

School Nominee Presentation Form

ELIGIBILITY CERTIFICATIONS**School and District's Certifications**

The signatures of the school principal and district superintendent (or equivalents) on the next page certify that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of their knowledge. *In no case is a private school required to make any certification with regard to the public school district in which it is located.*

1. The school has some configuration that includes grades Pre-K-12.
2. The school has been evaluated and selected from among schools within the Nominating Authority's jurisdiction, based on high achievement in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental education.
3. Neither the nominated public school nor its public school district is refusing the U.S. Department of Education Office of Civil Rights (OCR) access to information necessary to investigate a civil rights complaint or to conduct a district wide compliance review. The Department of Defense Education Activity (DoDEA) is not subject to the jurisdiction of OCR. The nominated DoDEA schools, however, are subject to and in compliance with statutory and regulatory requirements to comply with Federal civil rights laws.
4. OCR has not issued a violation letter of findings to the public school district concluding that the nominated public school or the public school district as a whole has violated one or more of the civil rights statutes. A violation letter of findings will not be considered outstanding if OCR has accepted a corrective action plan to remedy the violation.
5. The U.S. Department of Justice does not have a pending suit alleging that the public school or the public school district as a whole has violated one or more of the civil rights statutes or the Constitution's equal protection clause.
6. There are no findings of violations of the Individuals with Disabilities Education Act in a U.S. Department of Education monitoring report that apply to the public school or public school district in question; or if there are such findings, the state or public school district has corrected, or agreed to correct, the findings.
7. The school meets all applicable federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

U.S. Department of Education Green Ribbon Schools 2015-2018

Public Charter Title I Magnet Private Independent Rural

Name of Principal: **Mr. Michael K. Mulligan**

(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in the official records)

Official School Name: **The Thacher School**

(As it should appear on an award)

Official School Name Mailing Address: **5025 Thacher Road, Ojai, CA 93023**

(If address is P.O. Box, also include street address.)

County: **Ventura** State School Code Number *: **00080814**

Telephone: **805-646-4377** Fax: **805-646-9490**

Web site/URL: www.thacher.org E-mail: info@thacher.org

*Private Schools: If the information requested is not applicable, write N/A in the space

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.



Date: 01-27-17

(Principal's Signature)



Name of Superintendent: N/A
(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in official records)

District Name: N/A

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

N/A Date:
(Superintendent's Signature)

Nominating Authority's Certifications

The signature by the Nominating Authority on this page certifies that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of the Authority's knowledge.

1. The school has some configuration that includes grades Pre-K-12.
2. The school is one of those overseen by the Nominating Authority which is highest achieving in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. The school meets all applicable federal civil rights and federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

Name of Nominating Agency: **California Department of Education**

Name of Nominating Authority: **State Superintendent of Public Instruction Tom Torlakson**
(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

I have reviewed the information in this application and certify to the best of my knowledge that the school meets the provisions above.

Tom Torlakson Date: January 31, 2017
(Nominating Authority's Signature)

SUMMARY AND DOCUMENTATION OF NOMINEE'S ACHIEVEMENTS

Provide a coherent summary that describes how your school is representative of your jurisdiction's highest achieving green school efforts. Summarize your strengths and accomplishments in all three Pillars. Then, include concrete examples for work in every Pillar and Element. Only schools that document progress in every Pillar and Element can be considered for this award.

SUBMISSION

The nomination package, including the signed certifications and documentation of evaluation in the three Pillars should be converted to a PDF file and emailed to green.ribbon.schools@ed.gov according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509
Expiration Date: March 31, 2018

Public Burden Statement

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1860-0509. Public reporting burden for this collection of information is estimated to average 37 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit P.L. 107-110, Sec. 501, Innovative Programs and Parental Choice Provisions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20202-4536 or email ICDocketMgr@ed.gov and reference the OMB Control Number 1860-0509. Note: Please do not return the completed ED-Green Ribbon Schools application to this address.



The Thacher School

California Private School Nominee to
U.S. Department of Education Green Ribbon Schools



Prepared by
California Department of Education
School Facilities and Transportation Services Division
<http://www.cde.ca.gov/ls/fa/sf/greenribbonprog.asp>
January 2017

PART II – SUMMARY OF ACHIEVEMENTS

The Thacher School, Ojai, Calif.

Living sustainably and building deep connections with nature

The Thacher School (“Thacher”) is a coeducational boarding high school perched at the foot of the Topa Topa Mountains (Los Padres National Forest) near the community of Ojai. The school was founded in 1889 and covers 325 majestic acres—only 45 of which are developed—and 32 miles of trails. The campus is a National Wildlife Federation site that includes 25 acres of citrus and avocados that support the school nutrition program; a number of rainwater gardens and Hugelkultur have been installed.

