit, Variance, Architectural Review and Site Development Permit for Georgia Bennicas, 838 Portola Road, File#: PLN_USE 7-2017 and VAR 2-2017 (Staff: C. Richardson)

COMMISSION, STAFF, COMMITTEE REPORTS AND RECOMMENDATIONS

APPROVAL OF MINUTES

4. Planning Commission Field Meeting of August 2, 2017

5. Planning Commission Meeting of August 16, 2017

ADJOURNMENT

ASSISTANCE FOR PEOPLE WITH DISABILITIES

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PORTOLA VALLEY TOWN HALL

WILL BE CLOSED

Monday, September 4, 2017

In observance of Labor Day

In Case of Emergency: Sheriff's Office: 911

San Mateo County COUNCIL of CITIES

Dinner/Meeting Announcement
Friday, September 29, 2017

Everyone is encouraged to attend these monthly meetings. This is a great opportunity to meet colleagues from other cities, work together on solutions for our county, get to know how other cities handle issues, make friends and helpful connections, and learn what's going on with the "big" issues we seldom have time to discuss at council meetings.

Location:

Original Joe's Westlake
11 Glenwood Avenue, Daly City
94015
(Map, directions or parking instructions)

Schedule:

6:00pm	Social Time (Cash Bar)
6:30pm	Business Meeting
6:45pm	Dinner
7:15 pm	Program
8:30 pm	Adjourn

Please contact Chair Liza Normandy if you wish
to bring up an item for group discussion or give a committee report.
Telephone: (650) 291-4752 or email: liza.normandy@ssf.net

Individually Plated Meal Service
$50.00 per person*

First Course: *Ceasar Salad & French Bread*
Second Course Options: *Chicken Piccata/ Joe's Filet of Sole/ Eggplant Parmigiana (veg)*
Family Style Side Dishes: *House Made Meat Raviolis and Sautéed Mixed Vegetables*
Dessert: *Warm Chocolate Brownie with vanilla gelato, walnuts, caramel & chocolate sauces*
***Includes wine with dinner**

Registration is limited to first fifty (50) attendees.
Please **RSVP by Friday, September 22, 2017,** to Angie Padilla at:
apadilla@dalycity.org or (650) 991-8127

Please make checks payable to:

City of Daly City

Attn: Angie Padilla, Senior Executive Assistant, City Manager's Office

333-90th Street, Daly City, CA 94015

San Mateo County COUNCIL of CITIES

Business Meeting at 6:30pm
Friday, September 29, 2017

6:30pm

- Call to Order by Chair Liza Normandy
- Roll Call and Introduction of Mayors, Council Members and Guests
- Business Meeting
- Approval of Minutes of Previous Meeting and Treasurer's Report
- Committee Reports
- Old Business
- New Business
- Announcements

7:15pm

- Introduction of the Program by Mayor Glenn Sylvester, Daly City

PROGRAM: ***Ms. Shireen Malekafzali***, Senior Manager for Policy, Planning and Equity Health Policy and Planning Program, San Mateo County Health System, will present on *Get Healthy San Mateo County,* a collaborative initiative that supports cities and other partners in building healthy, equitable communities. *Get Healthy San Mateo County* focuses on advancing policies to prevent disease and ensure that every resident has equitable opportunities for good health and well-being. Topics to be discussed include: housing stability; economic opportunity; complete neighborhoods with transportation options and food access; and educational opportunities. Examples will also be shared on how data and/or resources can be used to advance aligned interests.

8:30pm

- Meeting Adjourned

MAP and DIRECTIONS to:

