

CALIFORNIA WINE
COMMUNITY
SUSTAINABILITY
REPORT
2020



SUSTAINABILITY

FROM GRAPES TO GLASS



CALIFORNIA
SUSTAINABLE WINEGROWING
ALLIANCE



SUSTAINABILITY SUPPORTS THE ABILITY TO PRODUCE HIGH QUALITY GRAPES & WINES

SUSTAINABLE
WINEGROWING
IS A SET OF
PRACTICES
THAT ARE
ENVIRONMENTALLY
SOUND, SOCIALLY
EQUITABLE AND
ECONOMICALLY
VIABLE

California wines come from a long tradition of family-owned businesses that date back to the late 1700s. The uniqueness and quality of these wines have been perfected not only by growers and vintners' knowledge, dedication and attention to detail, but also by the sun, soil, water and climate. To continue producing high quality grapes that make delicious wines for generations to come, vineyard and winery owners are implementing sustainable practices that preserve natural resources, protect ecosystems and contribute to the economic viability of their businesses and cultural vitality of their communities.

The **California Sustainable Winegrowing Alliance** (CSWA) has been a leader in promoting sustainable winegrowing practices within the California wine industry. Created in 2003 by **Wine Institute** and the **California Association of Winegrape Growers** (CAWG), CSWA is a nonprofit organization that encourages adoption of sustainable winegrowing practices and communicates the California wine industry's global leadership through education, outreach, certification and partnerships.





CSWA implements the **California Sustainable Winegrowing Program (SWP)**, a robust program that offers educational workshops, webinars, case studies, and online tools to assist growers and vintners in documenting, measuring and improving their sustainable practices. The California Code of Sustainable Winegrowing (Code) is central to the program, and enables growers and vintners to evaluate over 200 sustainable practices from grapes to glass against industry best practices.

KEY AREAS OF WIDELY ADOPTED SUSTAINABLE PRACTICES:



Launched in 2010, Certified California Sustainable Winegrowing is a voluntary third-party certification option for vineyards, wineries and wines. As the fourth largest wine-producing region in the world, California has the most comprehensive and widely adopted sustainability certification programs of its kind.




81% OF U.S. WINE
comes from 4,200
California wineries

620,000 ACRES
OF WINEGRAPES
are grown in California

49 OUT OF 58
CALIFORNIA COUNTIES
have winegrape vineyards

WELCOME TO THE 2020 SUSTAINABILITY REPORT



Twenty years ago, Wine Institute and the California Association of Winegrape Growers (CAWG) partnered to publish the California Code of Sustainable Winegrowing (Code) and create the California Sustainable Winegrowing Program, known as SWP, to position the California wine community as a global leader in sustainability. The California Sustainable Winegrowing Program Certified California Sustainable Winegrowing, and other regional educational and certification programs have been embraced by California growers and vintners statewide. Growers and vintners continue to adopt sustainable practices that can improve efficiency, quality, reduce risks and, in many cases, reduce costs, while contributing to a healthier environment, stronger communities and vibrant businesses.

HIGHLIGHTS

CALIFORNIA CODE OF SUSTAINABLE WINEGROWING

CSWA remains committed to ensuring that the Code is a world class sustainability self-assessment tool that is user-friendly and applicable to vineyards and wineries of all sizes in all regions of the state. Although this report highlights data collected using the 3rd Edition Code, released in early 2013, a 4th Edition Code was published in 2020 after an extensive stakeholder review process.

THE 2020 REPORT SHOWS IMPROVEMENTS IN 76% OF VINEYARD CRITERIA AND 85% OF WINERY CRITERIA.

Results of self-assessment data collected using the 3rd Edition Code from 2016-2020, demonstrate improvements in over two-thirds of the vineyard and winery sustainable practice criteria when compared to the self-assessment data reported in the 2015 Sustainability Report.

INVOLVEMENT IN SELF-ASSESSMENT, EDUCATION AND CERTIFICATION

Participation in both the SWP and certification, while voluntary, continues to grow.

SINCE THE 2015 SUSTAINABILITY REPORT, 2,300 VINEYARDS (REPRESENTING OVER 262,000 ACRES OF WINEGRAPES) AND 230 WINERIES (PRODUCING 300 MILLION CASES) HAVE SELF-ASSESSED THEIR OPERATION. This represents a 35% increase in vineyards and a 45% increase in acres and a 60% increase in wineries and a 58% increase in cases that have assessed since 2015.

CSWA HAS HELD OVER 660 WORKSHOPS FOR OVER 16,800 PARTICIPANTS to provide information and guidance for implementing sustainable practices. In 2019, CSWA joined forces with partner organizations in California, New York, Oregon and Washington to **HOST THE 1ST [U.S. SUSTAINABLE WINEGROWING SUMMIT](#).**

IN 2020, 2,247 VINEYARDS AND 171 WINERIES ACHIEVED CERTIFICATION.

They farm over 32% of statewide acreage and make 80% of California wine. In addition, 9,425,916 cases bear the wine logo or certification claims.

PROGRAMMATIC IMPROVEMENTS

CSWA is constantly striving to improve the educational and certification programs and to add new and relevant resources to the grower and vintner sustainability toolbox. Recent additions include:

CERTIFIED CALIFORNIA SUSTAINABLE WINEGROWING WAS UPDATED IN 2017

to allow for certification logo and claims on wine labels. Also in 2017, CSWA began issuing Certified California Sustainable Annual Reports and worked with SCS Global Services to assure that the program adheres to international standards. [View the 2020 Certification Report.](#)

THE 4th EDITION CALIFORNIA CODE OF SUSTAINABLE WINEGROWING WAS PUBLISHED IN 2020

following an extensive review, with changes including new criteria to address topics such as diversity, soil carbon sequestration, virus management and vineyard solid waste, as well as new prerequisites and educational content.

NEW RESOURCES FOR VINEYARDS AND WINERIES include an [Integrated Winery Water Quality Management Tool](#) designed to help California wineries identify and address their water management needs and an extensive [Research Library](#) of countless tools and publications on key sustainability topics.

CONSUMER AND TRADE RESEARCH was conducted to help California growers and vintners better understand the growing marketplace interest in sustainable wine. View [research findings](#).

COMMUNICATION AND OUTREACH

CSWA communicates the California wine community's commitment to sustainable winegrowing and, in turn, the industry has been widely recognized as a sustainability leader and a model by other wine regions and agricultural sectors.

IN 2016 & 2018 CSWA RECEIVED ITS 2ND and 3RD DRINKS BUSINESS MAGAZINE GREEN AWARD; and each year, CSWA works with other California sustainability programs to present the CALIFORNIA GREEN MEDAL: SUSTAINABLE WINEGROWING LEADERSHIP AWARDS

which celebrated its seventh year of recognizing California vineyards and wineries that are excelling in sustainability within the award categories of Leader, Environment, Business and Community.



NEW TOOLS WERE CREATED TO HELP TRADE, STAKEHOLDERS AND INTERESTED CONSUMERS LEARN MORE ABOUT SUSTAINABLE WINEGROWING including a coffee table book, *Wine Country Table: With Recipes that Celebrate California's Sustainable Harvest*, new videos and a monthly blog, [“Discover California: Wine, Food, Farms and Finds”](#).

As the industry faces growing international competition and increasing interest in sustainability by trade, wine consumers and other stakeholders, CSWA will provide meaningful tools to ensure that California growers and vintners continue to produce high quality grapes and wines for generations to come.



VINEYARDS

EVERY
BOTTLE OF
WINE STARTS
IN THE
VINEYARD

The excellence of California wine, like the future of the industry, depends on the health of its grapevines and the quality of its fruit. For this reason, California winegrowers work hard to be good stewards of both natural and human resources, the basis of vineyard success and longevity. Growers who farm over 2,300 California vineyards (representing over 262,000 acres of winegrapes) have assessed their operations since 2016 using the 3rd edition Code to evaluate both strengths and opportunities for improvement; this is a 35% increase in vineyards and a 45% in acres that have assessed since the 2015 Sustainability Report. They are taking action in conserving water and energy, maintaining healthy soil, protecting air and water quality, enhancing relations with employees and communities, and preserving local ecosystems and wildlife habitat.

SINCE 2016

2,300 VINEYARDS USED THE CODE TO EVALUATE AND IMPROVE THEIR PRACTICES.



WATER EFFICIENCY

82%

USED MICRO-IRRIGATION SYSTEMS THAT ALLOW FOR TARGETED IRRIGATION, OPTIMIZING WATER USE AND CONSERVATION.



ENERGY EFFICIENCY

90%

REDUCED ENERGY USE THROUGH WATER PUMP IMPROVEMENTS, WHICH TARGETED THE LARGEST ENERGY SAVING OPPORTUNITY IN THE VINEYARD.



PEST MANAGEMENT

83%

USED CULTURAL PRACTICES TO NATURALLY MANAGE PESTS, WHICH REDUCED THE NEED FOR PESTICIDES.



SOIL HEALTH

99%

ALLOWED RESIDENT VEGETATION TO GROW IN THE VINEYARD, USED COVER CROPS AND/OR COMPOSTED TO ENCOURAGE SOIL NUTRIENT CYCLING AND PROTECT SOIL STRUCTURE.



EFFECTIVE WATER MANAGEMENT HAS A GREATER IMPACT ON WINE QUALITY THAN ANY OTHER SINGLE PRACTICE

WATER EFFICIENCY

Winegrape growers are acutely aware of the importance of water to the future of their businesses. Long before the current drought, California winegrowers focused on water use efficiency and, in anticipation of future droughts and continued competition for water, remain committed to the wise management of this precious and increasingly limited resource.

IRRIGATION

Irrigation accounts for the greatest use of water in vineyards. Growers recognize the need to optimize water use both to conserve water and to provide their vines with ideal fruit-bearing conditions – a balance that requires viticultural knowledge, familiarity with the vineyards and, in many cases, use of technology to support irrigation decisions.

82% OF GROWERS USED ENGINEERED MICRO-IRRIGATION SYSTEMS (including drip irrigation or micro-sprinklers) in their vineyards. By giving the grower control over how much water to apply and when, micro-irrigation systems maximize water efficiency while improving winegrape quality. (Data represents 85% of assessed acres.)



90% OF GROWERS USED REGULATED DEFICIT IRRIGATION (RDI) to reduce irrigation volume, control vegetative growth and improve fruit and wine quality. (Data represents 92% of assessed acres.)

MANAGING WATER USE

Effective water management has a greater impact on wine quality than any other single practice.

99% OF GROWERS DEVELOPED WATER MANAGEMENT PLANS OR STRATEGIES that are based on grape growing goals before the growing season. This holistic ‘whole site’ approach is an excellent way to efficiently manage water resources. (Data represents 100% of assessed acres.)