Thacher’s tradition of helping students build a deep connection to nature is finding new expression along the journey to make the campus into a model of sustainability. Thacher has adopted the Whole-School Sustainability Framework [from the Institute for the Built Environment at Colorado State University and The Center for Green Schools at the U.S. Green Building Council] and aligned it to a sustainability action plan so that, along with the U.S. Department of Education Green Ribbon Schools criteria, the school can tackle sustainability from all angles.

The school’s sustainability plan identifies five pillars that encompass and represent Thacher as an institution and community: efficient use of resources, ecological curriculum, community connections, natural connections, and health and sustainability management. For instance, all physical projects are organized under the “efficient use of resources” pillar.

Under the direction of an experienced and committed facilities manager, Thacher has accomplished many sustainable physical projects in the last few years. In June 2016, a new solar farm went live, providing 92% of the school’s electricity needs. Water conservation projects have also sprung up all around campus, including rainwater catchment systems, greywater systems in all of the dorms, and xeriscaping projects on school grounds. From a 2013 baseline, Thacher has decreased non-potable water use by 44% and domestic water use by 39.5%. Physical campus improvements also provide real-world environmental education opportunities for students. Many math, science, and humanities teachers incorporate the live data provided by building systems into their curriculum to start conversations around resource consumption and waste management.

Thacher’s composting program, which includes horse manure, dining hall food waste, and green waste, processes over 1,600 tons annually. The product is used for soil augmentation and helps provide nutrients and improves stormwater control. Thacher also raises pigs, which are fed from dining hall scraps. Last year, the pigs ate 2.5 tons of dining hall scraps. The school also has a bee program that is helping to ensure a healthy bee population in the Ojai Valley. Local honey is processed and distributed. To ensure a good product, pollinator gardens have been constructed and maintained around campus. A chicken program was started in the past year. Eggs are gathered and used in the dining hall while the chickens help the horse program by eating fly larvae; they also consume some green waste and food scraps from the dining hall.

All students at Thacher are engaged in campus, local, regional, and global sustainability issues. For instance, as part of their official “welcome to school” orientation, all incoming freshman students study systems thinking and how it applies to their new campus environment. The sophomore class continues their sustainability education by learning and engaging in issues related to the Ojai Valley community. As this program progresses, juniors will have the

opportunity to explore regional and national issues while seniors will focus on global environmental and social problems and their solutions. The school is beginning a partnership with renowned education for sustainability expert Jaimie Cloud, from The Cloud Institute, to provide even more formal integration of sustainable principles into the school's curriculum. Currently, twenty-five course and program offerings integrate sustainability concepts in their instruction.

Thacher seeks to make strong and lasting connections with both individual and institutional members of the community. For instance, the school collaborates closely with the Ojai Valley Green Coalition in various projects around the valley and intends to continue solidifying this important relationship. One of the main goals for 2017 is to create a "consortium for sustainability" among local schools in which interested schools would share best practices, collaborate, and learn together. To that end, Thacher recently hosted a group of faculty and students from the Besant Hill School to start planning a small conference for students of both schools to explore leadership skills in the context of sustainability programs.

PART III – DOCUMENTATION OF STATE EVALUATION OF SCHOOL NOMINEE

Pillar I: Reduce Environmental Impact and Costs

Element IA: Energy

- Thacher has an energy action plan as part of the Thacher 2025 Sustainability Goals and Plans. The plan also uses information from the Sightlines LLC Return on Physical Assets (ROPA) to benchmark energy use compared against peer schools. Further, there are projects, with costs identified, in a plan to help achieve the goals.
- Using Sightlines LLC, which uses the cool earth cool planet model, Thacher has documented a reduction in GHG emissions both last year and this year. From FY14 to FY15, the school reduced GHG by 46 MTCDE, a reduction of 4%. From FY15 to FY16, the school reduced GHG by 362 MTCDE, a reduction of 29.9%. The total reduction from the FY14 baseline is 33.9%.
- Thacher is implementing the Lucid Building OS product to provide the interface that allows Hobo units to be used along with campus meters as input to ENERGY STAR. The data integration is underway and the first scores will be available in early 2017. The school's solar PV array is also being integrated. Thacher uses Sightlines LLC, a facilities benchmarking system, to compare energy use against peer schools. In this comparison, Thacher is exemplary; for the second year in a row, the school has the lowest BTU/GSF in the entire database of over 300 schools.
- In 2013, total energy use was 38 kBTU; this year it was 36.2 kBTU, a decrease of 4.7%; Thacher already documents the lowest kBTU/GSF in the Sightlines database. Actual consumption from all energy bills is used to calculate the reduction.
- About 92% of the school's electrical energy is obtained from on-site renewable energy generation from a 680 Kw (AC) solar PV array that went live on June 6, 2016. The system saves more than \$100,000 annually in purchased electricity.
- All projects in the last ten years (three dormitories) were constructed to LEED Silver building standards, but not submitted for certification. Just this past summer a dormitory was renovated and exceeded California Title 24 standards by 15%. New Faculty housing (four units, 1850 sf) will exceed Title 24 by 10% when they are completed this summer.

