

HAWAI'I
GEOGRAPHIC
INFORMATION
COORDINATING
COUNCIL

ANNUAL REPORT 2018-2019



ABOUT HIGICC

The Hawaii Geographic Information Coordinating Council is a non-profit organization run by volunteers nominated from Hawaii's geospatial community. We are always looking for people to help grow our organization and to promote GIS in our community.



Board of Directors

The 2018-2019 Board of Directors

(year term up)

Christine Chaplin, President (2019)

Gretchen Chiques, Vice President (2020)

Malie Beach-Smith, Treasurer (2019)

Craig Clouet (2019)

Karyn Nolan (2019)

Isla Young (2019)

Joan Delos Santos (2020)

Rhonda Maronn (2020)

Ted Kwok (2020)

Sam Aruch (2020)

The 2019-2020 Board of Directors

(year term up)

Christine Chaplin, President (2021)

Gretchen Chiques, Vice President (2020)

Mike Wahl, Secretary (2021)

Joan Delos Santos (2020)

Rhonda Maronn (2020)

Ted Kwok (2020)

Sam Aruch (2020)

Craig Clouet (2021)

Karyn Nolan (2021)

Ross Winans (2021)

Colin Lindeman (2021)



PRESIDENT'S MESSAGE

CHRISTINE
CHAPLIN

Aloha,

The HIGICC board is an esteemed group of 11 accomplished professionals representing different levels of government and private companies. This year, it was a great honor to begin my first term as President of the HIGICC Board of Directors.

We have had an exciting, event-filled year, as you'll see in the following pages of this annual report. The highlight this year was partnering with Hawaii Land Surveyor's Association (HLSA) for the first time, to bring our communities a 2 day conference filled with fresh new ideas, projects and technology. Be on the lookout for our next joint conference in 2021! Now, we are wrapping up our year with the annual meeting and social event, that is even more special because we are celebrating our 20th birthday of serving the geospatial community as a non-profit!

The board feels a calling to function as coordinators representing our members and the geospatial professional sector, therefore we give a lot of attention to the input we hear from you to help our board formulate a clear vision of what we should strive to achieve. We have requested feedback from everyone in the geospatial community, both at the conference and via email survey, on how we can be of more value. This feedback will help our programming, which is constantly evolving and being refined to serve professionals and students in the geospatial field.

Above all, we are grateful for our sponsors and members and the time they take to make our community well informed and connected. We have an exceptional bounty of strengths of our board, staff and members, and these strengths provide opportunities to create a resourceful and unique group. I believe that we are beginning to see a new vision of what we are capable of with these resources and my goal as board President is to keep us loyal to that vision. Remember, you don't have to be on the board to be a part of what we do, we welcome your solutions and participation.

Thank you for your part in our vision for the geospatial community in Hawaii, and I can't wait to see what we will achieve together.

Mahalo,

A handwritten signature in black ink that reads "Christine Chaplin".

EVENTS GIS DAY

In 1999, Esri President and co-founder Jack Dangermond began the first formal GIS Day, crediting Ralph Nader as the inspiration behind this day. The goal was to create a fun and educational event to learn and participate in the technological momentum of GIS.

STEMworks partners with the Hawaii Geographic Information Coordinating Council (HIGICC) to bring this "mappiest" day of the year to Hawaii students.

In November, Hawaii students learned the different applications of GIS and how it used in various industries across the islands. During GIS Day Hawaii, students engaged in Science on a Sphere, an Augmented Reality Sandbox, a Virtual Reality Google Earth Tour, Esri Collector Treasure Hunt, NOAA Drone Obstacle Course, a Tour of A Life-Size Humpback Whale, a Hands-on Remote Sensing Activity, GPS Monk Seal Tracker, and a Marine Debris Presentation held at NOAA Daniel K. Inouye Regional Center on Ford Island.

We enjoy taking part in the international celebration of GIS technology. It's important to show others how powerful geospatial technologies are to our students by demonstrating real-world applications that are making a difference in our society.

MAHALO TO OUR VOLUNTEERS &:



35 GIS PROFESSIONALS



85 HIGH SCHOOL STUDENTS



6 GEOSPATIAL ACTIVITIES

EVENTS **Hawaii STEM Conference**

HIGICC was proud to support STEMworks™ and their incredible Hawaii STEM Conference that impacts students each year!