87% OF GROWERS MEASURED THEIR WATER USE using flow meters or other methods such as calculation based on duration, date, energy use, weir, reservoir gauges. Knowledge of usage rates allows a grower to compare the efficiency of different management techniques and technologies and allows for goals to be set. It is a significant step towards maximizing the efficiency of inputs. (Data represents 98% of assessed acres.)





PUMPING WATER EFFICIENTLY SAVES ENERGY, MONEY AND REDUCES GROWERS' GHG EMISSIONS

ENERGY EFFICIENCY

Energy consumption in the vineyard is directly related to the pumping of water from wells or irrigation ponds. The environmental and economical benefits of pumping water efficiently are a “win-win” for increasing sustainability.

90% OF GROWERS IMPLEMENTED PUMP EFFICIENCY IMPROVEMENTS. (Data represents 99% of assessed acres.)

53% OF GROWERS TESTED PUMPS FOR EFFICIENCY and considered suitably powered variable speed drives when replacing pumps. (Data represents 66% of assessed acres.)



WINEGROWERS IMPLEMENT INTEGRATED PEST MANAGEMENT (IPM) PRACTICES TO REDUCE THE USE OF CROP PROTECTION MATERIALS

PEST MANAGEMENT

Integrated Pest Management (IPM) is a technique developed as a way to control pests without relying solely on pesticides. Awareness and monitoring are the first steps in preventing the presence of unwanted and threatening pests and, when found, determining the best management strategy.

84% OF GROWERS MONITORED THEIR VINEYARDS AT LEAST WEEKLY for insect and mite pests during the growing season and kept a written or electronic record of results. (Data represents 91% of assessed acres.)

83% OF GROWERS USED CULTURAL PRACTICES FOR MANAGING INSECT AND MITE PESTS if pest control was needed, which in turn reduced the quantity of pesticides needed in the vineyard. Examples of cultural practices for pest management include leaf removal, cover crops, hedgerows, sanitation, dust control and irrigation. (Data represents 86% of assessed acres.)

SOIL HEALTH

Soil is a living ecosystem that nourishes plants, degrades waste, absorbs carbon and makes water available, among many other vital functions. Soil health is a priority for growers, which is why a significant number employ sustainable soil management practices.

99% OF GROWERS ENCOURAGED SOIL NUTRIENT CYCLING by allowing resident vegetation to grow in the vineyard, using cover crops and/or composting. (Data represents 98% of assessed acres.)

67% OF GROWERS REDUCED OR ELIMINATED TILLAGE and/or conducted soil analysis for organic matter and monitored inputs and outputs. (Data represents 72% of assessed acres.)

95% OF GROWERS USED RESULTS OF PLANT TISSUE ANALYSIS as a guide for nutrient application decisions. (Data represents 97% of assessed acres.)

59% OF GROWERS MADE SITE-SPECIFIC NUTRIENT APPLICATIONS (i.e. content and amounts). Another important practice affecting soil health on agricultural lands and winegrape production is the careful management of nutrients. Efficient use of nutrients can reduce inputs, costs, GHG emissions and groundwater leaching, and has other benefits. (Data represents 64% of assessed acres.)



MAINTAINING
HEALTHY,
BALANCED SOIL
IS A PRIORITY
FOR GROWERS





WINERIES

RESPONSIBLE
MANAGEMENT
OF RESOURCES
ALLOWS
CALIFORNIA
VINTNERS TO
CREATE HIGH
QUALITY
WINES YEAR
AFTER YEAR

California wines are world-renowned for their exceptional quality due to ideal conditions for growing winegrapes combined with the skill and dedication of its growers and vintners. The quality of its wines and the breathtaking landscape of Californian wine regions draw millions of visitors annually from all over the world. Efficient management of resources is imperative to the ability of California vintners to create high quality wines year after year, while being good environmental and community stewards and meeting the demand for California wines around the globe.

California vintners are committed to using practices that maintain a healthy and beautiful environment for their families, neighbors and wine-country visitors for the long term. Since 2016, 230 wineries that produce nearly 300 million cases (representing over 90% of all cases produced in California) assessed their operations using the 3rd edition Code to evaluate both strengths and opportunities for improvement; this is a 60% increase in wineries and a 58% increase in cases that have assessed since the 2015 Sustainability Report.

SINCE 2016

138

WINERIES USED THE CODE TO MEASURE THEIR SUSTAINABILITY AND IMPROVE PRACTICES.



ENERGY EFFICIENCY

86%

OF VINTNERS CONDUCTED AN ENERGY AUDIT OF THEIR WINERY OPERATIONS WITHIN THE LAST FIVE YEARS TO SAVE ENERGY, CONTROL COSTS AND INCREASE PROFITABILITY.



WATER EFFICIENCY

90%

MEASURED AND MONITORED WATER USE TO MANAGE IT RESPONSIBLY.



SUSTAINABLE BUSINESS STRATEGY

91%

OF VINTNERS INTEGRATED SUSTAINABILITY INTO THEIR BUSINESS STRATEGY.

WINERIES



MEASURING AND MONITORING ENERGY USE ALLOWS VINTNERS TO PRIORITIZE AND IMPLEMENT ENERGY SAVING MEASURES

ENERGY EFFICIENCY

Energy is used throughout the winemaking process to power the equipment and refrigerate the wine. Uncertainty about costs of traditional electricity and fuel have led California vintners to manage and monitor their energy use with more scrutiny. The Code provides wineries with over 50 energy-saving tips to minimize energy use, which allows vintners to better manage energy and significantly reduce costs.

86% OF VINTNERS CONDUCTED AN ENERGY AUDIT of their overall winery operations within the last five years. Energy audits typically include review of lighting, refrigeration, building and tanks, ponds and boilers. (Data represents 99% of assessed cases.)

41% OF THESE WINERIES ALSO MONITORED AND RECORDED ENERGY USE over the year and developed an energy management plan, which included goals for overall energy use efficiency. (Data represents 62% of assessed cases.)

Vintners are also demonstrating innovation in energy conservation.

89% OF VINTNERS HAVE TAKEN THE INITIATIVE TO INSULATE GLYCOL LINES OR TANKS, a practice that reduces energy needs and costs because refrigeration requires significant energy. (Data represents 99% of assessed cases.)

68% OF VINTNERS EQUIPPED AT LEAST HALF OF THEIR TANKS WITH INSULATING JACKETS or enclosed and insulated the buildings in which the tanks are located. (Data represents 95% of assessed cases.)

Renewable energy has been identified by some wineries as a way to reduce GHG emissions and air pollution. These positive benefits combined with the lowering cost of renewable options has enabled California wineries to diversify their energy portfolios to ensure business viability.

38% OF VINTNERS IMPLEMENTED A RENEWABLE ENERGY SYSTEM, such as solar panels, or use renewable power from a third-party provider. (Data represents 52% of assessed cases.)





WINERIES



CALIFORNIA
VINTNERS KNOW
THAT MONITORING
& MEASURING ARE
FUNDAMENTAL TO
EFFICIENT WATER
MANAGEMENT

WATER EFFICIENCY

Vintners rely on water – a critical natural resource – for several important parts of the winemaking process. Cleaning and sanitizing barrels, tanks and the winemaking facility are among the top uses of water in the winery. California vintners understand that water monitoring and measurement are fundamental to efficient resource management.

90% OF VINTNERS HAVE MEASURED THEIR TOTAL WATER USE and monitored it throughout the year. (Data represents 99% of assessed cases.)

ADDITIONALLY, 41% OF THESE VINTNERS HAVE HAD A COMPREHENSIVE WATER AUDIT conducted in the last five years, resulting in management practice changes to maintenance, capital improvements, employee training, water use reduction and the development of annual water use goals. (Data represents 87% of assessed cases.)

SUSTAINABLE BUSINESS MANAGEMENT

Sustainability strategies that are fully aligned with and integrated into a winery or vineyard's overall business strategy can help foster understanding, productivity, and sense of community, and help ensure regulatory compliance.

91% OF VINTNERS INTEGRATED SUSTAINABILITY

into their business strategy. (Data represents 99% of assessed cases.)

WASTE MANAGEMENT

All business activity generates waste, but the wine industry has the unique ability to reuse or recycle a majority of the materials used to produce wine. Wineries are able to create nutrient-rich compost by properly managing the organic waste generated from their operations.

57% OF VINTNERS COMPOSTED POMACE AND LEES

on-site for direct application to vineyards and/or landscaping. As the largest source of organic waste at the winery, composting pomace and lees can divert 50% or more of the waste stream. (Data represents 58% of assessed cases.)

The right packaging is imperative to wine quality and glass provides a vessel neutral in flavor and ideal for aging. Glass bottles can be continuously recycled, which is beneficial in reducing winery waste.

54% OF VINTNERS SEPARATE RECYCLABLE GLASS

and have designated recycling bins at their facilities. (Data represents 77% of the assessed cases.)



CALIFORNIA
VINTNERS
REUSE OR
RECYCLE
MANY OF THE
PRINCIPAL
MATERIALS
USED IN WINE
PRODUCTION





COMMUNITY

THE
LIVELIHOOD
OF CALIFORNIA
VINTNERS AND
GROWERS
DEPENDS ON
THE HEALTH
OF THE
ENVIRONMENT
AND LOCAL
COMMUNITY

The livelihood of California vintners and growers depends on their communities and environment, with most owners' families and employees living within or near the locations of their vineyards and wineries. For this reason, they are deeply engaged in community life and strive to provide a healthy environment and add to the economic vitality of their communities through the preservation of natural landscapes, development of quality product, creation of employment opportunities, employee volunteerism and the enhancement of tourism.



WILDLIFE

91%

OF GROWERS ALLOWED THE GROWTH OF RESIDENT OR NATIVE VEGETATION TO PROTECT LOCAL WATER BODIES AND POSITIVELY AFFECT THE SURROUNDING COMMUNITY.



NEIGHBORS

99%

OF GROWERS PROVIDED NEIGHBORS WITH CONTACT INFORMATION AND RESPONDED TO COMMUNITY CONCERNS TO CREATE MEANINGFUL RELATIONSHIPS.



CONTRIBUTIONS

94%

OF VINTNERS VOLUNTEERED OR PROVIDED OTHER CONTRIBUTIONS TO ENHANCE THEIR LOCAL COMMUNITY.



EMPLOYEES

89%

OF VINTNERS ENCOURAGED EMPLOYEES TO PROVIDE SUGGESTIONS FOR IMPROVING OPERATIONAL EFFICIENCY TO ENHANCE SUSTAINABILITY.