- Cool roofs are the standard in the school's roof replacement program. Approximately one-third of horse program roofs (18,750 sf) were replaced this summer. Another four houses were painted with reflective paint.
- This past year, a dormitory renovation included a total lighting retrofit and new windows and doors to reduce energy use. The bathrooms use very efficient floor hydronic heating. Two dorms received new hot water heaters that are 90% efficient and have reduced natural gas bills by 20%. The Lucid Building OS system provides real-time monitoring of electrical use for each dormitory. Three faculty residences had SEER 23 cooling units installed. All replacement and new lamping continues to be LED.

Element IB: Water and Grounds

- Using meter readings from the domestic water provider, Thacher has achieved a 2.2M gallon reduction from a 2013 baseline for a 39.5% decrease.
- From a 2013 baseline, non-potable water use has decreased by 44%, documented through well meter readings for the current numbers and a combination of well meter readings and estimates due to broken meters for the 2013 baseline. The baseline numbers are comparable also to a local golf course for athletic fields, which make up 75% of non-potable use.
- Thacher has dramatically reduced the frequency of irrigation to the point of keeping turf alive, rather than green and lush. Playing fields are watered by an underground system and three acres of turf was replaced with xeriscaping. The school has improved controllers and checks each zone using a PM program rather than waiting for campus residents to notice over-watering. All dorms have laundry-to-greywater systems to irrigate the landscape close to the dorms.
- 50% of the maintained area on campus has an irrigation system. Any landscape introduced or replaced in the past two years has been native drought-tolerant plants. Three wells provide virtually all the irrigation. Also, a pre-1915 water right is used for a few months of the year.
- Bioswales and a Hugelkultur have been installed in numerous areas on campus where appropriate. The school's goal is to retain 100% of stormwater on campus eventually.
- Total campus acreage is 325 acres and the school occupies 45 of those acres with no plans to extend past the current boundaries. This is codified in the Conditional Use Permit with Ventura County. Thacher is a National Wildlife Federation site that contains 25 acres of citrus and avocados; a number of rainwater gardens and Hugelkultur have been installed.

Element IC: Waste

- Waste per student decreased 48% from FY14 to FY15 by 48%. During the past year, numbers are running the same. Thacher participated in the statewide K-12 Recycling Challenge and won first place in the per capita categories for mixed recyclables and cardboard. Overall efforts resulted in another 12% reduction from the FY14 baseline. The current rate for FY16 is 142 lbs/student FTE, compared to 321lbs/Student FTE in FY14 and 167lbs/Student FTE in FY16.
- Thacher's composting program, which includes horse manure, dining hall food waste, and green waste, processes over 1,600 tons annually. The product is used for soil augmentation and helps provide nutrients and improves stormwater control. Thacher also raises pigs, which are fed from dining hall scraps. Last year, the pigs ate 2.5 tons of dining hall scraps. Thacher has a bee program that is helping to ensure a healthy bee

population in the Ojai Valley. The honey is processed and distributed. To ensure a good product, pollinator gardens have been constructed and maintained around campus. A chicken program was started in the past year. The eggs are gathered and used in the dining hall. The chickens help the horse program by eating fly larvae. They also consume some green waste and food scraps from the dining hall. There are three dorm gardens that are planted and maintained all year by students. They were quite productive as they use the school's compost to provide the nutrients needed for the plants to thrive.

- For each pick-up of a trash container, the maintenance workers keep track of the number of full bags of each waste type. Staff reviews monthly billings from the refuse provider and records compost program data weekly.
- Thacher follows all industry standards and facilities are inspected annually by the County of Ventura Environmental and Health Department. Thacher collects electronic waste and takes part in local e-waste events. Batteries and all types of lamps are collected and picked up on a schedule.
- Most paper used on campus (around 95%) is Domtar Earth Choice, a Forest Stewardship Council certified and Rainforest Alliance certified paper. Thacher uses around 1,200-1,500 reams (120-150 cases) of copy paper each year. As the recycling program improves, efforts are shifting to reducing paper use.
- 100% of cleaning materials are Green Seal certified.

