ROOS INSTRUMENTS, INC.

Corporate Social Responsibility (CSR)

2020 Annual Report

Roos Instruments produces Automated Test Equipment for the world's most innovative semiconductor technology. RI continues to lead the ATE industry with a Corporate Social Responsibility (CSR) management system focused on reaching aggressive goals that reduce our impact on the environment.

Visit roos.com/green for access to this and previous reports.

2020 Energy Facts	
Natural Gas:	2,557 Therms
*Electricity:	157,694 Kilowatt Hours
GHG (Scope 1&2):	18,756 kg CO_2-e

*100% of electricity offset by Renewable Energy Credits
100% California Solar

THINK BEFORE YOU PRINT

Table of Contents

In 2020, Roos Instruments has completed a LED lighting upgrade, allowing us to resume the ambitious 2% annual reduction in electrical consumption targets. Instead of an 80% fixed reduction target that remains the same every year, we are now targeting a continued reduction of consumption every year. We enjoyed the reduced environmental footprint from changes made in previous years.

Purchasing 100% green energy since 2005 has helped us reach a higher standard of environmental responsibility and encouraged us to take this concept one step further. We are proud to offer our flagship product, Cassini, as one of the most energy efficient automated test equipment available, helping our customers set higher standards in responsible semiconductor manufacturing.

"We see this initiative as a wise investment in our future. Meeting energy needs with clean power and reducing the energy footprint of any investment, be it our company or the products we make, is very rewarding." -- Cathy Rossi-Roos, Roos Instruments COO.

Accomplishments

15 Years of 100% Renewable Electricity 100% CA Solar[1]

Over 4 MWh purchased since 2005 from Silicon Valley Power, Green Power Supporter.

Year	2006	2007	2008	2009	2010	2011	2012	2013
KwH	202,634	210,240	230,975	218,975	208,594	209,113	201,336	199,806
% diff	1.24%	3.62%	8.98%	-5.51%	-4.95%	0.25%	-3.72%	-0.01%

Year	2014	2015	2016	2017	2018	2019	**2020**
KwH	184782	202,079	203,589	212,113	211,603	216,584	**157,694**
% diff	-8.13%	8.56%	0.36%	6.13%	-2.24%	2.29%	**-27.19%**

Awarded Environmental Innovator 2010 ***Awarded 2011***

Silicon Valley Power issues the Environmental Innovation Award to organizations for "all around efforts to support energy efficiency and renewable energy."

At Desk Recycling - quarterly recycling, reduce waste, reuse components ***Since 2009***

Each desk has a dedicated recycling container, facilities empties weekly and reports "good to great" compliance and notifies individuals of incorrectly discarding recyclable material in a waste bin. Our vendor, Waste Management, switched from taking only paper and cardboard (separated) to accepting all forms of plastic, glass, aluminum, and paper in one container, increasing individual compliance.

Green Projects - Ideas to improve energy conservation collected from staff ***Since 2012***

Reduce Travel - Telecommuting and Virtual/Web Conferencing ***Since 2006***

Composing – Food and soiled paper waste is collected for composting ***Since 2019***

LED Lighting – Replaced existing fluorescent lighting fixtures with modern lightening standards for brightness, installed motion sensors and replaced all fixtures with LEDs, to eliminate hazardous waste disposal activity and reduce energy use over the fixtures' lifetime. ***Since 2020***

[1] Green Power Facilities – Sources for Renewable Energy Credits
https://www.siliconvalleypower.com/sustainability/santa-clara-green-power/green-power-facilities

Goals for 2020

Reach 72% Reduction of "Peak" Electricity[2]
167,281 kWh Target (26% reduction)
157,694 kWh Actual (Target Beat by 5.73%)

Maintain Natural Gas at 2008 Levels[3]
2,179 Therms Target
3,135 Therms Actual (Target Missed by 47%)

Encourage corporate environmental responsibility with focused programs to increase awareness and building efficiency and increase individual employee participation with "Green Team" awards and incentives. Reduce all electricity usage by 2% year after year of "peak demand." After successfully targeting 10% reduction in 2011, after 9 more years, the target is now 72% of peak demand, representing a 26% reduction overall.