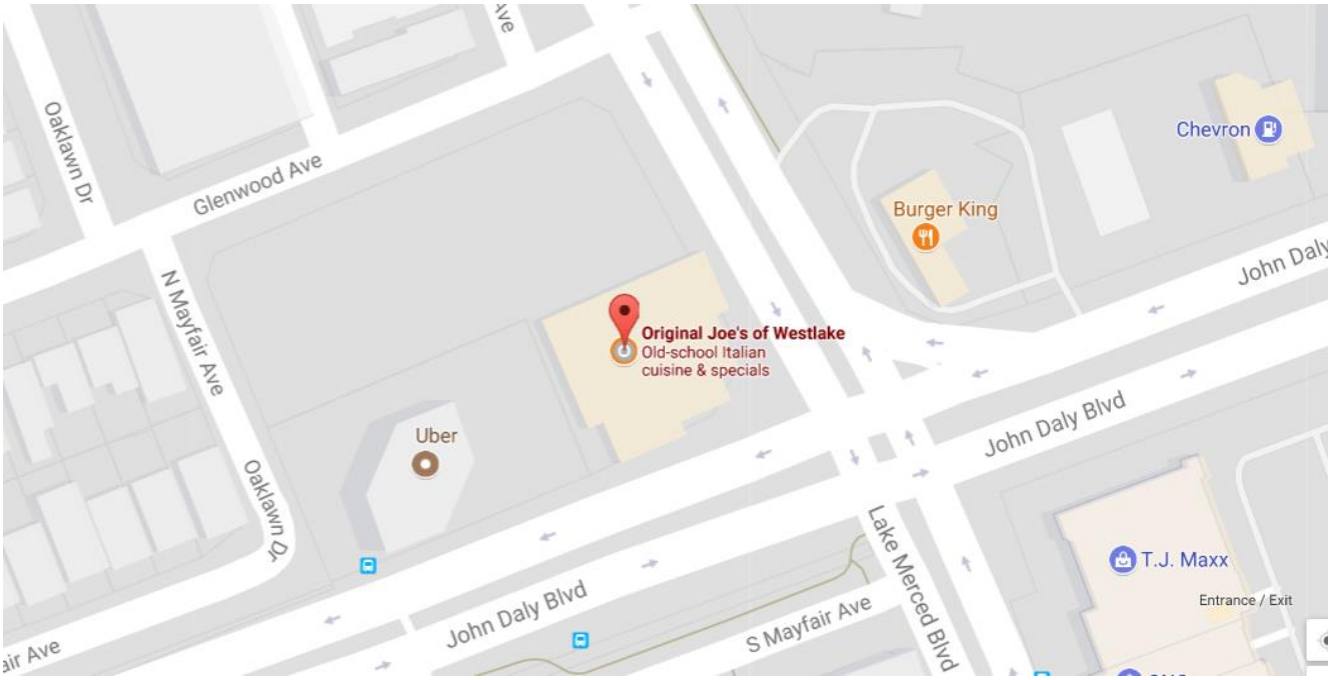
Original Joe's Westlake
11 Glenwood Avenue
Daly City, CA 94015

https://www.google.com/maps/dir/Original+Joe%E2%80%99s+of+Westlake,+11+Glenwood+Ave,+Daly+City,+CA+94015/Original+Joe%E2%80%99s+of+Westlake/@37.7011204,-122.4804372,15z/data=!4m13!4m12!1m5!1m1!1s0x808f7c5a2ce38f19:0xf2729137f08b75c!2m2!1d-122.485509!2d37.701585!1m5!1m1!1s0x0:0xf2729137f08b75c!2m2!1d-122.485509!2d37.701585

Driving Directions from the Peninsula

U.S.-101 North to I-380 and merge onto I-280 North **or**
I-280 North to Exit 49A
Take Exit 49A to merge onto Junipero Serra Blvd toward John Daly Blvd
Turn Left on John Daly Blvd and continue to Lake Merced Blvd
Turn Right on Lake Merced Blvd (Original Joe's Westlake on corner)
Immediate Left on Glenwood Avenue and arrive at destination.

Parking available: off-street lot and street.



TOWN COUNCIL WEEKLY DIGEST

Friday – September 8, 2017

1. Agenda – ASCC – Monday, September 11, 2017
2. Agenda – Emergency Preparedness Committee - Thursday, September 14, 2017
3. Agenda – Cultural Arts Committee – Thursday, September 14, 2017
4. Monthly Meeting Schedule – September 2017
5. Invitation to 2nd Annual San Mateo County Immigrant Integration Summit – Wednesday, October 18, 2017
6. Western City Magazine – September 2017

Attached Separates (Council Only)

(placed in your town hall mailbox)