Element ID: Alternative Transportation

- Thacher is a boarding school, so the number students divided by the boarding students becomes the percentage of walkers. 88% walk to school, while 2% carpool with other students.
- Crosswalks for students traversing the campus are well laid-out. Maintenance workers are trained and reminded to stop and look for students at the crossing areas.
- Thacher has a well-publicized no-idling policy that applies to all vehicles, and vehicle loading/unloading areas are at least 25 feet from building intakes, doors, and windows.
- Vehicles are maintained on a schedule to ensure they are operating efficiently, tires are properly inflated, etc. A third-party maintenance management company organizes and tracks this work. A complete fleet vehicle replacement included two pluggable hybrids. Fleet MPG increased from 13.9 to 32 mpg and more than 1,000 gallons of fuel were saved from previous years.

Pillar II: Improve the Health and Wellness of Students and Staff

Element IIA: Environmental Health

- The maintenance staff receives annual training in the proper use of any chemicals (if any) they might use, as well as refresher training on how to apply IPM practices. A comprehensive maintenance management system (SchoolDude) tracks all inspections and resulting work to ensure they are completed.
- Staff use only organic products for grounds maintenance and orchard activities. Custodians use only Green Seal certified products.
- Carbon monoxide monitoring is conducted near all fuel burning appliances; the work order system ensures detectors are checked and batteries replaced when needed. The last mercury-based thermostats were recently removed from an older dorm.

- 100% of Thacher classrooms have good acoustics (less than 45 dBA), good daylighting and high-quality electrical light when needed, and good relative humidity control (ASHRAE 30-60%). All classrooms exceed minimum outdoor air exchange rates. 90% of classrooms have views of trees and nature.
- The work order system allows moisture intrusion from rain or other sources to be reported so that work to stop the leak and properly clean the areas is completed in a timely manner. The school has a preventative maintenance program for roofs and gutters to ensure they are inspected and cleaned. Custodial and maintenance personnel are properly trained and have the equipment necessary to clean mold.
- If lead-based paint is potentially present, an area is sampled; if lead is present, it is properly removed to ensure containment. Thacher tests for lead prior to any construction.
- Thacher receives drinking water from the Senior Canyon Mutual Water District. Once the water is received by the campus, the water is in a potable water system consisting of pumps and tanks that are inspected per code. Annual samples are taken by Senior Canyon and results are provided to the campus community. Any brazing or activities on domestic water lines uses lead-free materials.
- Thacher uses only Green Seal chemicals in custodial activities, along with equipment that is more environmentally friendly. The custodial staff are routinely trained.

Element IIB: Nutrition and Fitness

- By working closely with food service provider Bon Appétit, Thacher is committed to provide students, faculty, and staff as many food products as possible that have been humanely raised or grown with the lowest environmental impact possible. For instance, 100% of the milk served is organic; the chicken is also 100% organic and free-range; all eggs are 100% humanely-raised; and the seafood follows the guidelines of the Monterey Bay Aquarium Seafood Watch for sustainable fisheries. Furthermore, starting this academic year, the Environmental Action Committee (the student sustainability organization) started to raise chickens as part of the husbandry program and eggs are collected throughout the week to serve them for breakfast during the weekend.
- Bon Appétit has its own Farm-to-Fork program. Additionally, Thacher currently works with four farms: Earthtrine Farm, Poco Farm, Cuyama Orchards, and Friends Ranch, many of them in Ojai or in Ventura County. During peak harvest season, between 50% and 60% of fruits and vegetables served on-campus are acquired from these and other local farms.
- Thacher's campus includes 25 acres of citrus and avocado plantations that provide those fruits to the school throughout the year. This past year, with the imminent progression of the Asian Citrus Psyllid (ACP) epidemic in the Ojai Valley, Thacher formulated a plan to work with neighboring citrus farmers. This real-life environmental issue was incorporated into some science classes' curriculum. Students helped collect data on the presence of the ACP on-campus, with instruction from the facilities department.
- Thacher also has gardens in five out of six dorms and raises chickens for eggs and hogs for meat. Four hogs are fed with the school's dining hall scraps and are then harvested and eaten by the community to celebrate and close the food circle.
- All students are required to participate in three sports per year—one per athletic season. Sports teams meet five or six days a week for an average of 1.5 hours per day. Except

for some sports like volleyball, basketball, yoga, and dance, most of the activities are outdoors.

