CALIFORNIA
SUSTAINABLE WINEGROWING
ALLIANCE

Performance Metrics and the California Sustainable Winegrowing Program

Sustainable Winegrowing Program Background

The California wine community's commitment to environmental stewardship, social responsibility and economic vitality is demonstrated by broad vintner and grower participation in the Sustainable Winegrowing Program (SWP, www.sustainablewinegrowing.org). Wine Institute and the California Association of Winegrape Growers (CAWG) launched the SWP in 2002 and created the California Sustainable Winegrowing Alliance (CSWA) in 2003 to help wineries and vineyards continuously improve by adopting and implementing sustainable practices. Through the Sustainable Winegrowing Program, CSWA provides growers and vintners with educational workshops and tools, including the Code of Sustainable Practices Self-Assessment Workbook covering 227 sustainable practices from grape to glass. (The Code is currently under review, with a third edition workbook to be published in summer 2012.) To date, 1,680 distinct winery and vineyard organizations, representing over 65% of California's wine case production and nearly 70% of its winegrape acreage, have used the Code to evaluate the sustainability of their operations. Results of self-assessments are useful to enhance the performance of individual operations and are aggregated in statewide reports released every 5-years. This data is also used to develop new and refine existing workshops targeting sustainable winegrowing topics. In January 2010, CSWA launched Certified California Sustainable Winegrowing – a third-party certification option to verify continuous improvement in the use of sustainable practices in vineyards and wineries.

Performance Metrics: the Next Step in Sustainable Winegrowing

As an important next step, CSWA is integrating performance metrics into the SWP to further promote, measure, and communicate continuous improvement. The goals of the metrics project are to:

- Provide growers and vintners with tools to measure, manage and track their use of natural resources to optimize operations, decrease costs, and increase sustainability;
- Enhance the California wine community's global leadership position in sustainable agriculture and production by remaining on the leading edge of sustainability;
- Enable participating SWP winegrowers to confidentially benchmark their performance metrics to drive innovation and adoption of sustainable practices;
- Expand the means for communicating continuous improvement in performance to stakeholders;
- Improve credibility of the SWP model with regulators and policymakers, retailers, and consumers by tying measurable performance outcomes to practices;
- Provide industry targets, tools, and resources to spur innovation and continuously improve sustainable practices; and
- Advance core principles, objectives, and strategic goals of the SWP.

The initial set of metrics will include:

1. Water Use (vineyards and wineries)
2. Energy Use (vineyards and wineries)
3. Greenhouse Gas Emissions (vineyards and wineries), and
4. Nitrogen Use (vineyards).

Additional metrics may be added, including metrics that measure the social aspects of sustainability. However, the initial set of selected metrics met CSWA's criteria, including economic and environmental impact, data availability, ease of use, and state of the science.

"You can't manage what you don't measure"

Performance metrics are the measurable outcomes of business practices. Growers and vintners already use performance metrics to measure and track economic success, including tons of grapes produced and associated cost per acre, and cases of wine produced and sold per year. However, from a broader perspective that balances the three E's of sustainability (**E**nvironmentally sound, **E**conomically viable, and socially **E**quitable), performance metrics should also consider measurable outcomes of environmental (e.g., use of natural resources) and social (e.g., employee health and safety) practices. Sustainability initiatives in all industry sectors, including agriculture, are increasingly moving towards performance metrics. These important measurement tools enable farming operations and companies of all sizes to more effectively improve sustainability performance and to "manage what they measure".

How do agricultural and production practices relate to performance metrics and sustainability?

Many sustainable agriculture initiatives to date, including the SWP, focus on documenting, tracking, and improving practices used on the farm or by subsequent operations along the supply chain. Although improvements in practices presumably result in beneficial environmental, social, and/or economic outcomes, precise impacts must be determined by measurement. For example, the knowledge of the water holding capacity of the vineyard and the monitoring of evapotranspiration and plant water status may support irrigation decisions, but the impact of these practices on water use is only known if the total amount of applied water is also measured. Understanding the interdependence of practices and performance metrics is crucial to making and validating improvement in sustainable agriculture. Practices impact metrics and metrics inform practices; understanding and quantifying this relationship is important for continuous improvement.

What are the benefits of using performance metrics?

Participating in the SWP and tracking vineyard and winery performance metrics makes good business sense. For growers and vintners, relating and tracking both practices ***and*** measurable outcomes helps prioritize vineyard or winery plans for greatest impact and operational efficiency – reducing inputs, saving money and minimizing adverse environmental and human impacts. Growers and vintners also can sort real from perceived outcomes – key to managing resources efficiently. Moreover, the data captured from quantifying performance has additional value – helping growers and vintners meet increasing market demand for transparency of product information, take advantage of developing financial incentives such as cap and trade (e.g., saleable carbon offsets) and alternative pricing associated with energy and water efficiency, and secure alternative regulatory compliance opportunities.

From an industry-wide standpoint, calculating collective impacts on natural resources enables the California wine community to convey accurate information about its sustainability efforts to key stakeholders. Consistent with the overall intent of the SWP, the tactful and proactive sharing of aggregated, fact-based performance can further the advantageous positioning of California wine in the global marketplace and public policy arena.

How will performance metrics be integrated into the SWP?
CSWA is adapting an initial set of performance metrics for the California wine industry to support individual and, perhaps eventually, collective industry performance tracking, goal setting, and continuous improvement. Metrics primarily were sourced from the Stewardship Index for Specialty Crops, a complementary multi-stakeholder effort to develop a common set of performance metrics for use throughout the specialty crop supply chain across the U.S. (www.stewardshipindex.org). The selected metrics are water use (vineyards and wineries), energy use (vineyards and wineries), greenhouse gas emissions (vineyards and wineries), and nitrogen use (vineyards).

