GLOBAL CLIMATE ACTION SUMMIT

AFFILIATE EVENT

Accelerating Climate Action: A Workshop for Community and Education Leaders

Workshop Report

Held September 11, 2018
WestEd Headquarters
San Francisco, CA

This event was primarily supported by the National Science Foundation-funded Climate Change Education Partnership (CCEP) Alliance and National Oceanic and Atmospheric Administration, in coordination with the Climate Literacy and Energy Awareness Network (CLEAN). The organizers were joined by colleagues from across the nation's climate education community who have synthesized a decade of federal agency and philanthropic literacy initiatives to support the event's outcomes.

Prepared by
Frank Niepold, Gail Scowcroft, and Andrea Gingras

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- Billy Spitzer, PhD, Vice President - Programs, Exhibits, and Planning, New England Aquarium
- Kristen Iverson Poppleton, MS, Director of Programs, Climate Generation: A Will Steger Legacy
- Elena Sparrow, PhD., Education Outreach Director, International Arctic Research Center (IARC)
- Oliver Sellers-Garcia, Director, Office of Sustainability and Environment, City of Somerville
- Mil Niepold, Founder and President, The Mara Partners
- Sarah Schoedinger, Senior Program Manager, NOAA Office of Education
- Anne Gold, Director, CIRES Education & Outreach, Climate Literacy & Energy Awareness Network, Co-chair
- Malinda Chase, Tribal Liaison, Alaska Climate Science Center, International Arctic Research Center
- Christina Nicholson, Director, Environmental Impact, Sustainable Innovation, Global Sustainability, Gap Inc

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- Haley Crim is an intern with the New Knowledge Organization and a rising senior at Bates College in Maine. She is majoring in environmental studies and minoring in physics and Russian.
- Silas Swanson is a Sophomore Earth and Environmental Engineering major at Columbia University, and member of Youth Climate Advisory Board Member at The Wild Center
- Samaa Eldadah is a senior at Sandy Spring Friends School. She is a goal-oriented and team-minded worker. Her interests include policy, advocacy, and education.

This Workshop would not have been possible without all of the passionate climate change education, civic engagement, and workforce development grantees, program leaders, and municipal leaders who joined us in San Francisco, California before the 2018 Global Climate Action Summit from across the country for a day of shared learning. Thank you for participating, and we look forward to continuing this important work with you.

Credit: Jim Callahan

Director, Mobile Climate Science Labs

Workshop Overview

This workshop, held in conjunction with the Global Climate Action Summit (GCAS), was a forum for community, business, and education leaders to showcase and explore models that build the social will and capacities needed to assist communities and businesses in reaching the net zero emissions by 2050 needed to achieve the Paris Agreement's aspiration for a cap of 1.5 degree climatic warming. Participants worked together to develop options for integrating climate change education, community engagement, and

workforce development activities into local climate action plans, with the goal of accelerating and supporting place-based climate solutions.

The Workshop's objectives were to:

- Explore how climate change education, community engagement, and workforce development programs are assisting communities in their ambitious climate action goals for the coming decades; and
- Identify how community and business leaders can work with climate change education professionals to meet the goals of local and regional climate action plans.

Effective climate change education, civic engagement, and workforce development are critical components in helping communities reach their climate action goals. The event supported community leaders by connecting them with effective climate change education partnerships and U.S. climate education leaders, who are supporting communities to seize the opportunities of a post-carbon and climate resilient future.

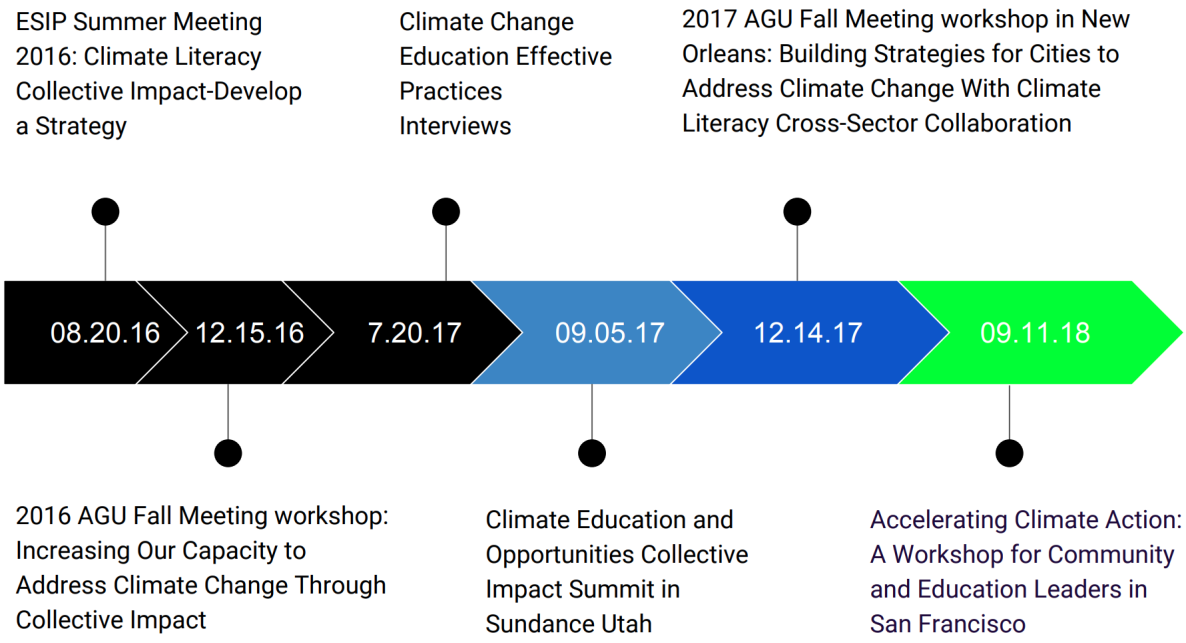

Figure 1: The Workshop was built on work that resulted from numerous events, including the American Geophysical Union Education Workshops and a summit and a multi-day planning meeting at the Earth Systems Information Partners summer meeting in 2016.