- The school also offers rock climbing as a sport during two of the athletic seasons. Within the program, students undertake training in the skills and safety systems required for single and multi-pitch climbs. Students climb daily on the boulders and crags located on the school's property. Students also have the opportunity to travel to locations such as Joshua Tree National Park and the Sierra Nevada to camp and climb on weekend trips. Instruction within the program is focused on a non-competitive but structured program that encourages students to embrace challenge and to learn the direct application of technical safety systems. In this program, sensitivity towards the environment, group collaboration, and personal growth are integral to the curriculum.
- In the 2016–17 school year, Thacher has been promoting wellness initiatives among students including weekly yoga classes, transcendental meditation club with weekly meetings and guided support, and mindfulness exercises incorporated into individual class schedules. The school is also hosting several workshops from renowned wellness experts, including Christine Carter, PhD (author of [The Sweet Spot](#)) and Peggy Orenstein (author of [Girls and Sex](#)), in an effort to encourage positive peer relationships and self-care.
- Thacher provides ample opportunities for students to spend time in the outdoors through the Extra-Day Trip Program (biannual self-propelled 6-day expeditions into remote wilderness areas), participation in the A and B-Camper Training Program, participation in the maintenance of 32 miles of trails on and around the Thacher campus, participation in weekend camping trips to local environs as well as the opportunity for time and reflection in an outdoor setting that is achieved by only a short walk from the student's dormitory or any classroom. Many students enjoy trail access for running, hiking, horseback riding, mountain biking, and rock climbing. In addition, the availability of gardens within each dormitory provides students with the opportunity to engage with the cultivation of native plants and food crops.
- The "Independent Program" also afford students the opportunity to explore activities not formally offered by Thacher under the supervision of a faculty member. Some past related independent projects are mountain biking, trail maintenance, and rock climbing. A current project seeks to codify ultra-lightweight camping strategies for all students and faculty. While many students and faculty have been camping for several years, applying ultra-light techniques across the camping curriculum is expected to increase student enjoyment on trips while reducing the chance of minor injuries (blisters) or discomfort (muscle soreness or tendonitis) that can diminish a student's experience in the outdoors.
- Thacher faculty engage in backpacking trips and are integral to the fitness of students through their coaching roles for various sports. Additionally, yoga and meditation are offered to faculty and staff to provide balanced health and wellness. Faculty and staff have access to the abundance of locally cultivated fruits and vegetables offered in the dining hall. The Thacher Health Center provides health promotion and disease prevention by offering acute health assessments by registered nurses, referrals to the campus physician, outside resources, and annual flu vaccinations.
- Thacher has a robust farm-to-table program in which many fruits and vegetables come from Ojai Valley growers or nearby areas (around 60%). Once a year, the dining service provider, Bon Appétit, organizes a week of healthy and local food awareness where it highlights health and environmental impacts of the food we consume. As part of the community service program, Thacher partners with two senior care centers in Ojai to

offer companionship to senior citizens. Students and faculty visit seniors and share time during meals and on special occasions.

- Thacher cultivates a nurturing environment where students can discover, develop, and hone academic and athletic skills and mature into healthy young adults. Students participate in daily physical activity through organized sports and horseback riding, are nourished with an abundance of locally-sourced fruits and vegetables, and have access to a licensed healthcare provider at all times, keeping students in school and ready to learn.
- Thacher partners with a non-profit organization, Reins of Hope, which introduces students to working with horses in order to build confidence and trust as well as improve communication and problem-solving skills. Additionally, the school offers an elective class in Wilderness First Aid, giving students the opportunity to learn survival skills necessary to experience the backcountry safely.
- Students have access to a registered nurse at the school Health Center and a campus physician is available for scheduled appointments and emergency care as needed. School nurses assess, treat, administer medication, develop a plan of care, and provide appropriate referrals to outside providers as needed for injuries and illnesses. The school retains trained counselors for mental health and counseling needs for any student who elects this service. Counselors come to campus and students can arrange sessions with confidentiality as desired.
- Thacher also has a well-established program for sexual education and peer-to-peer relationships called Human Relations and Sexuality. All sophomore students are required to attend weekly sessions for the fall term that are led by both faculty and upper-level students. All classes participate in health and wellness programs in their dormitories and on campus throughout the year. These programs are led by faculty, or by faculty and upper-level students together.

Pillar III: Provide Effective Environmental and Sustainability Education

Element IIIA: Interdisciplinary Learning

- Each incoming freshman student at Thacher is required to take a “campus sustainability orientation” as part of their official freshman orientation class. Thacher also has a clear set of objectives for environmental literacy:
 - Develop educational programs for students, faculty, and staff that emphasize individual responsibility and leadership to foster ecological sustainability and environmental health, as well as personal health.
 - Provide professional development opportunities for faculty and staff to learn about ways to incorporate sustainability concepts into their disciplines.
 - Use the outdoors, including the school campus, as a “living lab” to learn about current environmental challenges and find solutions to them.
 - Teach, practice, and encourage sustainable living of the entire Thacher community—students, faculty, staff, parents, and alumni.
 - Incorporate information into the Thacher curriculum that will equip students to be well-informed and prepared to confront the ongoing challenge of maintaining a healthy and productive planet without sacrificing the teaching of other crucial topics.
 - Use travel opportunities to learn about cultural approaches to sustainability.