Educators and students were immersed in a dynamic, interactive Science, Technology, Engineering and Math (STEM) during the 10th Annual Hawaii STEM Conference held on May 1 and 2 at the Hawaii Convention Center on Oahu.

This year's event attracted over 1,000 STEMworks™ Service Learning students and 300 teachers from K-12 schools from the islands of Kauai, Lanai, Maui, Molokai, Hawaii Island, and Oahu; along with prominent speakers, industry leaders, and event partners. During this regional technology conference, attendees got the chance to explore the latest technology tools and resources designed to inspire problem solving, critical thinking, innovation, collaboration and communication. They heard stories of inspiration and engaged in activities with some of the biggest names in STEM.



1000+ ATTENDEES



INDUSTRY CONNECTIONS WITH HIGICC



85 STEM SESSIONS



Mahalo to the HIGICC team members for being part of growing the next generation of STEM leaders!

EVENTS

Hawaii Surveying & Mapping Conference

HIGICC teamed up with Hawaii Land Surveyors Association to bring our communities the premier conference of many to come in the future. It was a two day session-filled conference, with amazing guest speakers: Chief of Police Susan Ballard, Esri's Brent Jones, Avalon Group CEO Christine Camp, and Lisa Van Horn from the National Society of Professional Surveyors.

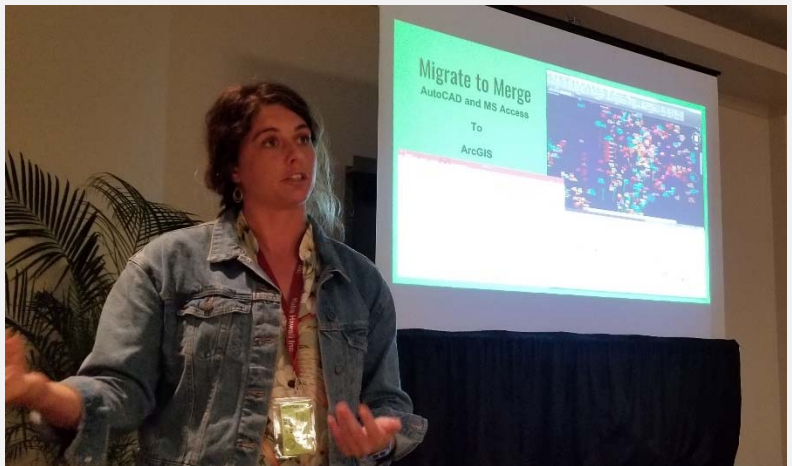
The conference was prefaced by fantastic well-attended workshops: Spatial Data Analysis, and Why GIS Needs Surveyors held by Esri and Mapping & Surveying Real World Demonstrations by Frontier Precision. Folks who went to these workshops had glowing recommendations of the insights they gained by attending.

Attendees benefitted from the combination of two technologies and the presentations offered. There were classes, presentations, exhibits and opportunities for networking.

Mahalo to all of our vendors and presenters who made this great event happen!



273 ATTENDEES



65 PRESENTATIONS



9 VENDOR SPONSORS

EVENTS

Esri User Conference

The Hawaii Statewide GIS Program was the recipient of a Special Achievement in GIS award at the 2019 Esri User Conference, held recently in San Diego, CA. The Program was honored for its work in empowering state employees to leverage GIS technology to improve decision making, coordination, information sharing and collaboration. The program has been able to use Esri solutions provided by the State's Enterprise Agreement (EA) and Esri Enterprise Advantage Program (EEAP) to extend support across agencies. The State's Open Geospatial Data Portal, use of ArcGIS Online and the ability to provide training to a broad audience of State users were recognized, as were a variety of projects undertaken by State agencies, including those involving voter registration, transit oriented development, and vector control.

HIGICC held a pau hana at the Pendry Hotel's 5th & Rose bar for cocktails and lively conversation. Members from all over the state joined us for libations and networking. Thank you to all who came to share this occasion with us, we all had a wonderful time getting to know everyone and sharing conferencing tips. Next year, Esri will hold the UC on July 13th – 17th.