COMMUNITY



CALIFORNIA
WINEGROWERS
UNDERSTAND
THE CONNECTION
BETWEEN HEALTHY
GRAPES AND A
HEALTHY
ECOSYSTEM

WILDLIFE HABITAT & BIODIVERSITY

California winegrowers understand the connection between healthy grapes and a healthy ecosystem, which is why they make sure their vineyards are welcoming to natural wildlife. By maintaining wildlife habitat, they also contribute to the natural beauty of the land.

94% OF GROWERS MAINTAINED NESTING HABITATS or placed nesting boxes in and around their vineyards which attract birds and raptors that, in turn help naturally manage pests. (Data represents 94% of assessed acres.)

Creating a balanced vineyard ecology has significant benefits such as allowing for sizable populations of predators that control natural pests and reduce the need to use pesticides.

91% OF GROWERS ALLOWED RESIDENT OR NATIVE VEGETATION TO GROW AROUND FENCE LINES AND IN DITCH BANKS, creating a positive effect on the surrounding community. This vegetation also protects local water bodies by capturing and treating the run-off of sediment and inputs. (Data represents 87% of assessed acres.)



NEIGHBORS & COMMUNITY CONTRIBUTIONS

California vintners and growers work hard to maintain open and productive relationships with their neighbors and surrounding communities, by being both good stewards of the land and strong pillars of the community. The SWP provides growers and vintners with the resources and tools to effectively communicate and build valuable relationships with their neighbors and communities.

99% OF GROWERS AND 96% OF VINTNERS HAD A PROCESS IN PLACE TO EFFECTIVELY MANAGE AND RESPOND TO COMMUNITY CONCERNS, QUESTIONS AND COMMENTS. All neighbors were provided with their contact information. (Data represents 98% of assessed acres and 97% of assessed cases.)

85% OF GROWERS AND 94% OF VINTNERS VOLUNTEERED OR PROVIDED CONTRIBUTIONS in the form of wine, time, financial support or, often, all of these benefits to enhance their community. (Data represents 84% of accessed acres and nearly 100% of assessed cases.)



VINTNERS AND GROWERS ARE DEEPLY INVOLVED IN THEIR COMMUNITIES AND STRIVE TO ENHANCE THEIR VIBRANCY



EMPLOYEES PLAY
A KEY ROLE IN
SUCCESSFULLY
INTEGRATING
SUSTAINABILITY
PRACTICES
INTO BUSINESS
OPERATIONS

EMPLOYEES, SAFETY & SUSTAINABILITY

Employees are the foundation of California wine and are essential to the quality and longevity of the industry. In addition to the federally established labor laws, California has laws designed to specifically protect the health and rights of agricultural employees.

The continued safety, well-being and empowerment of the wine industry's employees will help maintain a steady, diverse, and skilled workforce that enables the California wine industry to maintain vibrant businesses for generations to come. Safety is of prime importance, and California winemakers take it seriously.

85% OF VINTNERS AND 81% OF GROWERS CONDUCTED SAFETY AUDITS AND HELD SAFETY AND TRAINING MEETINGS on a quarterly basis or more to keep employees informed on the most up-to-date information. Some employees speak other languages, most often Spanish, so the industry often produces safety materials and conducts safety trainings in the appropriate language. (Data represents nearly 100% of assessed cases and 86% of assessed acres.)

**82% OF VINTNERS AND 62% OF GROWERS
REGULARLY INFORMED RELEVANT EMPLOYEES
OF THE OPERATION'S SUSTAINABILITY EFFORTS.**

(Data represents 99% of assessed cases and 72% of assessed acres.)

**89% OF VINTNERS AND 71% OF GROWERS
ENCOURAGE THEIR EMPLOYEES TO PROVIDE
SUGGESTIONS FOR OPERATIONAL EFFICIENCY
IMPROVEMENTS.**

The continuous flow of information throughout the company increases the likelihood that employees fully understand and feel empowered to operate vineyards and wineries in an efficient and cost-saving way. (Data represents nearly 100% of assessed cases and 79% of assessed acres.)

**93% OF VINTNERS AND 95% OF GROWERS
BENCHMARKED COMPENSATION LEVELS,**

within the industry and/or by location to ensure they remain competitive. The ability of vintners to provide their employees with fair compensation enhances their ability to attract and retain a dependable workforce. (Data represents 99% of assessed cases and 96% of assessed acres.)



CALIFORNIA CODE OF SUSTAINABLE WINEGROWING ASSESSMENT DATA 2016-2020

The following tables show the assessment results of the 2,300 California vineyards (representing over 262,000 acres of winegrapes) and the 230 wineries that produce nearly 300 million cases (representing over 90% of all cases produced in California) that have assessed their operations since 2016 using the 3rd Edition California Code of Sustainable Winegrowing (Code workbook).

The data shows improvements in 76% of vineyard criteria and 85% of winery criteria since the 2015 Sustainability Report.

The 3rd Edition includes 15 chapters: sustainable business strategy, viticulture, soil management, vineyard water management, pest management, wine quality, ecosystem management, energy efficiency, winery water conservation and quality, material handling, solid waste reduction and management, environmentally preferable purchasing, human resources, neighbors and community, and air quality.

There are 140 vineyard and 104 winery assessment criteria in the 3rd Edition Code workbook and each criterion has four categories describing the level of sustainable practices adoption. Participants assess their practices according to this four-category system. Category 1 illustrates practices considered to be the minimum level of sustainability for that criterion but within compliance, if regulations exist. The categories and associated practices represent increasing sustainability moving from Category 1 to Category 4. When interpreting the results between criteria it is very important to consider that the criteria are not all scaled the same, meaning that categories “4”, “3”, “2” and “1” between criteria, and more importantly across chapters, do not represent the same level of sustainability. For example, it may be much more difficult to implement a category “3” or “4” for some criteria. This is especially true for chapters 9 through 15. [Download a copy of the 3rd Edition Code.](#) Visit sustainablewinegrowing.org to download a copy of the latest Code workbook, 4th Edition.



ASSESSMENT DATA: 2016 - 2020

CHAPTER 2 | SUSTAINABLE BUSINESS STRATEGY

Many California winegrowers take the time to develop a business strategy that integrates sustainability as it provides the foundation for making sustainable management decisions in winegrape growing and winemaking. A well-defined sustainability strategy builds understanding around a framework, helps get work done, and fosters a sense of community. In order to ensure that both sustainability and key business goals are met, a sustainability strategy should be fully aligned with and integrated into a vineyard or wineries’ business strategy.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
2-1. Integrating Sustainability Into Business Strategy	28%	54%	15%	2%	0%	Sustainability is integrated into the company business strategy.
2-2. Environmental Compliance Planning	14%	43%	38%	6%	0%	A compliance strategy to address environmental legal and regulatory requirements is implemented.

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
2-1. Integrating Sustainability into Business Strategy	59%	32%	7%	3%	0%	Sustainability is integrated into the company business strategy.
2-2. Environmental Compliance Planning	41%	33%	22%	4%	1%	A compliance strategy to address legal and regulatory requirements is implemented.

CHAPTER 3 | VITICULTURE

California growers have a long history of producing excellent quality grapes for winemaking. Towards this end, one key achievement has been an understanding of the importance of selecting varieties best suited for regional climatic conditions and soils. Doing this also helps growers maximize their profit margins and reduce the need for additional inputs.

Growers face vast challenges on a daily basis, including environmental, global, and regulatory pressures. International and domestic competition compels every California winegrower to be fully engaged in the quest for quality, and today's consumer expects quality to be characterized by high levels of environmental and social performance as well. Increasingly stringent environmental regulations require growers to think ahead and anticipate potential impacts of their operations. Collectively, winegrowers in California have a deep desire to be model stewards of the land and thereby sustain their business of producing world-class wines for future generations.

The practices assessed in this chapter help growers address quality and environmental concerns with confidence. It is important to keep in mind that because growing conditions and grape prices vary significantly by region, variety, and time, economic constraints can dictate the degree to which some viticultural practices are implemented.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
3-1. Balanced Vines	24%	54%	21%	1%	0%	Crop is adjusted on weak shoots and vines.
3-2. Shoot Density	52%	28%	14%	1%	4%	Management practices ensure an optimum number of shoots per foot of cordon for the variety and region.
3-3. Leaf Removal	5%	80%	8%	3%	4%	Leaves are removed around the clusters to expose the clusters to the appropriate amount of light.
3-4. Crop-to-Pruning Weight Ratio	9%	26%	58%	2%	5%	Techniques for monitoring crop-to-pruning weight ratio are known.
3-5. Vineyard Design and Trellis	19%	64%	14%	1%	3%	Trellis, vine spacing, and shoot positioning accommodate the vigor of the vine.
3-6. Vineyard Vigor Uniformity	47%	36%	14%	3%	0%	Uniform growth is achieved by pruning vines differentially to match their vigor, removing weak shoots, and tailoring irrigation blocks and durations to the soil differences and rootstock requirements
3-7. Monitoring Canopy Density and Vigor	8%	54%	36%	2%	0%	The canopy density or shoot-tip vigor is monitored by an objective visual assessment at various times throughout the growing season.

CHAPTER 3 | VITICULTURE CONT'D

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
3-8. Environmental Due Diligence for a New Vineyard Site or a Replanting	34%	25%	14%	5%	22%	Environmental due diligence is carried out to determine the presence of environmental features which may affect farming.
3-9. Soil Profile Inspection and Modification	21%	41%	15%	3%	18%	Backhoe pits are dug in enough locations to cover the soil profile variability of the site.
3-10. Soil Tested for Physical and Chemical Properties and Amended Pre-Planting	19%	49%	14%	5%	14%	Soil properties are tested and amended if needed.
3-11. Soil Sampled for Biological Problems Pre-Planting	26%	39%	17%	3%	15%	One or two samples are taken for nematodes and phyloxera pre-planting.
3-12. Addressing Biological Problems	8%	46%	20%	1%	25%	Biological problems in soil verified by testing are addressed and mitigated, if applicable.
3-13. Rootstocks	41%	44%	3%	1%	10%	Rootstocks are chosen to provide adequate vigor and resist soil-borne pests present in the vineyard.
3-14. Vineyard Layout	37%	35%	14%	1%	12%	Vineyard layout is designed considering soil type, wind, sunlight, and erosion.
3-15. Row and Vine Spacing	48%	29%	10%	0%	12%	Row and vine spacing are chosen to accommodate site vigor potential and maximize vine balance and fruit quality.
3-16. Scion/Cultivar	40%	34%	14%	0%	12%	The scion is certified virus-free, and appropriate for climate, soil, and rootstock.
3-17. Trellis Selection and Design	46%	29%	11%	0%	14%	The trellis selection and design is based on wine quality and managing vigor.
3-18. Conservation of Habitat for Wildlife and Pest Predators	21%	28%	22%	1%	28%	Important habitat is protected during vineyard establishment and habitat is enhanced to minimize disruption.
3-19. Creation of Habitat for Wildlife and Pest Natural Enemies	20%	36%	35%	8%	1%	Some native plants are established or present and resident vegetation is allowed to grow in non-crop areas.
6-2. Training for Insect and Mite Monitoring	12%	49%	37%	1%	0%	Vineyard employees are trained to identify pest problems.