- Use the environment and sustainability to develop STEAM content knowledge and critical thinking skills to prepare graduates for the 21st century.
- Further the understanding of the interdisciplinary relationships between environmental, energy, and human systems.
- Further the development of civic engagement knowledge and skills to address sustainability and environmental issues in the Thacher community and beyond.
- Thacher is working on a long-term plan to incorporate sustainability in all aspects of the school life. In Summer 2016, Thacher sent its sustainability coordinator to a week-long intensive workshop on Educating for Sustainability (EfS) at the Cloud Institute. The goal of this training was to help schools design and embed EfS into curriculum, assessments, and programs. The school intends to send several faculty members each year over a five to seven-year period in order to achieve saturation in the school community.
- In 2015, Thacher conducted a survey to investigate how sustainability concepts are being taught, measured by four different levels of instruction; results showed a substantial degree of engagement across most academic departments. Twenty-five course and program offerings integrate sustainability concepts in their instruction:
 - Level 1: Dedicated courses to sustainability education. These include: Environmental Literature (English), AP Environmental Science, Advanced Topics Environmental Science, Water Resources Seminar, and Sustainable Development in Latin America (Spanish VI).
 - Level 2: Course units with a sustainability focus. A unit is dedicated to sustainability or environmental conservation in Spanish II, AP Spanish, and Marine Biology.
 - Level 3: Lessons with a sustainability focus. Eighteen courses include sustainability in their curriculum through lectures, readings, and discussions, encompassing the subject areas of foreign language, English, science, art, wood design, psychology, government, and economics.
 - Level 4: Place-based education. Engaging students in their local context and environment permeates all Environmental Action Committee initiatives including the horse program, the camping program, the trail maintenance program, and the community service program—working at Earthrine’s and Poco farms in Ojai, beach cleaning, orange picking for food pantry, and working with a local K–8 elementary school (Monica Ros School) on environmental projects. Students in AP Environmental Science apply knowledge of sustainable farming practices to grow a small selection of food crops in raised beds as a part of the curriculum. This project is undertaken in the late winter/spring of each academic year.
- The Environmental Action Committee (EAC) is the hub of all student initiatives related to programs and practices regarding sustainability. Led primarily by seniors each year, this task force is the engine driving myriad projects on campus, including freshman environmental orientation, hog and chicken care and feeding, beekeeping, food waste and composting, electricity use management, water management, dorm gardens, zero-waste events, inter-dorm competitions, environmental and social justice events, construction projects involving PV installation, rainwater catchment and recycling bins, outreach to elementary and secondary schools, and attendance at local town meetings. With a decade’s history of success at the school, the EAC enjoys special stature and respect in the school community. Furthermore, the community service program provides numerous opportunities for student involvement in environmentally focused programs. For example, students volunteer in local organizations, such as the Ojai Valley Green

Coalition, to remove non-native plants from local waterways and plant trees in the community.

- Within the Science Department, the unique campus setting immediately adjacent to the Los Padres National Forest is used for field trip and laboratory work in AP Environmental Science and Biology courses. In addition, the school is establishing a formal ecological study site within an oak woodland ecosystem on-campus for long-term soil analysis, wildlife study, and ecological succession studies.
- Additionally, the school is using the new systems display for real-life data collection (solar, water, waste) to educate the community. Signs throughout campus explain the positive results of some of the projects done in the last three years to conserve water; a sustainability campus map advertises these projects to both the internal and external community.
- Thacher students have teamed with another school in the community to stage a combined one-day conference on Student Leadership in Environmentalism. This is planned for February 12, 2017, and will serve to strengthen the environmental programs in both schools by introducing younger students to the skills they will require to be future leaders in the schools' respective sustainability programs.