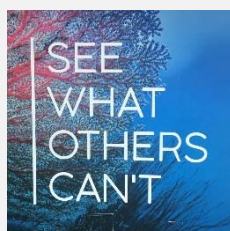
HONORED



NETWORKING




JOIN US NEXT YEAR AT THE ESRI UC



EVENTS

Local Workshops

In May and September, HIGICC partnered with the United States Census Bureau to provide a workshop to learn more about the US Census programs and products. Participants learned about Quick Fact, American FactFinder, and other tools, helping our GIS users to learn more about the census and census products in preparation of the 2020 Census. We look forward to hosting additional events with Eric Coyle from the U.S. Census Bureau.



HIGICC FREE EVENT



Census Workshop
Data on a Deadline:
Accessing Quick Data Reports and
Interactive Maps

Looking for statistics at your fingertips? Learn how to use a variety of data access tools available online at census.gov that can quickly provide a snapshot of you community. During this training, you will learn about U.S. Census Bureau programs and products through live exercises and instruction using tools such as QuickFacts, American FactFinder, and more.

Presented by Eric Coyle, US Census Bureau

U.S. CENSUS DATA

Another exciting event this year was at the Map Library of the University of Hawaii in Manoa, MAGIS Visit and Tour. HIGICC Director Ted Kwok and his colleagues held an open house at the map collection of the library for HIGICC members. We learned about Early and Historical Maps from the region, had the chance to look at historic aerial photographs, and Special Collections maps. We thank Ted Kwok and his team for this great event!



UH MAGIS TOUR

We want to thank Frontier Precision for sponsoring a well attended BBQ at Ala Moana Beach Park this August. There were games, delicious food, fun folks to chat with and of course the Friday night fireworks. It was great to catch up with our members and their families.



MAGIC ISLAND BBQ

SCHOLARSHIP HIGICC AWARD

Yoko Uyehara



I am an undergraduate student at University of Hawaii at Manoa majoring Geography and Environment concentration in Geospatial Information Science (GIS), and working as a student GIS assistant for the University of Hawaii at Manoa. I have learned the importance of conservation, climate changes, skills and knowledge in GIS through different geography courses.

Being a student GIS assistant, I have become more familiar with GIS and have gained real-world techniques and expertise through my supervisor's instructions and suggestions.

Every time I work on my projects, I have learned different ideas to analyze the data, another point of views to look into the results, and, of course, more geospatial techniques. Every step of the remote sensing and GIS projects, it has provided me a significant moment to encourage me to pursue further to learn about the geospatial field. Also, it helps me to get involved in the conservation community to assist their conservation and mitigation efforts using my geospatial knowledge and skills.

This summer, I was accepted in the Office of Coastal Management at National Oceanic and Atmospheric Administration as an intern. My research project is to create orthomaps from historical and modern imagery, then to create classification maps to help the coastal community to understand the sediment characteristics and its locations, which impacts to the coral reef.

Oahu Rooftop Photovoltaic Farm Location Suitability Analysis

GEOG 489 - Yoko M. Uyehara, May 2019
University of Hawai'i at Manoa

INTRODUCTION

Hawaii Governor David Ige has signed a legislative bill, HB2182, to make the state of Hawaii to be the first state in the country committing to Zero Emissions and Carbon Neutrality by the year 2045. It means that the power utilities, Hawaiian Electric Company, Inc (Oahu, Maui and Hawaii) and Kauai Island Utility Cooperative, need to change the existing electricity production method of burning fossil fuels to renewable energy methods. One of these methods is to harness abundant energy from the sun. Since the state of Hawaii, especially Oahu, has nearly 70% of days, 271 days in a year, with sunny days (Current Results, 2019), it is ideal for obtaining energy from the sun through rooftop Photovoltaic Panels or solar farms. There are suitable rooftop solar farms in residential, commercial, and public areas, and these locations are pending approval by the Public Utility Commission and community forums.

Since the solar farm requires a large and relatively flat land, finding suitable solar farm locations on Oahu Island becomes challenging because most land area used for the solar farms are zoned for conservation land or agriculture use. It is crucial to keep the agricultural areas to maintain the current state of Hawaii's sustainability.