Alma Sol Winery

CHAPTER 4 | SOIL MANAGEMENT

Healthy soil is the foundation of a sustainable vineyard. A third of the grapevine lives underground in the form of roots. Leaves feed the vines sugar, but the roots feed everything else. The soil provides the roots with three vital resources: water, nutrients and air. These resources are best provided by soil with good structure and a vibrant population of microbes and worms that help form important soil aggregates by slowly decomposing organic matter.

Growers can take advantage of natural soil processes to improve vine health while allowing roots better access to nutrients. This translates into a reduced need for increasingly expensive fertilizers in the field. One way to utilize nature is through the use of cover crops, which, among other benefits, increases the turnover of organic matter, can add important nutrients, and generally enhances the health of the soil. However, cover crops can compete with vine growth, and must be carefully selected according to regional and individual characteristics. Growers also take important steps to preventing erosion and protect soil health by minimizing soil compaction and minimizing soil disturbance through reduced tillage.

CHAPTER 4 | SOIL MANAGEMENT CONT'D

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE
4-1. Plant Tissue Analysis	58%	31%	10%	1%	0%	A tissue sample is taken and sent for lab analysis every 1-2 years.
4-2. Soil Nutrient Analysis	34%	43%	16%	7%	0%	Soil samples that consider soil variations within the vineyard are taken and sent for lab analysis every 6 years.
4-3. Nutrient Management	59%	36%	5%	0%	0%	Nutrient applications are made based on vine vigor, fruit quality, leaf symptoms, vineyard history, wine quality, and plant tissue analysis results.
4-4. Nitrogen Management	22%	60%	17%	1%	1%	Nitrogen is only applied if justified by plant tissue analysis and inadequate vine vigor, and local conditions and water quality are considered in deciding which form of nitrogen to apply.
4-5. Fertigation	56%	34%	3%	0%	7%	Fertilization timing and frequency is seasonally correct, based on soil and vine needs and prevents leaching of fertilizer below the vine zone.
4-6. Amendments for Poor Water Penetration	6%	29%	16%	1%	47%	If water penetration is poor, appropriate amendments are added to the soil or a cover crop is grown.
4-7. Amendments for pH	18%	34%	9%	5%	34%	If soil pH is less than 5.5 or greater than 8.5 amendments are made to the soil.
4-8. Preserving or Increasing Organic Matter	13%	54%	32%	1%	0%	Soil analysis is done for organic matter, practices are implemented for increased nutrient cycling (e.g., compost, cover crops), and tillage is reduced or eliminated.
4-9. Soil Compaction	18%	62%	15%	5%	0%	Equipment is chosen and use is managed to reduce soil compaction.
4-10. Surface Water Diversions for Erodible Sites	22%	46%	11%	1%	20%	Erosion is controlled with permanent drainage systems and maintenance and repair materials are available for emergency repair.
4-11. Management of Erosion from Roads, Ditches, and Culverts	19%	27%	37%	0%	16%	Soil erosion is controlled.
4-12. Non-Point Source (NPS) Pollution Prevention Within the Vineyard Block	6%	30%	62%	1%	0%	A winter annual cover crop or resident vegetation is maintained and a floor management strategy is developed to reduce runoff.

CHAPTER 5 | VINEYARD WATER MANAGEMENT

Winegrapes use less water than most crops. However, because of increasing statewide demand for a constrained water supply and recurring droughts, it is imperative that all users maximize their effective and efficient use of this crucial natural resource. Winegrowers should continue to lead the state's agriculture sector by implementing high levels of beneficial practices for conserving and ensuring the quality of California's water.

Where soils are deep enough, some winegrowers practice dry farming, the ultimate in irrigation water conservation. However, not all vineyards can be dry farmed and reliably produce a crop of desired size and quality. Thus, most growers use some form of irrigation in their vineyards.

Drip irrigation has revolutionized viticulture throughout most of the state. With drip irrigation, water is applied directly to each vine in quantities needed to support that vine's growth. However, drip irrigation systems must be managed for optimal efficiency, and problems such as clogged emitters rob growers of the full benefits of the system.

Growers must commit to routinely monitoring flows, inspecting lines, and recording water use to ensure efficient delivery of intended quantities and to track and potentially further reduce water use over time. The great benefit of drip irrigation is the control it gives growers in deciding exactly how much water to apply and when. This flexibility, however, brings with it the responsibility to schedule irrigations properly. Numerous plant- and soil-based methods exist for determining the need for and scheduling irrigation.

The context of water conservation and use efficiency is reflected in the water management strategy developed and implemented by growers. The target is to provide the minimal amount of necessary water to achieve yield and quality goals. Excess irrigation can lead to runoff and excessive vine growth, resulting in more canopy management and often lower quality grapes and wines. Many growers use deficit irrigation approaches, i.e. intentionally causing moderate vine water stress during specific growth stages, as a means to improve fruit quality. In terms of conservation and protection of natural resources and saving money, deficit irrigation reduces water use and the energy to pump it.

CHAPTER 5 | VINEYARD WATER MANAGEMENT CONT'D

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
5-1. Water Management Strategy	13%	30%	57%	1%	0%	A water management strategy is developed based on grape growing goals, soil types, slopes, and irrigation water availability, cost and quality.
5-2. Monitoring and Amending Quality of Irrigation Water	10%	33%	36%	17%	4%	Irrigation water is tested for quality.
5-3. Off-Site Water Movement	41%	54%	4%	0%	1%	Off-site water movement is minimized and engineered drainage systems were in place for hillside or terraced sites, if applicable.
5-4. Irrigation System	82%	8%	5%	2%	3%	An engineered micro-irrigation system is installed in the vineyard.
5-5. Distribution Uniformity for Irrigation Systems	11%	30%	50%	6%	3%	Irrigation distribution uniformity is tested.
5-6. Filters and Lines	41%	36%	20%	0%	4%	Irrigation lines and filters are cleaned and inspected regularly.
5-7. Water Budget	15%	37%	47%	1%	1%	Irrigation water is applied at the optimized amount.
5-8. Measuring Water Use	12%	24%	52%	9%	4%	Vineyard water use is measured.
5-9. Soil Water-Infiltration Rates and Water-Holding Capacity	5%	28%	64%	2%	0%	Infiltration rates and water-holding capacity of soil is estimated and used for estimating volume for irrigation applications.
5-10. Soil Moisture and Plant Water Status Monitoring Methods	20%	62%	16%	1%	1%	Soil moisture monitoring devices are used to schedule irrigation.
5-11. Planned Deficit Irrigation through Regulated Deficit Irrigation (RDI)	14%	36%	40%	5%	4%	Irrigation is restricted so that some level of water stress is applied to the vines and monitored using plant water status instruments or visual symptoms.

CHAPTER 6 | PEST MANAGEMENT

Winegrowers deal with pest problems throughout the year, whether from pathogens, nematodes, insects, mites, weeds, vertebrates, or any combination thereof. Over time, many approaches to pest management have been developed. Integrated pest management (IPM), best management practices (BMPs), and certified organic pest management are common examples.

All of these approaches stress safe, effective, information-based management as a fundamental principle and, therefore, fall under the umbrella of IPM. IPM is a sustainable, multi-tactical approach to managing pests that combines biological, cultural, and chemical tools in a way that minimizes economic, health, and environmental risks. IPM first relies on cultural and biological means to maintain pests at tolerable levels. Remedial control using the safest and most cost-effective alternatives (including pesticides) is reserved for circumstances where a pest population reaches an economic threshold or density expected to cause economic loss.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
6-1. Vineyard Monitoring for Insect and Mite Pests	48%	36%	16%	0%	0%	Vineyard is monitored weekly for insects and mites, results are recorded, and the information is analyzed and used for management decisions.
6-2. Training for Insect and Mite Monitoring	12%	48%	38%	2%	0%	Vineyard employees are trained to identify pest problems and encouraged to monitor for insects and mites.
6-3. Economic Thresholds and Pest-Natural Enemy Ratios for Leafhoppers, Mites, and Thrips	24%	54%	18%	0%	4%	Control decisions for pests are based on economic thresholds.
6-4. Minimizing Risks from Insecticides and Miticides	11%	84%	4%	0%	1%	Lower risk pesticides are used whenever possible and risks to environmental and human health are considered.
6-5. Cultural Practices for Insect and Mite Management	31%	52%	14%	0%	3%	Cultural practices such as cover crops and leaf removal were used for managing pests and vine vigor was maintained at a level appropriate for reducing pest pressure.
6-6. Dust Abatement in and around Vineyards for Mite Management	29%	43%	25%	3%	0%	Vineyard practices that create dust are minimized, and vehicle speeds were controlled on surrounding unpaved roads.
6-7. Use of Weather Data and Degree-Days for Managing Moth Pests	4%	28%	10%	0%	58%	Moth pests are treated based on experience and time of year or vine development.
6-8. Portion of Vineyard Treated for Mites or Leafhoppers	33%	22%	27%	1%	17%	Pest treatments are made only to portions of the vineyard exceeding economic thresholds (e.g., edges and/or hotspots) and treatment efficacy is verified by monitoring.