1. Invitation from LifeMoves - Move it Forward 2017 Benefit Breakfast – Thursday, October 5, 2017
2. LABOR Newsletter – September 2017

TOWN OF PORTOLA VALLEY

Meetings of the Architectural Site Control Commission (ASCC)
Monday, September 11, 2017
7:00 PM – Regular ASCC Meeting
Historic Schoolhouse
765 Portola Road, Portola Valley, CA 94028

REGULAR MEETING AGENDA

7:00 PM - CALL TO ORDER AND ROLL CALL
Commissioners Breen, Koch, Wilson, Vice Chair Sill and Chair Ross

ORAL COMMUNICATIONS
Persons wishing to address the Architectural and Site Control Commission on any subject may do so now. Please note however, that the Architectural and Site Control Commission is not able to undertake extended discussion or action tonight on items not on the agenda.

OLD BUSINESS
1. Review of a Proposal to Renew and Amend a Conditional Use Permit, Alpine Inn Beer Garden, 3915 Alpine Road, File # 36-2016 (Staff: A. Cassidy)

2. Architectural Review and Site Development Permit for a New Residence, 100 Canyon Drive, Lu Residence, File # PLAN_ARCH 5-2016 (Staff: A. Cassidy)

3. Architectural Review for an Interior Remodel of the Main Building and Site Improvements, File # PLN ARCH 31-2017, 501 Portola Road, The Sequoias (Staff: A. Cassidy)

NEW BUSINESS
4. Preliminary Review for a Conditional Use Permit, Variance, Architectural Review and Site Development Permit, 838 Portola Road, Owner: Georgia Bennicas, File#: PLN_USE 7-2017 and VAR 2-2017 (Staff: C. Richardson)

COMMISSION, STAFF, COMMITTEE REPORTS AND RECOMMENDATIONS

APPROVAL OF MINUTES
5. ASCC Meeting of August 28, 2017

ADJOURNMENT

AVAILABILITY OF INFORMATION

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TOWN OF PORTOLA VALLEY
Regular Meeting of the
Emergency Preparedness Committee
Thursday, September 14th, 2017 - 8:00 AM
EOC / Community Hall
765 Portola Road, Portola Valley, CA 94028

AGENDA

1. 8:00 Call to order
   - Members: Mark Bercow, Dave Howes, Diana Koin, Anne Kopf-Sill, Dale Pfau, Chris Raanes, Ray Rothrock, Craig Taylor, Bud Trapp
   - Guests: Jeremy Dennis/Town Manager, Brandi de Garmeaux, John Richards/Town Council, Dan Ghiorso and Selena Brown WFPD, Mark Kuykendall/Sheriff's Office, Gary Neilsen/Sheriff Commissioner, Chuck Nile/Red Cross, Stuart Young/former EPC member, Lorrie Duval.

2. 8:01 Select secretary for this meeting

3. 8:03 Oral Communications

4. 8:08 Review and approval of minutes
   - Motion; Approve minutes for June 8, 2017 meeting (no meeting in July or August)

5. 8:10 CERPP/WFPD Report (Brown/Ghiorso)

6. 8:20 Town Report (de Garmeaux)
   - Approve expenditure of $675 for service plan for satellite radio for first year.

7. 8:30 Committee Reports
   - Medical Subcommittee Report
   - Communications Subcommittee Report (Rothrock)
     - Radio Day
   - Monthly email to PV Forum (Kopf-Sill)

8. 8:45 EP supplies clean-up on August 2nd – report (Kopf-Sill & Duval)
   - Approve budget for up to $500 for replacement supplies, including batteries
   - EP supplies location

9. 9:00 Adjourn. Next meeting is October 12th, 2017

TOWN OF PORTOLA VALLEY
Cultural Arts Committee Meeting
Thursday, September 14, 2017 - 1:00 PM
Historic Schoolhouse
765 Portola Road, Portola Valley, CA

MEETING AGENDA

1. Call to Order

2. Oral Communications

3. Approval of Minutes – August 10, 2017

4. Old Business:
   - Summer Concert Series debrief
   - Fall Speaker Series planning
   - Herb Dengler Exhibition at Priory & Sequoias