Given this challenge, rooftop of commercial buildings and private homes, are the preferred solution because rooftop solar does not impact undeveloped and protected natural landscape.

Since the bill, HB2182, was approved, Hawaii has made the commitment to achieve Zero Emissions and Carbon Neutrality by the year 2045 and utilizing rooftop solar can help in accelerating meeting this goal. Oahu is especially challenged with the highest power load and limited space thus utilizing existing rooftop area to deploy Photovoltaic Solar power appears to be the best option.

OBJECTIVES

- To investigate how much solar radiation the rooftop surfaces receive.
- To measure feasibility of 100% renewable energy consumption by the year 2045 using the building rooftop photovoltaic panels.
- To analyze which locations would be suitable to promote the rooftop photovoltaic solution.

STUDY AREA: Island of Oahu

DATA

- Digital Surface Model of Oahu
- Digital Elevation Model of Oahu
- Building Footprints of City and County of Honolulu
- Census Block Group 2010 Boundary

CRITERIA

- Greater values of Annual Solar Energy Availability
 - Higher Elevation
 - Flatter the Surface
 - Northerly Facing Surface than Northerly Facing Surface
- Large Rooftop Area Sizes

METHODS using ArcGIS

- Combining DEM and DEM of Oahu due to unavailability data of 18M generated from LIDAR data with Raster Calculator
- Clipping the solar energy value layer to rooftop
- Analyzing the rooftop Photovoltaic suitability using Census Block Group
 - Tools
 - Raster Calculator
 - Zonal Statistics as a Table
 - Rankify

RESULTS

Total annual solar radiation of Oahu is over 73,000 Giga watt-hour per square meter. The rooftop solar radiation values are allocated into each census block group boundary and classified into ten classes. There are eight census groups ranked in the highest class, which its average solar radiation is between 144 to 148 Mega watt-hour per square meter. The total annual solar radiation among these eight regions is 1,443 Giga watt-hour per square meter.

CONCLUSION

Through the rooftop photovoltaic location suitability analysis, it is confirmed that Oahu does not have the ability to meet the Zero Emissions and Carbon Neutrality by the year 2045 without further land conversion from agricultural suitable land or vegetation area to mega solar farms. According to Hawaiian Electric's sustainability report 2018, almost 3 Gigawatts of renewable energy were produced by solar, wind, and other sources. Based on these numbers, the total amount of the energy used in the 2018 was determined to be 13.54 Gigawatts. There are at least 18.6 Gigawatts must come from the renewable energy, but Oahu rooftop photovoltaic farms can have 74,300 Giga watt-hour per square meter, 8.18 Gigawatts, which is over 2 Gigawatts short.

In conclusion, the building rooftop photovoltaic solution cannot meet the energy demands of Oahu, but Oahu has a great potential to meet the 100% renewable energy commitment by 2045 with the combination with the mega solar farm developments, further study is necessary.

FUTURE IMPROVEMENTS

To include the following aspects:

- Mega Solar Farm Location Suitability
- Harvest Storage Capacity
- Building's Built Year
- Smaller buildings are better
- Quantity of buildings by Census Block Groups
- Financing Issues
- Avoid flooding area for stable energy production

REFERENCES

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ACKNOWLEDGEMENT

This Oahu Rooftop Photovoltaic Farm Location Suitability Analysis is a part of GEOG 489 course at the University of Hawaii at Manoa. I am grateful to Dr. Qing's in encouraging me to start the work, making suggestions, and finally to complete it.

I would like to thank Mr. Juhua Paulo and Mr. Mahony Limque for providing me useful ArcGIS techniques and suggestions. Lastly, I would like to acknowledge with gratitude, the support and love of my family - my husband, Baby, and my beautiful sons, Justin and Isaac. They all helped me to continue this suitability analysis project.

I am hoping to improve my geospatial skills further and eventually work in the organization where my skills and knowledge can directly or indirectly contribute to mitigating climate change and conservation of the natural environment of Hawaii.