CHAPTER 6 | PEST MANAGEMENT CONT'D

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
6-9. Mealybug Management	6%	36%	30%	0%	28%	Mealybugs are monitored throughout the year and only infested areas are treated if found.
6-10. Soil-Borne Pest Management after Planting	4%	27%	41%	25%	3%	A soil-borne pest management strategy that includes sampling the vineyard soil every 5 years is developed.
6-11. Vineyard Monitoring for Disease	45%	37%	18%	0%	0%	Vineyard is monitored weekly for diseases, results are recorded, and this information is analyzed and used for management decisions.
6-12. Powdery Mildew Management	21%	70%	9%	0%	0%	Management practices for reducing powdery mildew are timed appropriately and fungicides with different modes of action are rotated throughout the season.
6-13. Minimizing Risks from Fungicides for Powdery Mildew and Botrytis Control	8%	89%	2%	1%	0%	Lower risk fungicides are used whenever possible and risks to environmental and human health are considered.
6-14. Pruning for Canker Management	30%	47%	14%	2%	8%	Pruning practices are well timed and ensure diseased wood is removed.
6-15. Bunch Rot Management	35%	43%	13%	0%	9%	Practices are used to reduce physical fruit damage and create conditions less conducive to bunch rot.
6-16. Pierce's Disease (PD) Management where Blue-Green Sharpshooter is Primary Vector	6%	13%	36%	0%	44%	The vineyard is monitored for bluegreen sharpshooters to control Pierce's Disease.
6-17. Vineyard Monitoring for Weeds	37%	44%	18%	0%	0%	Vineyard is monitored periodically for weeds, results are recorded, and information is used for management decisions.
6-18. Weed Knowledge	48%	30%	22%	0%	0%	Person making pest management decisions has extensive knowledge of weeds and their life cycles in the vineyard and uses an identification book in the field.
6-19. Weed Management	9%	13%	77%	0%	0%	Cost, efficacy, and timing are considered when selecting weed control tactics.
6-20. Herbicide Leaching Potential	57%	26%	12%	0%	5%	Applications are not made when herbicides may migrate from the application area and herbicides with high leaching potential are not used.
6-21. Area Treated with Herbicides	11%	61%	21%	2%	5%	A narrow berm is maintained and some weeds are tolerated.
6-22. Vineyard Monitoring for Vertebrate Pests	37%	41%	22%	1%	0%	Vineyard is monitored monthly for vertebrate pests, results are recorded, and information is used for management decisions.

CHAPTER 6 | PEST MANAGEMENT CONT'D

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
6-23. Vertebrate Pest Management	46%	32%	14%	1%	7%	No toxic baits or fumigants are used to control vertebrate pests, problems are managed by habitat modification and any exclusion fencing was directed only at the target pest.
6-24. Predation by Vertebrates	11%	33%	30%	25%	1%	One maintained owl box exists for every 40-100 vineyard acres, and raptor perches are provided.
6-25. Low-Volume Vine Canopy Sprayers	17%	57%	23%	2%	2%	Conventional dilute sprayers with air induction nozzles are predominantly used.
6-26. Sprayer Calibration and Maintenance	34%	60%	6%	0%	0%	Sprayer is calibrated, coverage is checked, and nozzles are replaced every year to ensure optimal use of crop protection materials.
6-27. Spray Coverage	55%	36%	9%	0%	0%	Spray coverage is verified and adjusted according to canopy size and density, and employees are trained in the safe and effective operation of equipment.
6-28. Spray Buffer Zone	75%	22%	3%	0%	0%	Sensitive areas are protected from spray with buffer zones, and timing of applications are adjusted to ensure minimal human activity and disturbance in sensitive areas.
6-29. Spray Drift	10%	80%	8%	2%	0%	Timing of applications avoid drift, and lowest effective rates are used with nozzles that deliver the largest recommended droplets of uniform size.
6-30. Pesticide Storage	20%	42%	31%	3%	2%	A minimal amount of pesticides are stored during the winter, and best practices for pesticide storage are used.
6-31. Pesticide Mixing and Loading	17%	56%	25%	1%	0%	All workers are provided pesticide safety training and required personal protective equipment, and the mixing/loading area is at least 30 feet from any well.
6-32. Pesticide Emergency Response Plan	47%	18%	25%	9%	0%	A pesticide emergency response plan is posted, pesticide spill cleanup materials, first-aid equipment, and wash facilities are available, and workers are trained to follow the plan.
6-34. Using Lower Risk Crop Protection Materials	62%	30%	7%	1%	0%	Red List and Yellow List materials are not used.

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
6-33. Winery Pest Management	19%	44%	34%	1%	3%	A written plan to prevent and manage pests is used and any necessary remedial control involve the use of the lowest-risk, cost effective option(s).

CHAPTER 7 | WINE QUALITY

Overall wine quality is a subjective measure affected by personal experience and preference. However, some aspects of quality, such as color, flavor, malic acid, and pH, can be measured objectively. In today's extremely competitive global wine market, quality is a moving target as more consumers demand high quality wines at lower price points. Understanding wine quality and how it is interpreted and measured throughout the wine industry is critical to the success of the modern-day grower and winemaker. Many growers have an on-going dialogue with their winemaker or the winery buying their fruit regarding the specific quality aspects that the winemaker expects. Growers can enhance this interaction by sharing knowledge and information about vineyard practices with the winemaker. Besides using this information to collectively agree on practices leading to higher quality grapes and wine, winemakers can apply understanding of farming operations to help ensure food safety requirements are met.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
7-1. Field Fruit Maturity	65%	21%	8%	2%	4%	Fruit is considered mature when juice Brix, pH and TA reach targeted levels for harvest, and shoot growth stops or slows.
7-2. Tasting Grapes with the Winery Representative	65%	21%	13%	0%	0%	Grapes are frequently tasted by the grower or by a winery representative as they mature for each vineyard block.
7-3. Juice Chemistry	45%	29%	24%	1%	1%	Pre-harvest berry analysis (Brix, TA, and pH) is tracked and recorded for enhanced wine quality and feedback from the winery on juice chemistry is available.
7-4. Tasting Wine Made from the Grapes	43%	27%	27%	2%	0%	There is an annual meeting with each winemaker to taste and compare wine made from the grapes to other wines made with similar grapes from other vineyards in the region.
7-5. Knowledge of Wine Quality	39%	35%	22%	2%	2%	Components of wine quality and how they can be traced back to the vineyard are understood, domestic and international wines are regularly tasted, and domestic and international wine regions have been visited.
7-6. Knowledge of Wine Industry Marketing and Trends	45%	30%	24%	1%	0%	Trends and prices in grapes, bulk wine, and case good markets for California and other parts of the world are known.
7-7. Viticultural Improvement	30%	43%	25%	2%	0%	Local vineyard trials are conducted or reviewed at least every three years.

CHAPTER 7 | WINE QUALITY CONT'D

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
7-6. Knowledge of Wine Industry Marketing and Trends	68%	26%	5%	0%	0%	Trends and prices in local grapes, bulk wine and cased goods wine markets for California are known.
7-8. Planning, Monitoring, Goals, and Results for Food Safety	30%	24%	43%	1%	2%	A food safety strategy is being investigated or developed.
7-9. Planning, Monitoring, Goals, and Results for Security	23%	29%	44%	1%	2%	A security or defense strategy is being investigated or developed.



CHAPTER 8 | ECOSYSTEM MANAGEMENT

The long-term viability of the state's wine industry is linked to the long-term stability of ecological processes. Maintaining and enhancing natural "ecosystem services," such as cleansing of the water and air, storing and cycling nutrients, pollination of crops and natural vegetation, generation and maintenance of soils, detoxification and decomposition of wastes, and preservation of wildlife and natural beauty, is a key stewardship objective for the California winegrowing community. Moreover, successfully blending the conservation of natural systems and associated services with agricultural activities is crucial for California's tourism and recreation industries.

Investments by growers and vintners need to account for the natural capital that is inherent in ecosystem services. Personal commitments to stewardship of the land and increasing regulatory requirements are among the reasons growers farm to minimize impacts on the environment, while capitalizing on the natural services that contribute to quality grapes and wine. Growers and vintners across the state realize that return on investment includes more than just immediate cash flow, but also the sustained viability of the ecosystem.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
8-1. Ecosystem Processes - Resource Base Ecosystem Biodiversity	14%	12%	73%	1%	0%	The vineyard's role in a diverse and healthy ecosystem and the practices that promote ecosystem biodiversity are understood.
8-2. Watershed Management - Watershed Awareness	31%	60%	7%	1%	1%	Pertinent watershed issues are known and efforts are made to minimize any negative impacts.
8-3. Ecosystem Management - Native Woodlands	5%	33%	12%	4%	46%	Native woodlands are not removed for vineyard establishment or expansion, or any removal of woodlands and shrubs is offset by mitigation/protection measures.
8-4. Ecosystem Management - Riparian Habitat	27%	37%	7%	0%	28%	Banks of watercourses have vegetated buffer strips adjacent to the waterway.
8-5. Ecosystem Management - Aquatic Habitats: Streams, Rivers, and Wetlands	25%	34%	11%	0%	29%	Aquatic habitats are considered in vineyard site selection and management and there are adequate buffer strips between vineyards and aquatic habitats.
8-6. Habitat Enhancement for Wildlife	19%	37%	38%	6%	1%	Natural nesting sites or nesting boxes are present in and/or around the vineyard.
8-7. Conservation Easements	6%	13%	54%	23%	4%	An agriculture conservation easement or natural resource conservation easement program is known.
8-8. Sensitive Species	17%	47%	31%	3%	1%	Sensitive species in the region are known, and it is known whether any of these species have occurred on the property.
8-9. Sensitive Species and Collaboration with Partners	9%	32%	24%	5%	30%	Qualified experts are consulted to inform management decisions that may affect sensitive species.

CHAPTER 8 | ECOSYSTEM MANAGEMENT CONT'D

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
8-1. Ecosystem Processes - Resource Base Ecosystem Biodiversity	21%	10%	65%	0%	3%	The winery's role in a diverse and healthy ecosystem and the practices that promote ecosystem biodiversity are understood.
8-2. Watershed Management - Watershed Awareness	40%	47%	8%	0%	4%	Pertinent watershed issues are known and efforts are made to minimize any negative impacts.
8-3. Ecosystem Management - Native Woodlands	12%	18%	13%	1%	55%	Native woodlands are not removed for winery establishment or expansion, or any removal of woodlands and shrubs is offset by mitigation/protection measures.
8-4. Ecosystem Management - Riparian Habitat	30%	19%	4%	0%	47%	Banks of watercourses have vegetated buffer strips adjacent to the waterway and outside the buffer strip is a row of trees and shrubs that shade part or the entire water course.
8-5. Ecosystem Management - Aquatic Habitats: Streams, Rivers, and Wetlands	26%	24%	6%	1%	44%	Aquatic habitats are considered in site selection, and roads are kept to a minimum adjacent to aquatic habitats.
8-6. Habitat Enhancement for Wildlife	28%	38%	19%	10%	5%	Natural nesting sites or nesting boxes are maintained in and/or around the winery.
8-7. Conservation Easements	14%	7%	46%	16%	17%	An agriculture conservation easement or natural resource conservation easement program is known.
8-8. Sensitive Species	20%	49%	22%	4%	6%	Sensitive species in the region are known, and it is known whether any of these species have occurred on the property.
8-9. Sensitive Species and Collaboration with Partners	12%	25%	23%	4%	36%	Qualified experts are consulted to inform management decisions that may affect sensitive species.