5. New Business:
   - Collaboration opportunities

6. Adjournment

Town of Portola Valley

Town Hall: 765 Portola Road, Portola Valley, CA 94028 Tel: (650) 851-1700 Fax: (650) 851-4677

SEPTEMBER 2017 MEETING SCHEDULE

Note: **Unless otherwise noted below and on the agenda, all meetings take place in the Historic Schoolhouse**, located at 765 Portola Road, Portola Valley, CA

TOWN COUNCIL – 7:00 PM (Meets 2nd & 4th Wednesdays)
Wednesday, September 13, 2017
Wednesday, September 27, 2017

PLANNING COMMISSION – 7:00 PM (Meets 1st & 3rd Wednesdays)
Council Liaison – Jeff Aalfs (for months July, August, September)
Wednesday, September 6, 2017
Wednesday, September 20, 2017

ARCHITECTURAL & SITE CONTROL COMMISSION - 7:00 PM (Meets 2nd & 4th Mondays)
Council Liaison – Ann Wengert (for months July, August, September)
Monday, September 11, 2017
Monday, September 25, 2017

BICYCLE, PEDESTRIAN & TRAFFIC SAFETY COMMITTEE – 8:15 AM (Meets 1st Wednesday of every month)
Council Liaison – Craig Hughes
Wednesday, September 6, 2017

CABLE & UTILITIES UNDERGROUNDING COMMITTEE – 8:15 AM
Council Liaison – Craig Hughes
As announced

CONSERVATION COMMITTEE – 7:30 PM (Meets 4th Tuesday of every month)
Council Liaison – John Richards
Tuesday, September 26, 2017

CULTURAL ARTS COMMITTEE – 1:00 PM (Meets 2nd Thursday of every month)
Council Liaison – John Richards
Thursday, September 14, 2017

EMERGENCY PREPAREDNESS COMMITTEE – 8:00 AM (Meets 2nd Thursday of every month) in the EOC / Conference Room at Town Hall
Council Liaison – John Richards
Thursday, September 14, 2017

FINANCE COMMITTEE
Council Liaison – Ann Wengert
As announced

GEOLOGIC SAFETY COMMITTEE – 9:00 AM
Council Liaison – Jeff Aalfs
As announced

HISTORIC RESOURCES COMMITTEE
Council Liaison – Jeff Aalfs
As announced

NATURE AND SCIENCE COMMITTEE – 5:00 PM (Meets 2nd Thursday of alternate even numbered months)
Council Liaison – Jeff Aalfs

OPEN SPACE ACQUISITION ADVISORY COMMITTEE
Council Liaison – Craig Hughes
As announced

PARKS & RECREATION COMMITTEE – 7:30 PM (Meets 1st Monday of every month)
Council Liaison – Ann Wengert
Monday, September 4, 2017 – **This meeting has been canceled**

PUBLIC WORKS COMMITTEE
Council Liaison – Jeff Aalfs
As announced

SUSTAINABILITY & ENVIRONMENTAL RESOURCES COMMITTEE – 10:30 AM (Meets 3rd Monday of every month) in the EOC / Conference Room at Town Hall
Council Liaison – Maryann Derwin
Monday, September 18, 2017

TOWN CENTER MASTER PLAN UPDATE AD-HOC COMMITTEE – 4:00 PM
As announced

TRAILS & PATHS COMMITTEE – 8:15 AM (3rd Tuesday of every month, or as needed)
Council Liaison – Jeff Aalfs
Tuesday, September 19, 2017 – 8:15 AM

From: Irving Torres [mailto:ITorres@smcgov.org]
Sent: Tuesday, September 05, 2017 8:30 AM
To: Irving Torres
Subject: Registration for the Second Annual Immigrant Integration Summit is Now Open!

Registration is now open!

2nd Annual San Mateo County

Immigrant Integration Summit

Wednesday, October 18, 2017

8:30 AM – 2:30 PM

Fox Theatre

2215 Broadway Street

Redwood City

Click on the link below to register:

https://www.eventbrite.com/e/san-mateo-county-immigrant-integration-summit-2017-tickets-37247469183

Please direct any questions to: Irving Torres, Legislative Aide
itorres@smcgov.org