Planned Projects

- Maintain Energy reduction programs to meet future goals
- Cascading requirements - Vendor incentives (monetary and preference) to voluntarily participate in creating a CSR of their own.
- Strive for 100% recycling with facility reviews where all recyclable material is recovered from waste bins prior to dumping.
- Increase energy efficiency of RI systems with software and hardware engineering related to supporting sleep and low power modes.

[2] For 2019, Goal for electrical consumption is 185,686 kWhs/yr or less (80% of Peak Demand, 2008 Annual Usage = 232,335 kWh)

[3] 100% or less of 2008 levels or 2,179 Therms/yr

Green Power Partners

Silicon Valley Power

100% renewable energy from Silicon Valley Power. Verifiable RECs available upon request.[4]

United States Environmental Protection Agency (EPA)

Roos Instruments participates with the EPA Green Power partnership. RI has purchased 100% renewable energy since 2005.[5]

The following suppliers and customers have implemented a similar Corporate Responsibility and Environmental Management System. Thank you for helping Roos Instruments promote good environmental stewardship in the semiconductor industry.

4 Send an email to "admin@roos.com" to request RECs from Silicon Valley Power

5 EPA: https://www.epa.gov/greenpower/green-power-partnership-100-green-power-users-0

Green Projects

RI Santa Clara, CA
Building Area: ~19,600 feet² , Constructed 1978
5,000 feet² redeveloped 2007 with modern HVAC, high efficiency motion sensing lights
The projects listed below contributed to achieving the 2020 targets.

Total Expected Annual Impact for All Projects in 2020: **250 kWh**

Name of Project	*Potential Impact*[6]
Continue Power conservation: Turn off lights when not in use. Use motion sensors for lights frequently left on.	**250 kWh**
HVAC Efficiency Tuning and Maintenance: Assure optimum performance, managed by Environmental Systems.	**80 Therms**

Other CSR Goals:

- Reclaim Used Equipment: Any RI equipment can be returned to Santa Clara factory for recycling. Incentives like free shipping may be available. Publicized online roos.com/contact, and on printed material like docs & service/training manuals.
- Maintain high recycling compliance with "unified" recycling bins located throughout the building that is used for plastic, aluminum and paper instead of separate bins.
- Supply "Green certified" office cleaner and post-consumer recycled paper products in restrooms and kitchens and environmentally friendly cleaning chemicals.
- Divert waste with composting collection bins.

Vendor Letter and qualification:

- Promote vendors who have their own Green programs on our roos.com/green page. Prefer "green" vendors by clearly marking them in our vendor contact databases to enable increased purchasing of equipment and services from preferred sources.

[6] Potential Impacts were computed with the following calculators:
EPA's www.epa.gov/cleanenergy/energy-resources/calculator.html
CO2 Footprint Calculator: www.carbonify.com/carbon-calculator.htm

Future Green Projects

Name of Project — *Potential Impact*

Clean Living — **Waste Reclaim**

Replacing all non-biodegradable products used in the break rooms like foam cups and plates to biodegradable ones.

Sweater & Shorts Days: — **400 Therms**

Wear warm clothing and leave temp down to 68 two days a week in Winter.
Wear cool clothing and leave temp up to 76 two days a week in Summer.

Land Care: — **Hazardous Material Reduction**

Mulching and using non-toxic chemicals for lawn maintenance.

Purchase RECs to offset 100% GHG Emissions: — **100% GHG Offsets**

Employee Activities

Recycle Program: 100% of recyclable material is collected in dedicated bins.
Composing: Divert waste that is not recyclable but will compost to dedicated bins.
Green Waste: Recycle all electronics that are not in use.
Annual Employee Training and Audits: Carpool, how to reduce paper, proper tire inflation, etc...

Support mobile workforce: — **1,000 kWh**

Provide smart phones, laptops and other respources for mobile and remote offices.