Element IIIB: STEM Content, Knowledge, and Skills

- The mathematics department will often use data from on-campus systems or data from California, national, or global trends to have students develop predictive models. For example, the local Lake Casitas reservoir, desperately low at this time (36%), was modeled to go completely dry in June 2020 should environmental factors not change. This was consistent with the findings of experts who also looked at this problem. Many faculty design experiences or learning units in their courses so that students are exposed to STEM thinking and skills. This is most evident in AP Environmental Science and Advanced Topics Environmental Science, but also exists in math courses, AP Physics, astronomy, and Spanish courses. In addition, projects undertaken by the EAC are opportunities for students to learn and apply skills when they are tasked with addressing problems by building solutions including a pig pen, a chicken coop, a utility shed, a beehive, a rain catchment system, etc.
- The management of the school's facilities and the actions of the EAC are explicit demonstrations to the student body of what new technologies, strategies, and behaviors will be needed to sustain our world as we move into the 21st Century. Communication with Thacher alumni also serves as a conduit for students to pursue passions and career pathways as they think about college education and beyond. Thacher is working to establish an alumni group composed of professionals in several fields such as engineering, finance, environmental science, marketing, and medical research to provide opportunities for the student body to learn about careers in the broad sustainability field. This is part of the "Community Connections" pillar in the school's sustainability program.
- Students are intentionally exposed to careers in sustainability through content in AP Environmental Science as well as through visitors to the school. A recent example is the visit of Peter Frykman, a graduate of Thacher and a founder of Drip Tech, which designs, builds, and distributes innovative low-cost drip irrigation to farmers in the developing world.
- Thacher's Golden Trout Wilderness School, a remote campus in the southern Sierra Nevada, is also a valuable tool in introducing the concept of sustainable systems, connecting students to the relationship between communities and their environment, and trending students toward environmentally-oriented careers. Students employed or

attending programs there are introduced to the complexities of a self-sustaining facility, and are responsible for maintaining the water, power, and waste systems that support the wilderness-centered campus. Former students have gone on to environmentally-oriented careers such as range management, forestry, wilderness medicine, and wildlife biology.

Element IIIC: Civic Knowledge and Skills

- In the spring of 2014, six students and two faculty members traveled to Nicaragua to partner with Blue Energy, a non-profit organization working in the rural areas of Bluefields, to bring clean water and clean energy to numerous families in outlying rural areas. Thacher is planning a second trip this coming summer to continue helping needy families in Nicaragua and provide hands-on and first-hand experience to students in sustainable development in the developing world.
- A trip to Costa Rica is also being planned for the 2017 summer. In this trip, students will have the opportunity to experience environmental and social problems in the developing world first-hand. Students will stay with local families to learn about their lifestyles, visit conventional and sustainable farms so they can reflect on the differences, pros, and cons of each method, work in a sustainable farm where they attempt to live only of the land using organic and sustainable methods, attend lectures by renowned environmental scientists, and work on social and environmental community service projects. All students are encouraged to apply (with Spanish II or above) and the school is working toward a funding model that in the future will make it possible for all interested students to participate regardless of financial constraints.
- Many students from the EAC volunteer with organizations in the Ojai Valley to improve the quality of life in the local community. Thacher works closely with the Ojai Valley Green Coalition to collaborate on local environmental projects.
- The horse program requires each new student at Thacher to ride for an entire year and facilitates opportunities and upper-level instruction for upperclassmen to further develop skills. In other words, all freshmen are engaged in the riding program (primarily western riding) for one year. Upperclassmen also participate in the climbing program during the afternoon sports period and choose to ride just as one might join a soccer or basketball team. Furthermore, the spring term in the riding program is devoted to gymkhana which involves athletic competition on horseback in diverse events that require skill, timing, and a profound connection between horse and rider. The spring term culminates in the Big Gymkhana, which is a celebration of horses, riders, athleticism and the unique culture at Thacher.
- For the school's freshman orientation, students head out from the campus to Thacher's Golden Trout Wilderness School for a five-day program of camping, natural history, and sustainability education. It is their first experience as a new Thacher student. With the boys and girls divided into two separate sections, one group hikes into the backcountry facility for a two-day program, while the other breaks into smaller groups and spends two days camping in the John Muir Wilderness. Students at the Golden Trout Wilderness School participate in a sustainability orientation in which they investigate the water, power, and waste systems that allow the remote facility to function. They also participate in a natural history scavenger hunt in which smaller groups head out into the Cottonwood Lakes basin to discover the myriad species of flora and fauna that inhabit this specialized ecosystem. Students on the camping portion of the orientation are versed in Leave-No-Trace camping techniques, taught the fundamental skills of backcountry proficiency, and are given a brief solo experience that aids in ingraining the

profound lessons of a wilderness experience. On the third day, students rotate from the camp to the field and vice-versa. All students at Thacher participate in weeklong camping trips twice a year and have the opportunity to go in other outdoor trips throughout the academic year.