CHAPTER 9 | ENERGY EFFICIENCY

The drive to save money by conserving natural resources and the uncertainty related to the availability and costs of electricity and fuel have compelled many vintners and growers to invest in energy efficiency measures. These measures can include upgrading lighting, insulating tanks and piping, installing variable frequency drives on pumps and motors, and installing dissolved oxygen sensors for process water treatment. These measures have been enhanced through complementary internal actions such as energy conservation training (implementing policies to turn off equipment and lighting when not in use), shifting to night harvesting to reduce the ambient heat stored in grapes and thus cooling requirements, and the appointment of staff or teams to investigate, implement, monitor, and further improve energy efficiency practices and equipment. Many wineries and vineyards are also installing solar panels as part of their renewable energy strategies. These combined efforts have resulted in measurable reductions in energy consumption and related energy costs, as well as in greenhouse gas emissions.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
9-1. Planning, Monitoring, Goals, and Results	3%	16%	68%	12%	0%	An energy audit is conducted and results are used for energy efficiency decisions.
9-2. Vineyard Pump Efficiency	12%	42%	36%	8%	2%	Pump efficiency is tested, and results are used to increase efficiency to better manage vineyard irrigation.
9-3. Vineyard Vehicles	11%	44%	40%	5%	0%	The amount of fuel used in the vineyard is tracked and fuel efficiency is increased.
9-8. Lighting - Offices and Labs	14%	23%	42%	9%	13%	Efforts are made to improve lighting energy efficiency, including use of compact fluorescent lights or LEDs in some locations.
9-9. Lighting - Shops and Facilities	9%	23%	47%	8%	13%	Efforts are made to improve lighting energy efficiency, including use of compact fluorescent lights or LEDs in some locations.
9-10. Lighting - Outdoor and Security	11%	27%	38%	14%	10%	Efforts are made to improve lighting energy efficiency.
9-11. Office Equipment	28%	35%	22%	5%	10%	Office equipment is turned off or in standby mode when not in use and energy consumption is considered when office equipment is replaced.
9-12. Renewable Sources of Power	13%	22%	50%	11%	3%	The sources for electricity supplied to the vineyard is known and renewable energy options are researched.

CHAPTER 9 | ENERGY EFFICIENCY CONT'D

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE
9-1. Planning, Monitoring, Goals, and Results	7%	33%	45%	12%	2%	An energy audit is conducted and results are used for energy efficiency decisions.
9-4. Winery Motors, Drives, and Pumps	27%	34%	32%	4%	4%	Existing equipment is maintained for optimal performance, and new technologies are investigated to improve the energy efficiency of winery motors, drives and pumps.
9-5. Refrigeration System	25%	43%	23%	5%	4%	Chiller loads are reduced by building insulation, night air cooling, and off-peak evaporative cooling and/or ice making.
9-6. Tanks and Lines	40%	27%	21%	7%	5%	80% or more of tanks are equipped with insulated jackets or the building(s) they are located in are enclosed and insulated.
9-7. Heating Ventilation and Air Conditioning (HVAC)	20%	33%	33%	11%	3%	Efforts are made to improve the energy efficiency of the HVAC system and regularly scheduled maintenance includes checking insulation, weather stripping, and window film.
9-8. Lighting - Offices and Labs	39%	34%	24%	1%	1%	Energy efficient lighting technologies and designs are used throughout the winery.
9-9. Lighting - Shops and Facilities	38%	35%	22%	2%	3%	Lighting is designed to illuminate areas needed at the time.
9-10. Lighting - Outdoor and Security	25%	41%	21%	4%	8%	Lighting is designed to illuminate key security areas at all times, motion detectors are used in other areas, unnecessary lamps and fluorescent ballasts are disconnected.
9-11. Office Equipment	47%	36%	14%	2%	0%	New or replacement office equipment is Energy Star® certified.
9-12. Renewable Sources of Power	38%	25%	32%	4%	2%	A third-party that provides renewable power sources for the winery is selected or a renewable energy system is implemented.

CHAPTER 10 | WINERY WATER CONSERVATION AND QUALITY

With the increased pressure on California’s finite water resources, the state’s wine community recognizes the need to conserve water and improve efficiency. Vintners and winegrape growers know that water is a critical element in the winemaking process. At every step of the winemaking process - from crushing and pressing, through fermentation and aging, to bottling of the finished product - water is required. Water is at the heart of the sanitizing system, ensuring that tanks, barrels, and the bottling line are properly cleaned. Knowing the quality of the water and the amount required for all of the tasks is critical to ensuring that an adequate supply is available each and every season.

Many wineries have installed water meters at key operational points to enable water use monitoring during specific operations like crush, fermentation, and bottling. A small but growing percentage of wineries have installed water meters throughout their entire facilities to monitor water consumption. This added information is then tracked and analyzed for the continuous improvement of water conservation throughout the entire operation.

Water is a limited natural resource that is required by all members of the ecosystem for survival. As a steward and user of water resources, it is important for wineries to monitor and record the amount and quality of water coming into the operations and use this precious resource as efficiently as possible.

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
10-1. Water Conservation Planning, Monitoring, Goals, and Results	18%	24%	49%	7%	3%	Winery water use is known and monitored.
10-2. Source Water Quality Planning, Monitoring, Goals, and Results	15%	55%	20%	6%	3%	Winery water quality is tested and recorded throughout the year and results are used to make decisions on capital improvements, maintenance, and employee training.
10-3. Water Supply	21%	42%	21%	8%	9%	Meters are installed on winery wells or water use is measured and monitored monthly.
10-4. Water to Process Water Ponds or Public-Owned Treatment Works (POTW)	26%	30%	18%	8%	19%	Best management practices for process water is in place.
10-5. Process Water Discharge - Water from Process Water Ponds	23%	19%	6%	5%	47%	Flow data is used to help select reuse or disposal methods.
10-6. Septic Systems or Onsite Systems	8%	39%	27%	4%	22%	The septic system is regularly checked to ensure effective operation and an operations and maintenance plan is in place.
10-7. Storm Water	19%	30%	33%	8%	10%	Storm drain locations are identified and labeled.

CHAPTER 10 | WINERY WATER CONSERVATION AND QUALITY CONT'D

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
10-8. Crush Operations	34%	14%	44%	1%	7%	Pre-cleaning of crush equipment and high-pressure nozzles are used to reduce winery water use.
10-9. Presses	32%	22%	37%	2%	7%	Pre-cleaning of presses and high pressure nozzles are used to reduce winery water use.
10-10. Tanks and Transfer Lines	7%	38%	41%	9%	4%	Water for cleaning tanks is applied with a high pressure/low volume nozzle fitted with a shut-off valve.
10-11. Cellars	5%	16%	56%	19%	4%	Water use and clean-up time for the cellar are estimated and recorded and cellar workers are aware of water conservation information.
10-12. Barrel Washing	7%	31%	48%	4%	11%	Barrel washing is done with a high pressure/low volume nozzle fitted with a shut-off valve and the amount of water used is estimated.
10-13. Barrel Soaking	9%	19%	21%	3%	48%	The amount of water used during barrel soaking is estimated.
10-14. Bottling	7%	13%	51%	7%	22%	The pump and filler are pressure-washed with high pressure/low volume cleaning equipment fitted with shut-off nozzles. r
10-15. Labs	2%	11%	71%	6%	11%	Lab workers are aware of water conservation information.

CHAPTER 11 | MATERIAL HANDLING

Materials used in vineyard and winery operations are potentially hazardous if they have one or more of the following properties: flammability, reactivity, toxicity or corrosivity. Reducing the amounts of these materials whenever possible can enhance the health and safety of people at the facility, minimize the risk of exposure to the environment, and decrease or even eliminate some regulatory oversight and inspection. Any measures that can be put into place to reduce or eliminate the use of hazardous materials and the generation of hazardous waste can also diminish liability exposure.

Since the use of hazardous materials leads to the generation of hazardous waste, reducing the use of or replacing these materials with non-hazardous materials results in less hazardous waste generation. Accomplishing this task requires growers and vintners to begin practicing a pollution prevention (P2) approach to their operations. The P2 approach takes a full systems view of the operations into account to help identify the best areas for reduction, substitution or elimination of hazardous materials.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
11-1. Planning, Monitoring, Goals, and Results	6%	12%	77%	3%	1%	Total amount of hazardous waste is monitored.
11-2. Good Housekeeping - Dumpster Area	2%	11%	65%	8%	14%	Dumpster areas are kept litter free, lids are kept closed to keep water out and signs are posted near dumpsters describing what materials can and cannot be disposed.
11-3. Hazardous Materials - Hazardous Material Storage and Replacement	11%	29%	54%	1%	5%	Hazardous materials are stored away from storm drains.
11-4. Hazardous Materials - Hazardous Waste Disposal	6%	45%	34%	8%	7%	A program is in place for disposal to minimize the amount of hazardous materials stored and recyclable hazardous wastes (e.g., used oils, batteries, anti-freeze) are stored carefully to facilitate recycling (drums closed and covered).
11-5. Paint and Paint Thinners	3%	9%	53%	17%	18%	Paints and thinners are stored in a centralized location and purchased only in needed quantities.
11-6. Aerosol Cans	3%	16%	46%	14%	21%	Non-empty aerosol cans containing ignitable, corrosive, toxic, or reactive substances are separated for disposal in hazardous waste containers .
11-7. Protection of Storm Water and Process Wastewater	7%	26%	47%	14%	6%	Hazardous materials and waste are stored away from storm drains and major equipment and tools are cleaned in an area that drains process water to an appropriate disposal site.
11-8. Fuel Storage - Aboveground Storage Tanks (ASTs) or Portable Tanks	11%	13%	49%	9%	18%	The fueling area is inspected regularly, and a positive shut-off nozzle is installed and the hose and nozzle are inspected for leaks and damage.

CHAPTER 11 | MATERIAL HANDLING

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
11-1. Planning, Monitoring, Goals, and Results	7%	19%	65%	7%	3%	Total amount of hazardous waste is monitored.
11-2. Good Housekeeping - Dumpster Area	11%	23%	51%	11%	4%	Dumpster areas are kept litter free, lids are kept closed to keep water out and signs are posted near dumpsters describing what materials can and cannot be disposed.
11-3. Hazardous Materials - Hazardous Material Storage and Replacement	17%	39%	38%	3%	3%	Hazardous materials are stored away from storm drains, the total amount of hazardous materials is known (and an inventory is kept) and priority materials have been reviewed for green chemistry alternatives.
11-4. Hazardous Materials - Hazardous Waste Disposal	26%	37%	21%	7%	8%	A program is in place for disposal to minimize the amount of hazardous materials stored and recyclable hazardous wastes (e.g., used oils, batteries, anti-freeze) are stored carefully to facilitate recycling (drums closed and covered).
11-5. Paint and Paint Thinners	6%	10%	58%	15%	11%	Paints and thinners are stored in a centralized location and purchased only in needed quantities.
11-6. Aerosol Cans	10%	22%	41%	13%	14%	Empty aerosol cans are disposed in recycling containers or appropriate waste containers.
11-7. Protection of Storm Water and Process Wastewater	23%	48%	22%	3%	4%	All liquid hazardous materials and waste are stored in secondary containment.
11-8. Fuel Storage - Aboveground Storage Tanks (ASTs) or Portable Tanks	19%	14%	29%	10%	29%	The fueling area is inspected regularly, and a positive shut-off nozzle is installed and the hose and nozzle are inspected for leaks and damage.
11-9. Winery Sanitation Supplies	14%	57%	22%	5%	3%	Handling of sanitation supplies is part of employee training.