Web conference — **Saving Estimated 2.91 Tons of CO_2**

Instead of face to face meetings, use remote presence (video chat) for sales/support.

Cascading CSR Notice — **Reduce Scope 3 GHG**

Top 10 vendor CSR Questionnaire - Cascading requirement letter and questionnaire.

Compliance Enforcement

All local and national environmental laws, regulations and contractual requirements are followed by ensuring that appropriate signs and labels are posted. Employees are notified of changes to requirements via email and are required to attend annual safety training programs appropriate to their tasks. All vendors are certified and approved legal operations, only verified if suspected of violations.

Projects are reviewed by assigned personnel and milestones used to show progress.
OSHA - Computer Workstations & Material Safety Data Sheets (MSDS)

Employees are asked to complete the Green Audit & Survey
RI Headquarters in Santa Clara is included in this program.

Safety Program
All Employees should complete formal training including workstation ergonomics, lifting, emergency plans, and distracted driving. Employees working on the production of RI systems complete electronics safety, soldering iron, lighting, ventilation, and lead exposure training courses. Employees who regularly ship equipment must learn about back safety, maintaining a safe working environment (i.e. no cluttered floors) and proper lighting.

"Green Team" awards are given to RI employees periodically to encourage innovation and participation.

Innovator - finds new and effective ways to meet or define goals
Grind - the person recognized for doing the most to lower consumption, increase reuse, or do the most recycling @ RI Santa Clara
Guru - the person who proves the most aware of RI's current programs (answers most questions right, random drawing if tie)

Example "Green Team" Guru survey questions:

How many kWhs did Roos Instruments consume last year?
How many Watts does a fully loaded Cassini (16 TIMs) use in an hour?
What is the closest Thermostat set at right now?
How many Therms (Natural Gas) did RI use last year?
How many average total miles do RI employees collectively commute per day? (excluding visits from employees normally staffed outside of Santa Clara county)
What is RI's CO_2 Equivalent impact? (mostly due to Natural Gas consumption)

Employee Training Resources

The Roos Instruments' training presentation includes an introduction: "What is our CSR?", an Employee Survey/Audit, and mandatory minimum training. A prize incentive for encouraging a project that saves the most kWh or CO_2. Carpooling is highly encouraged. The thermostat is not 72°F all year round; 74°F in warm months and 68°F in cold months. Employees sent newsletter including links to "More Energy Saving Tips" online. Posters from "Recyclestuff.org" remind employees where to recycle various items. Occasionally "Bike to Work" incentives like free lunch are used to get hooked on cycling as normal transportation. Local Government Programs are used to educate and engage. Email newsletter includes topics like "How to Reduce paper at work" and "Dangers of distracted driving" OSHA's distracted driving brochure explains to employers and supervisors the importance of preventing texting by their workers while driving. Texting while driving dramatically increases the risk of motor vehicle crashes, the leading cause of worker fatalities.

Disclosing Results

The Green Annual Report (this document) published online at roos.com/green includes Roos Instruments' annual usage, goals, projects, analysis, and refinements needed to the Corporate Social Responsibility program.

Fully Loaded Cassini 16

=

800 Watts

Greenhouse Gas (GHG) Emissions

Greenhouse Gas Emissions and Carbon Dioxide Equivalent (CO_2 -e) are calculated using the GHG Corporate Protocol standard[7]. Zero percent (0%) of Scope 1 and one hundred percent (100%) of Scope 2 GHG Emissions are offset by Renewable Energy Credits.

Total Scope 1 & 2 **18,756 kg CO_2-e**

Scope1: Generated by Roos Instruments

Includes RI vehicles, appliances (refrigerators), HVAC systems, facilities, and landscaping.