PRESIDENT'S AWARD

HIGICC AWARD

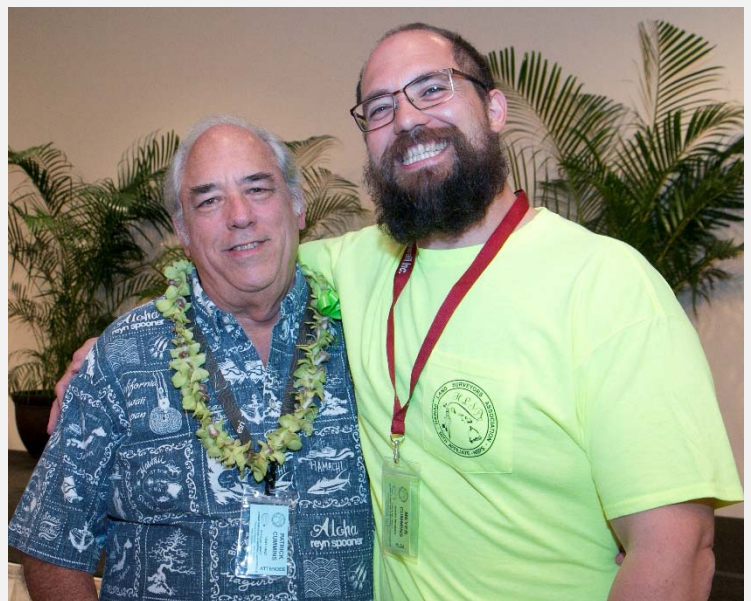
Meyer Cummins



For this year's President's Award, I wanted to honor Meyer Cummins. This year I had the pleasure of working with Meyer to plan the first ever HLSA-HIGICC Conference. He is a kind, hardworking, exceptional leader who does excellent work, always responsive, and positive. This year, Meyer was elected President of Hawaii Land Surveyor Association, and we would like to congratulate him. I look forward to working with him in the future.

Meyer is kama' āina to Hawai'i, born and raised in Kahalu'u on the east side of the island of O'ahu. He is a licensed land surveyor who has been working in the survey profession since his early teenage years. As the son of two licensed surveyors, Pat and Mary Cummins, owners and operators of Hawaii Land Consultants, a surveying and mapping company. Meyer has been conducting field work, doing research and reading maps for more than half his life. He has a B.A. in Geography from the University of Hawaii at Mānoa and is the owner and operator of 'Oihana Land Surveying. Meyer spent several years working as a small business owner before starting a career with the State of Hawai'i's Land Survey Division.

Meyer was elected to the Hawaii Land Surveyors Association in 2017 and is the current President. Meyer lives near Diamond Head on the island of O'ahu with his wife Natalie, and their daughter who enjoys food fights, Mary Jane.



BUDGET

With the support and participation of Hawaii's geospatial and surveying community at the Hawaii Surveying and Mapping Conference we were able to generate a profit of \$11,280 from the conference. The conference profit is used to offset HIGICC's annual spending deficits of \$3,000 to \$6,000 per non-conference year and fund start-up cost for future conferences. Additional to the conference profit we have \$5,070 from membership fees and \$1,000 in donations from our sponsors G70 and Dudek. Total income for this year was \$17,350.

Board expenses include: web site, professional services, travel for board members, licenses and insurance for a total of \$6,143 for the year. The net gain from this year was \$11,207.94. Mahalo to everyone for your continued support.

HIGICC Profit & Loss July 2018 through June 2019

	Jul '18 - Jun 19
Income	
4000 · Membership dues income	5,070.00
4050 · Donations income	1,000.00
4400 · Conference	
4410 · Conference income	
HLSA Awards Dinner Income	1,850.00
HLSA Membership Dues Income	2,800.00
4410 · Conference income - Other	52,560.00
Total 4410 · Conference income	57,210.00
4415 · Conference expenses	
HLSA Award Dinner Expense	-153.88
4415 · Conference expenses - Other	-45,775.17
Total 4415 · Conference expenses	-45,929.05
Total 4400 · Conference	11,280.95
Total Income	17,350.95
Expense	
5100 · Contact management site	1,728.00
5150 · Insurance	718.00
5250 · Fees & service charges	1,409.06
5300 · Licenses & permits	3.50
5400 · Dues	1,100.00
5450 · Travel expense	566.91
5500 · Office supplies & expense	225.61
5650 · Web conferencing service	391.93
Total Expense	6,143.01
Net Income	11,207.94

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