CSWA's SWP Joint Committee selected the initial metrics based on criteria including economic and environmental impact, data availability, ease of use, and state of the science (the SWP Joint Committee is a group of over 50 growers and vintners from organizations throughout the state.) See the following tables for details on the selected metrics.

How will the performance metrics calculator be used?
The online Performance Metrics Calculator will be used by growers and vintners to calculate metrics and access associated educational information. Metrics results will be confidentially stored (password protected) in the SWP online system for individual business use. Growers will create a vineyard profile and vintners will create a winery profile to help analyze "like" operations in the future when enough metric data is available to attempt regional and statewide comparisons. These comparisons will be anonymous in the same manner that current practice comparisons are provided to SWP participants.

How will the metrics data be used? Is my data confidential?
Like the self-assessment and reporting for vineyard and winery practices, performance metrics information and accounting will be incorporated into the SWP's free online system where growers and vintners can confidentially store data, track improvements over time, and access tools and resources to help save money. This will enable them to compare their natural resource use and greenhouse gas emissions from year to year and relate measurable outcomes to changed practices. Each California winery and vineyard participant is given a unique Username and Password, and CSWA and the SWP online system adhere to a strict Confidentiality Policy. The SWP online system has the same security features as online banking. CSWA will never share individual self-assessment or performance metrics data.

After a robust set of metrics results is aggregated over several years, data will be carefully analyzed to determine if reasonable collective (e.g. regional and/or statewide) baselines can be generated for industry wide benchmarking and target-setting. No collective results will be released without 100% assurance of individual business anonymity. Metric results will also be used to drive educational programs as well.

Performance Metrics for the SWP

The following is a list of the performance metrics selected for initial incorporation into the SWP. Also listed are the expected benefits from calculating the metrics along with associated data requirements and sources.

Vineyard Metrics

Metrics Area	Metrics	Metric Usage Benefits	Data Elements	Data Sources
Vineyard – Water Use	Water Use Efficiency = Acre-inches Applied / Acre = Acre-inches Applied / Ton of Grapes	Environmental and societal benefits: reducing water use can reduce GHG emissions and enhance water availability for multiple uses. Economic benefits: reducing water use can save money and potentially reduce future regulatory compliance costs.	• Applied water (including for frost protection) • Acreage • Yield (total tons)	Utility records; Flow meter readings
Vineyard – Energy Use	Energy Use Intensity = Kilowatt Hours / Acre = Kilowatt Hours / Ton of Grapes	Environmental and societal benefits: reducing energy use can decrease GHG and criteria pollutant emissions. Economic benefits: reducing energy use can save money, while reducing risks from price variability and energy availability, and potentially reduce future regulatory compliance costs.	• Fuel usage • Electricity usage • Acreage • Yield (total tons)	Utility records; Fuel receipts; Meter & equipment readings

Vineyard – Greenhouse Gas (GHG) Emissions* *from energy use	GHG Intensity = Pounds of Carbon Dioxide Equivalents / Acre = Pounds of Carbon Dioxide Equivalents / Ton of Grapes	Environmental and societal benefits: reducing GHG emissions can reduce GHG impacts and often associated emissions of criteria pollutants. Economic benefits: reducing GHG emissions can save money and potentially reduce future regulatory compliance costs.	• Fuel usage • Electricity usage • Acreage • Yield (total tons) * additional data elements will be added as GHG calculation models evolve	Utility records; Fuel receipts; Meter & equipment readings
Vineyard – Nitrogen Use	Nitrogen Applied Efficiency = Pounds Applied / Acre = Pounds Applied / Ton of Grapes	Environmental and societal benefits: reducing nitrogen use can reduce GHG emissions and improve water quality. Economic benefits: measuring and reducing nitrogen use can save money and potentially reduce future regulatory compliance costs.	• Synthetic & organic fertilizer • Compost • Manure • Irrigation water N • Acreage • Yield (total tons)	Fertilizer application records; compost & manure applications; irrigation N content; Vineyard management company

Winery Metrics

Metrics Area	Metrics	Metric Usage Benefits	Data Elements	Data Sources
Winery – Water Use	Water Use Efficiency = Gallons Used / Gallon of Wine = Gallons Used / Case of Wine	Environmental and societal benefits: reducing water use can reduce GHG emissions and enhance water availability for multiple uses. Economic benefits: reducing water use can save money and potentially reduce future regulatory compliance costs.	• Water usage • Gallons and cases produced	Utility records; Flow meter readings
Winery – Energy Use	Energy Use Intensity = Kilowatt Hours / Gallon of Wine = Kilowatt Hours / Case of Wine	Environmental and societal benefits: reducing energy use can decrease GHG and criteria pollutant emissions. Economic benefits: reducing energy use can save money, while reducing risks from price variability and energy availability, and potentially reduce future regulatory compliance costs.	• Fuel usage • Electricity usage • Gallons and cases produced	Utility records; Fuel receipts; Meter & equipment readings
Winery – Greenhouse Gas (GHG) Emissions* *from energy use and refrigerant loss	GHG Intensity = Pounds of Carbon Dioxide Equivalents / Gallon of Wine = Pounds of Carbon Dioxide Equivalents / Case of Wine	Environmental and societal benefits: reducing GHG emissions can reduce GHG impacts and often associated emissions of criteria pollutants. Economic benefits: measuring and reducing GHG emissions can save money and potentially reduce future regulatory compliance costs.	• Fuel usage • Electricity usage • Refrigerant usage • Gallons and cases produced	Utility records; Fuel receipts; Meter & equipment readings, refrigerant purchase receipts