2000 Tundra 4WD, 6 cyl, 3.4 L (Petroleum - Transportation)[8]	**4,738 kg CO_2-e**
3 Office Refrigerators (Leaking Refrigerant)[9]	**56 kg CO_2-e**
12 Air Conditioning Units (Leaking Refrigerant)[10]	**100 kg CO_2-e**
Facilities (Gas Lawn Care, Blower, etc.)[11]	**142 kg CO_2-e**
Natural Gas (Heating with Natural Gas): 2,557 Therms[12]	**13,720 kg CO_2-e**
Scope 1 Total:	**18,756 kg CO_2-e**

Scope2: Generated by electricity producers (Silicon Valley Power)

100% renewable sources. Natural Gas usage is included in Scope 1.

Electricity: 170,032 kwH **110,789 kg CO_2-e**

100% Offset by Renewable Energy Credits

Scope 2 Total: **0 kg CO_2-e**

Total GHG CO_2-e By Year (excluding Scope 2, 100% offset by RECs)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**
16,328	15,461	15,238	14,220	14,018	13,482	15,009	15,514	13,774	21,623	**18,756**
-	-5.61%	-1.46%	-7.16%	-1.44%	-3.98%	11.32%	3.25%	-11.22%	56.98%	**-13.26%**

7 Scope1 GHG emissions calculation. http://www.ghgprotocol.org/calculation-tools/faq

8 Annual mileage is estimated 7,500 miles/year @ 15 mpg = 0.0667 gallons per mile = 500 gallons of gasoline per year

9 KitchenAid Model: KSF5200EWHO, 5.125 oz of R134b, 0.145291306 kg
Kenmore Model: 106.9618412, 1992, 6.25 oz R12 0.17718452 kgl
Electrolux Home Products: 4.25oz, R134a = 0.1566305 kg
Total from Refrigerant = 0.479 kg
Global Warming Potential Table HFC 134a, 1300 R404a, 3260 R407b, 2285 R407c, 1526 R410A, 1725 source: http://www.ghgprotocol.org/calculation-tools/all-tools

10 GHG emissions from refrigerants (kg CO2-e) = Recharge capacity (kg) X Annual leakage rate x Global Warming Potential - 37.72 kg CO2 -e = 0.322 kg x 0.09 x 1300; Air conditioners/chillers Annual leakage rate = 0.09 (9%) - www.fueleconomy.gov

11 According to the EPA, and one gas-powered lawn mower emits as many pollutants as 8 new vehicles driving 55mph for the same period of time. 30 min per week, for 12 months, equals 16 hours, approx 16 gallons of gas. http://www.epa.gov/cleanenergy/energy-resources/calculator.html

12 0.0053 metric tons CO2/therm - https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references

Energy Usage Details

Electricity generated by Silicon Valley Power

Conservation efforts are monitored with vendor supplied meters.

kWH By Year[13]

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**
230,975	218,917	208,384	208,240	205,462	200,039	195,526	208,068	213,741	212,113	213,225	216,584	**170,032**
10.63%	-5.90%	-4.68%	-0.07%	-1.33%	-2.64%	-2.26%	6.41%	2.73%	-0.75%	0.51%	1.58%	**-26.93%**

Percentage is Year to Year Difference

2020 kWH By Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
16,756	14,198	13,507	12,914	10,897	13,398	16,290	15,762	14,124	16,351	14,636	14,475

Natural Gas provided by PG&E

Conservation efforts are monitored with vendor supplied meters.

Therms By Year

2008	2009	2010	2011	2012	2013	2014[14]	2015	2016	2017	2018	2019	**2020**
2,179	2,135	2,092	1,966	1,924	1,732	1,694	1,593	1,881	1,574	1,648	3,135	**2,557**
N/A	86%	91%	106%	89%	119%	78%	73%	86%	72%	76%	144%	**117%**

Target is same as 2008 of 2,179 Therms

2020 Therms By Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
485	485	288	296	130	22	9	54	64	73	220	431
-37%	52%	247%	921%	1082%	450%	-	-	1600%	248%	-17%	-8%

[13] Started purchasing Renewable Energy Credits in 2005. Totals revised after 2017 audited data correction for month-to-month irregularities.

[14] 2014 amount revised after audited data correction