CHAPTER 12 | SOLID WASTE REDUCTION AND MANAGEMENT

California has some of the best recycling infrastructure available to businesses of any state in the country. This makes it easier for vintners to reduce the amount of material going into the landfill because much of the solid waste generated at the winery (cardboard, paper, metal, glass and plastic) can be collected and reused or recycled.

Assessing the amount of product purchased that ends up in the dumpster is the first step to reducing and managing solid waste. Many supplies that are purchased also come with excessive packaging that requires an additional disposal cost. Knowing the full cost of the packaging associated with each purchased product, including disposal costs, is therefore another important aspect to an effective strategy for reducing solid waste.

Wineries can work with suppliers to reduce the amount of packaging that comes with purchased materials and supplies. Their suppliers can help develop systems for reusable containers, recyclable packaging, or reprocessing of waste material. By working with suppliers, wineries are reducing the amount of waste going to landfill, which is discussed in greater detail in Chapter 13 - Environmentally Preferred Purchasing.

Employees are at the heart of a successful waste reduction and recycling program. Investing time to educate and train all staff members to identify, separate and recycle materials at the winery will save the company money and encourage more recycling in the broader community.

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
12-1. Planning, Monitoring, Goals, and Results	18%	11%	51%	17%	3%	A winery solid waste audit is conducted at least every 5 years and solid waste is monitored throughout the year and.
12-2. Pomace and Lees	31%	27%	34%	4%	6%	Pomace and lees are applied directly to the vineyards and landscape areas or are hauled off-site for use as animal feed or compost.
12-3. Diatomaceous Earth (DE)	11%	11%	9%	6%	63%	The amount of DE used is known and DE cakes are incorporated into compost operations.
12-4. Plate and Frame Filters	8%	16%	13%	5%	58%	Alternatives to plate and frame filter media disposal are researched.
12-5. Cooperage	36%	21%	31%	3%	9%	Barrels are bar-coded to track age, date received, current use, and location.
12-6. Glass	28%	26%	39%	3%	4%	All glass is separated into recyclable glass and non-recyclable lab glass (Pyrex).
12-7. Cardboard	8%	24%	63%	2%	2%	Cardboard is recycled and the amount recycled is estimated.

CHAPTER 12 | SOLID WASTE REDUCTION AND MANAGEMENT CONT'D

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
12-8. Paper	3%	25%	62%	8%	2%	Paper is recycled in a designated recycling container and the amount recycled is estimated.
12-9. Plastic	8%	31%	48%	12%	2%	Plastic is disposed of in a solid waste container and the amount of plastic discarded is estimated.
12-10. Packaging	9%	19%	51%	17%	4%	Alternative packaging materials is researched and the amount of packaging discarded is estimated.
12-11. Metals	17%	39%	38%	0%	5%	Metals are recycled or reused and employees are trained on metal reuse.
12-12. Natural Cork	13%	26%	36%	12%	13%	Cork is separated out of the solid waste stream.
12-13. Pallets, Wood Packaging, Bins, etc.	6%	41%	47%	2%	4%	Unused pallets and/or bins are stacked and stored for vendors to pickup.
12-14. Capsules	6%	32%	42%	5%	15%	Aluminum and tin capsules are recycled.
12-15. Landscape Residuals	30%	34%	25%	2%	8%	Landscape residuals are composted or chipped and left on the ground and no landscape residuals are disposed of in solid waste containers.
12-16. Food Waste	9%	18%	20%	46%	7%	All food waste and utensils are disposed of in a solid waste container.

CHAPTER 13 | ENVIRONMENTALLY PREFERABLE PURCHASING

Participating in recycling efforts and reusing materials whenever possible are simple steps in helping to reduce the amount of solid waste going to landfills every day, but this is only part of the cycle. Being aware of the material that is purchased for use in the vineyard or winery helps “close the loop” and increases the market for products made of recycled content. One of the primary ways this can be accomplished is through Environmentally Preferable Purchasing (EPP). EPP is a process for selecting products or services that have a reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. The first step in an EPP program is to screen products and services for their relative beneficial environmental attributes (such as recycled content and energy efficiency) as well as potential adverse environmental and human health impacts. While the review process requires an investment of time, vendors and suppliers should be called upon to assist in the process by providing information on the environmental attributes of their products and services. If they don’t know, or don’t seem very interested in making that information available, it is wise to consider seeking suppliers who will support the EPP efforts of the enterprise.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
13-1. Planning, Monitoring, Goals, and Results	5%	19%	74%	2%	0%	Environmental considerations are included in some purchasing decisions.
13-3. Vineyard Supplies	5%	40%	47%	9%	0%	Environmental considerations are included in some vineyard supplies purchasing decisions, including asking some vendors about their products’ environmental attributes.
13-4. Vehicles	4%	43%	45%	6%	2%	Environmental considerations are included in some vehicle purchasing decisions, including asking some vendors about their products’ environmental attributes.
13-5. Vehicle Maintenance Products	3%	33%	49%	13%	1%	Environmental considerations are included in some vehicle maintenance products purchasing decisions, including asking some vendors about their products’ environmental attributes.
13-6. Office Equipment	6%	39%	40%	10%	4%	Environmental considerations are included in some office equipment purchasing decisions, including asking some vendors about their products’ environmental attributes.

CHAPTER 13 | ENVIRONMENTALLY PREFERABLE PURCHASING CONT'D

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
13-1. Planning, Monitoring, Goals, and Results	2%	29%	64%	4%	2%	Environmental considerations are included in some purchasing decisions.
13-2. Service Providers	1%	30%	57%	9%	3%	Some service providers are asked about their environmental practices and requirements for services included some environmental considerations.
13-4. Vehicles	2%	25%	50%	14%	8%	Environmental considerations are included in some vehicle purchasing decisions, including asking some vendors about their products' environmental attributes.
13-5. Vehicle Maintenance Products	1%	17%	53%	17%	12%	Environmental considerations are included in some vehicle maintenance products purchasing decisions, including asking some vendors about their products' environmental attributes.
13-6. Office Equipment	3%	34%	54%	9%	1%	Environmental considerations are included in some office equipment purchasing decisions, including asking some vendors about their products' environmental attributes.
13-7. Wine Containers	1%	42%	38%	10%	8%	Vendors are evaluated on their products' environmental attributes and some orders specified environmental requirements.
13-8. Closures	2%	37%	43%	8%	10%	Requirements for closures include some environmental considerations.
13-9. Capsules	1%	31%	42%	12%	14%	Requirements for capsules include some environmental considerations.
13-10. Boxes	0%	29%	52%	10%	8%	Requirements for boxes include some environmental considerations.
13-11. Winery Equipment	2%	27%	59%	9%	3%	Requirements for winery equipment include some environmental considerations.)
13-12. Paper	4%	37%	45%	13%	0%	Requirements for paper include some environmental considerations.
13-13. Cleaning Supplies	2%	41%	45%	9%	3%	Requirements for cleaning supplies include some environmental considerations.
13-14. Packaging - From Suppliers	3%	11%	61%	23%	2%	Requirements for packaging coming from major suppliers include some environmental requirements and the amount of packaging used was considered in purchasing decisions.
13-15. Packaging - To Customers	4%	21%	51%	7%	17%	Requirements for packaging materials to customers included environmental considerations and packaging materials from suppliers is reused.

CHAPTER 14 | HUMAN RESOURCES

The effective management of human resources (HR) is a key component to the sustainability of any organization. Attracting and retaining an excellent workforce in vineyard and winery operations can improve productivity, profitability and therefore, sustainability. Job creation and employee professional development strengthen and enhance the quality of life in local communities. Providing training focused on the conservation of natural resources – such as programs targeting water conservation, energy efficiency, and recycling – is not only critical to an operation’s bottom line, but also to a community’s ability to achieve tangible environmental results.

Many vineyard and winery operations are already implementing human resource best practices, resulting in higher levels of employee productivity and satisfaction. California also has a strong regulatory framework for human resources and worker health and safety, with which California vineyard and winery operations must comply. By hiring, developing, managing, and rewarding employees in the appropriate manner, the California wine community can create a competitive advantage that will help sustain and improve productivity, efficiency, and innovation.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
14-1. HR Planning and Goals	16%	42%	35%	5%	2%	The vineyard has a process for staying aware of human resources legal requirement and there is an HR plan that addresses staffing and recruitment, training and development, employee relations, compensation and benefits, and record-keeping.
14-2. Staffing and Recruiting Strategy	13%	33%	44%	8%	2%	The vineyard has a staffing strategy that analyzes future staffing needs and recruiting methods, and ensures state license requirements are checked for labor contractors.
14-3. Interviewing Process	13%	39%	23%	23%	2%	Interviews involved a set of specific questions designed to ensure qualifications are met for each position and information is provided about the company, performance expectations, and essential aspects of the job.
14-4. Employee Orientation	16%	42%	22%	17%	4%	The vineyard provides an orientation program for new employees that includes necessary start up documentation and an overview/tour of the company’s purpose and operations.
14-5. Safety Training	36%	45%	17%	1%	1%	Employee safety training meetings are held at least quarterly, attendance and training dates are documented and safety statistics are tracked, and safety audits and training tailgates are conducted.
14-6. Continuing Education, Training and Development	17%	58%	19%	3%	3%	The vineyard operation evaluates training needs, and encourages and offers paid time for employees to attend in-house or outside training.

CHAPTER 14 | HUMAN RESOURCES CONT'D

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
14-7. Industry Knowledge and Participation	46%	25%	27%	1%	1%	Appropriate manager/employee(s) in the vineyard operation stay informed on key industry issues, and the vineyard operation participates in grower associations.
14-8. Promoting Sustainability in the Workplace	25%	37%	36%	1%	1%	Employees involved in sustainability efforts are informed about practices and procedures and the company seeks feedback from employees to make improvements.
14-9. Employee Performance	18%	53%	13%	14%	2%	An established process for assessing competency and performance of employees exists, and open communication between employees and management is encouraged.
14-10. Compensation Benchmarking	26%	41%	27%	3%	2%	Compensation packages are reviewed and benchmarked within the industry to ensure they properly attract and retain employees.