- Thacher is planning to take part of the Living Schoolyard Month (2017) celebration. As part of a leadership position, two senior members of the Environmental Action Committee will be organizing several activities to highlight the benefits of gardening and local food. Thacher has six gardens (one in each dorm) and 25 acres of citrus and avocados where students can volunteer to work and faculty members can use the area for outdoor education.
- Since the school's founding in 1889, the outdoors have played an integral role in the education of its students. Two of the central programs, the horse program and the outdoor and camping program (as described above), teach students in an immersive outdoor setting. Through these programs, students are exposed to leadership training in a number of meaningful ways during their Thacher career. In addition, students are exposed to the importance of developing technical skills (e.g., working with basic tools, seeking creative solutions to problems) as well soft skills such as self-awareness and group awareness.
- Thacher has an extensive horse riding program. The freshmen are required to ride and care for a horse their entire freshman year and many upperclassmen continue to ride throughout their time at Thacher. They learn the basics of animal husbandry, horsemanship, and horse care. All of the riding takes place outdoors on the riding fields and on the extensive and rugged trail system in the mountains behind the school. Students ride in all but the most inclement weather. Instructors talk about the local ecosystem and the mountains students ride in. There are two six-day pack trips per year plus numerous weekend pack trips. These trips go into the Los Padres National Forest and into the Southern Sierra. Sense of place and an appreciation of and coexistence with the backcountry and wilderness are stressed. Through skill acquisition and experience, students acquire a comfort level and love of the backcountry. Pack trips are generally self-contained, following the old adage of whatever you pack in, you pack out; the program follows leave-no-trace camping practices. Pack trips are a lesson in personal responsibility, economy, and teamwork. Division of labor is important and everyone works. Creature comforts are limited in such environments. The students must prepare their own food and create their own warmth.
- Thacher also has a partnership with two local organic farms, Poco Farm and Earthtrine Farm, where students can volunteer to work as part of the service learning program. To date, more than thirty students have volunteered at those farms.
- As part of the "Community Outreach" pillar of the sustainability program, Thacher works with members of the Ojai Valley community to share best practices. For example, the Outreach program presented at the Ojai Green Coalition's Water Awareness Day this fall; members of the public and community stakeholders were able to learn about Thacher's manure composting system and rainwater reclamation projects. Thacher composts its horse manure so that it is appropriate to apply as soil amendment in its orchards or other plantings around the school. Three years ago, Thacher built a six-bay compost facility where it compost all of its horse manure (2.2 million pounds a year), all the organic matter from the dining hall that is not fed to the hogs or chickens, and clippings from the grounds crew.
- Thacher facilities personnel actively participate in the Ventura County Resource Conservation District, the Horse and Livestock Watershed Alliance, and the Ventura

River Watershed Council. Thacher makes presentations and participates in policy-writing and review for each of these groups. EAC members also plan and teach two classes a year on environmental issues (e.g., water and energy conservation, waste management, etc.) at the Monica Ros School, a local elementary school. This past fall, a group of Thacher students and faculty met with their counterparts from the Besant Hill School to plan a small conference on sustainability leadership skills for students of both schools. The goal is to establish a “sustainability consortium” of schools in the area interested in sharing best practices and learning together.

- The Marvin Shagam Ethics and Global Citizenship program is yet another way students can further pursue civic values and sustainability understanding in the curriculum. This program engages students in off-campus and international travel with several goals in mind, among them sustainability and environmental protection. Trips to Nicaragua and Costa Rica are planned for Summer 2017.
- Thacher also has worked hand-to-hand with their food service provider to implement other programs that are helping the school save money, provide excellent nutrition, and help the larger community. For instance, through a partnership with Chefs to End Hunger, an organization that provides food services the opportunity to donate to food banks and food pantries leftover food, Thacher’s kitchen is donating all food in good condition to several food pantries in the Los Angeles region. This program, along with the school’s compost, pig, and chicken programs, eliminates practically all food waste from the kitchen.
- Thacher’s dining service is in the process to receive the Food Recovery Certification (FRC), the nation’s first and only food recovery certification that differentiates and recognizes food businesses that donate their surplus food. Thacher is also proactively pursuing food waste reduction by participating in Bon Appétit’s Imperfectly Delicious Produce, a cutting-edge program to rescue flavorful but cosmetically imperfect produce from going to waste on farms and during distribution.
- Another very unique program that reflects Thacher sustainability education is the Kumana Prize for Sustainability, a grant comprising both monetary and institutional support, made each spring to one or more teams of students in the Junior Class whose project proposals best combine the tenets of learning, achievement, and community with regard to goals of long-term Global Sustainability. Last year, the Kumana Prize was awarded to two group of juniors (now seniors) working on; (Group 1) writing environmental legislation to deal with tree mortality due to the current drought (in partnership with the office of the State Senator Hannah-Beth Jackson); and (Group 2) to engineer and test a cheap, compact, and easily reproducible process/machine to break down disposed bathroom paper towels in a net-neutral system.
- Thacher has partnerships with nationally-recognized programs at the Chewonki School in Maine and the Mountain School of Milton Academy for their environmental and sustainability-oriented curriculums. Every year, on average, two juniors attend these programs.