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
14-1. HR Planning and Goals	16%	42%	35%	5%	2%	The vineyard has a process for staying aware of human resources legal requirement and there is an HR plan that addresses staffing and recruitment, training and development, employee relations, compensation and benefits, and record-keeping.
14-2. Staffing and Recruiting Strategy	13%	33%	44%	8%	2%	The vineyard has a staffing strategy that analyzes future staffing needs and recruiting methods, and ensures state license requirements are checked for labor contractors.
14-3. Interviewing Process	13%	39%	23%	23%	2%	Interviews involved a set of specific questions designed to ensure qualifications are met for each position and information is provided about the company, performance expectations, and essential aspects of the job.
14-4. Employee Orientation	16%	42%	22%	17%	4%	The vineyard provides an orientation program for new employees that includes necessary start up documentation and an overview/tour of the company's purpose and operations.
14-5. Safety Training	36%	45%	17%	1%	1%	Employee safety training meetings are held at least quarterly, attendance and training dates are documented and safety statistics are tracked, and safety audits and training tailgates are conducted.
14-6. Continuing Education, Training and Development	17%	58%	19%	3%	3%	The vineyard operation evaluates training needs, and encourages and offers paid time for employees to attend in-house or outside training.

CHAPTER 14 | HUMAN RESOURCES CONT'D

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
14-6. Continuing Education, Training and Development	38%	51%	10%	0%	1%	The winery operation evaluates training needs, and encourages and offers paid time for employees to attend in-house or outside training.
14-7. Industry Knowledge and Participation	62%	28%	9%	0%	0%	Appropriate manager/employee(s) in the winery operation stay informed on key industry issues, and the winery operation participates in vintner associations.
14-8. Promoting Sustainability in the Workplace	36%	46%	15%	2%	1%	Employees involved in sustainability efforts are informed about practices and procedures and the company seeks feedback from employees to make improvements.
14-9. Employee Performance	33%	56%	4%	6%	1%	An established process for assessing competency and performance of employees exists, and open communication between employees and management is encouraged.
14-10. Compensation Benchmarking	56%	27%	10%	5%	2%	Compensation packages are reviewed and benchmarked within the industry to ensure they properly attract and retain employees and retention is tracked.

CHAPTER 15 | NEIGHBORS AND COMMUNITY

Vintners and growers around the state are committed to being not only good stewards of the land, but also good neighbors. Many owners and employees live at or near their vineyards and wineries, and strive to maintain a healthy and beautiful environment and vibrant communities for their families, neighbors, and wine country visitors. Many of the practices they use also provide ecosystems services that benefit the environment (e.g., carbon sequestration, groundwater recharge), protect wildlife habitat, and improve quality of life for the broader community.

In addition, as a signature product, California wine adds to the economic vitality of diverse wine regions throughout the state, as well as to the California and U.S. economies, through jobs, tourism, and taxes. Growers and vintners are also active in their local communities, contributing time, money, and wine to help neighbors and a wide variety of organizations and institutions thrive.

At the same time, California's population growth and shifts from urban to rural areas increase the potential for conflicts over land use, natural resources, public services, and other neighbor and community issues. The key to staying current with the pressing issues of the greater community is to establish a dialogue with them. By understanding the concerns and issues community members may have, growers and vintners will be better able to proactively defuse potential conflicts. Two of the biggest barriers to effective problem solving are a lack of communication and a profusion of misinformation, which can be minimized through proactive interactions with neighbors. Growers and vintners should be able to contact their neighbors to explain a new procedure before it impacts them and neighbors, in turn, should be able to contact growers and vintners if they have a question or concern. In addition, time must be invested to research local issues, learn and understand the various perspectives, and attend meetings and workshops with community members to listen and ensure that the grower and vintner perspectives are represented.

CHAPTER 15 | NEIGHBORS AND COMMUNITY CONT'D

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
15-1. Neighbors and Community Relations	29%	47%	22%	1%	0%	Proactive efforts are made to foster good relations with neighbors and community and neighbors know how to contact the vineyard, and a process is in place for considering and acting on neighbor/community questions or concerns.
15-2. Awareness of Potential Neighbor and Community Issues	41%	40%	18%	1%	0%	The vineyard knows the perceptions of neighbors and how the operation may affect them and proactively works to minimize potentially significant neighbor or community issues.
15-5. Arts and Culture	71%	4%	3%	21%	1%	The vineyard volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance arts and culture in their community.
15-6. Community	85%	4%	4%	7%	0%	The vineyard volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance their community.
15-7. Environment	63%	4%	6%	28%	0%	The vineyard volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance the environment in their community.
15-8. Wine Industry Research	72%	5%	6%	18%	0%	The vineyard volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance wine industry research.
15-9. Other Philanthropic Causes	73%	5%	6%	16%	0%	The vineyard volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance other philanthropic causes in their community.

CHAPTER 15 | NEIGHBORS AND COMMUNITY CONT'D

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTD BY SHADING
15-1. Neighbors and Community Relations	42%	31%	23%	1%	3%	Proactive efforts are made to foster good relations with neighbors and community, the winery has communicated about their sustainability, and a process is in place for considering and acting on neighbor/community questions.
15-2. Awareness of Potential Neighbor and Community Issues	43%	39%	15%	2%	2%	The winery knows the perceptions of neighbors and how the operation may affect them and proactively works to minimize potentially significant neighbor or community issues.
15-3. Mitigation of Light, Noise and Traffic Impacts	27%	31%	28%	3%	11%	Winery impact on light, noise and traffic for neighbors is known and some mitigation options are implemented (e.g., speed limit signs, employee training, shields for lighting, soundproofing or timing of specific operations or events).
15-4. Awareness of Community Issues that Could Potentially Affect a Winery	51%	26%	20%	1%	1%	The winery actively works toward improvement of community issues (e.g. volunteered, assigned company liaison, made philanthropic contribution, etc.)
15-5. Arts and Culture	89%	1%	0%	6%	4%	The winery volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance arts and culture in their community.
15-6. Community	94%	1%	0%	4%	0%	The winery volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance their community.
15-7. Environment	79%	2%	2%	16%	1%	The winery volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance the environment in their community.
15-8. Wine Industry Research	82%	4%	2%	10%	1%	The winery volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance wine industry research.
15-9. Other Philanthropic Causes	90%	3%	0%	6%	1%	The winery volunteers, contributes staff time, or donates financial resources, wine, or makes other contributions to enhance other philanthropic causes in their community.
13-11. Winery Equipment	2%	27%	59%	9%	3%	Requirements for winery equipment include some environmental considerations.)

CHAPTER 16 | AIR QUALITY

Because it is ubiquitously distributed and generally invisible, air is a critical natural resource that is often taken for granted. Various activities and an expanding human population in California and elsewhere are increasing emissions to the atmosphere and taxing the air quality of California. To address the increasing importance and scope of concerns about air quality, it is important for everyone to take steps to reduce emissions, and many California vineyards and wineries are implementing measures to protect air quality.

Since agriculture constitutes only one source of the state's air emissions and the wine industry is only a fraction of the agricultural component, emissions associated with each vineyard or winery may seem minimal. However, a collective commitment by the winegrowing community to limit emissions acknowledges that all efforts make a difference and moves the dialogue beyond the narrow and reactive focus on individual sources, impacts, and regulations. Through voluntary assessment and proactive efforts to decrease emissions, cost-effective practices and technologies can be identified and implemented, improving air quality while maintaining the economic viability of this important business sector.

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
16-1. Planning, Monitoring, Goals, and Results	3%	5%	88%	5%	0%	There is awareness of some sources of air emissions associated with the vineyard.
16-2. Vineyard Floors	14%	62%	20%	4%	0%	Soil management practices for mitigating airborne dust and PM10 are known, and a soil conservation strategy is implemented.
16-3. Unpaved Surfaces - Roadways and Traffic and Equipment Staging Areas	31%	43%	25%	1%	0%	Dust from roadways is minimized using strategies such as reduced speeds and effectively timed applications of water or regulatory compliant anti-dust materials and/or layering gravel, chipping, mulching, sanding, paving, or seeding.
16-4. Vineyard Water Use	18%	52%	27%	3%	0%	Irrigation design and strategy is known to affect air quality, and a cost effective irrigation strategy that delivered minimal amounts of water while reducing emissions is implemented.
16-5. Pest Management Strategy	36%	37%	24%	3%	1%	There is knowledge of how pest management practices affect air quality, and a strategy that relies on biological and cultural tactics is implemented to reduce emissions.
16-6. Pesticide Stewardship	24%	41%	32%	2%	1%	Recommended practices are followed to minimize PM10 and drift from dust (e.g., sulfur) and liquid applications, and there is some understanding of pesticide products associated with higher VOC emissions.)
16-7. Agricultural and Winery Chemicals and Materials	13%	29%	45%	14%	0%	There is awareness of how chemicals and materials used in the vineyard affect air quality, and a strategy is being developed for chemical acquisition.

CHAPTER 16 | AIR QUALITY CONT'D

PERCENTAGE OF GROWERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
16-8. Transportation	11%	15%	67%	7%	0%	There is awareness of links between miles traveled and air quality, and a strategy is being developed to minimize the miles traveled to and from the vineyard each year.
16-9. Agricultural Burning	19%	48%	28%	4%	1%	Vineyard prunings are managed to minimize air quality issues, only diseased vines are burned, and all burning is done under the supervision of a trained vineyard manager.

PERCENTAGE OF VINTNERS

CODE WORKBOOK CRITERIA	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1	NA	EXAMPLE PRACTICE(S) FOR CATEGORY WITH HIGHEST ADOPTION RATE (%) - 3RD EDITION CODE DENOTED BY SHADING
16-1. Planning, Monitoring, Goals, and Results	0%	6%	85%	4%	4%	There is awareness of some sources of air emissions associated with the winery.
16-3. Unpaved Surfaces - Roadways and Traffic and Equipment Staging Areas	26%	33%	27%	2%	13%	Dust from roadways is minimized using strategies such as reduced speeds and effectively timed applications of water or regulatory compliant anti-dust materials and/or layering gravel, chipping, mulching, sanding, paving, or seeding.
16-7. Agricultural and Winery Chemicals and Materials	10%	23%	51%	13%	3%	There is awareness of how chemicals and materials used in the winery affect air quality, and a strategy is being developed for chemical acquisition.
16-8. Transportation	3%	15%	68%	10%	5%	There is awareness of links between miles traveled and air quality, and a strategy is being developed to minimize the miles traveled to and from the winery each year.
16-10. Winery Refrigerants	21%	27%	43%	4%	5%	An audit of the refrigeration system is completed and the type and amount of refrigerants are known.

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