The Workshop was primarily supported by the National Science Foundation-funded Climate Change Education Partnership (CCEP) Alliance and National Oceanic and Atmospheric Administration, in coordination with the Tri-Agency Climate Change Education Collaborative, and the Climate Literacy and Energy Awareness Network (CLEAN). The organizers are joined by colleagues from across the nation's climate education community who have synthesized a decade of federal agency and philanthropic literacy initiatives to support the event's outcomes.

Credit: Frank Niepold

Senior Climate Education Program Manager, NOAA Climate Program Office

A. Panel One: The Private Sector - Innovative Partnerships to Accelerate Implementation of Climate Action Plans (Moderator, Mil Niepold)

Objective: Use the power of example to inspire new partnerships between the private sector, communities/municipalities, and education professionals that will accelerate implementation of climate action plans in synergistic ways.

1. Sasha Radovich, Director of PACE Personal Advancement, Gap, Inc.
Sasha Radovich works with the Gap Corporation and Gap Foundation supply chain empowering women in the combination of their Foundation and their actual cooperation. GAP is connected to multiple other brands. Consider the entire supply chain of all their products and all of the effects. They've performed an entire life cycle analysis of their products, from the water used in production, to the farmers for their materials, to shipping to selling of their goods after being sold. They don't have a direct relationship with the farmers but understand where their water use is largest. They are a 16 billion dollar company.

Foundational things and improvements that they will never stop trying to improve: water use, waste production, getting 100% of their factories green or yellow rated. A goal is to save 10 billion liters of water through cotton sourcing and their manufacturing processes. PACE is their advancement program. Gap has tried to leverage some of their goals to see if they can move forward on departmental goals. Women in Water Program: Work with mill, cut, and sew workers. Second largest water use is milling. Inspiration/Connection: Average 6 hours a day for women and girls to take the brunt of the work searching for water. Most of this collecting is through groundwater, an increasingly scarce source. They teach women life skills, such as time management, advocacy skills, and financial literacy. They attempt to create female community leaders around water health decisions through training programs:

- Advance self-efficacy
- Accelerate access to WASH (water, sanitation, and hygiene) services

- Aggregate stakeholders to improve water supply and sanitation financing availability (microcredit programs) and management of community water resources.
- Share information, collaborate, and build partnerships across and beyond the apparel sector to further the impact and extend the reach of the partnerships.

2. Brent Habig, Vice-President, International Programs, Institute for Sustainable Communities
The Institute for Sustainable Communities (ISC) is a Vermont based NGO focused on implementing climate action in cities and manufacturing/supply chains. Brent works in the U.S. and Asia, primarily China, Bangladesh, and India. He also works with Walmart, Apple, and GE. He addressed the resources and opportunities that the private sector can contribute to education initiatives.

Non-corporate organizations need creativity, time, patience, and an understanding of cultural differences between academia, corporations, and NGOs; but working together is a huge opportunity. Even if you can identify a shared agenda between you and a company, things will still fall through the cracks. You need to bring in other organizations/businesses to make sure it works. You need to work on the long game.

Example: 25% of Asia's emissions come from manufacturing. The Institute for Sustainable Communities worked with universities and companies to figure out why. They identified a lack of skilled factory managers, so they created a coalition between government, companies, academia, and NGOs, launching training centers in China, India, and Bangladesh. They were run by universities as separate centers for workforce development. This was not easy to do, as culture was a big issue, especially for universities who had to learn to sell their training services to factories. Pricing needed to be low, but training centers needed to be profitable.

ISC came in as a catalyst and the glue, persistence, and grit to carry this through. We had to stay the course during slow work.

3. Maura McKnight, Executive Director, Business Council on Climate Change
The Business Council on Climate Change (BCCC) was started by former Mayor Gavin Newsome. BCCC works with a mix of San Francisco Bay Area companies across industries. People are innovating, joining RE100, and committing to science based goals. The Bay Area is sort of a bubble, but it's a good place to rehearse for the future. San Francisco has grown the economy 110% and population 20%, while reducing emissions 30% below 1990 levels. It's possible and replicable. Quebec has done it too. BCCC works on procurement and policy as a way to connect government to business leaders so that they can weigh-in on the other's plans. BCCC has been building a model of how to have local government and business work together to accomplish climate goals. They have leveraged local government and business partners to lower the price of photovoltaic systems and electric vehicles in the Bay Area.

It's critical to reach across sectors, but it's not easy. Private sector brings products and services, employees, and influence to the table. Getting them to work together is extremely important. Education and research sectors are needed to address training and education for employees, which is a huge opportunity and corporations are interested in it.

4. Participant Questions for Panelists
• How do you ensure that everyone is doing the work that they agreed to?
Need to convene dynamically and harness inputs of companies while they're there. Need to keep recruiting more partners.
• How much STEM and climate/environmental education is GAP doing with women?
PACE focuses on life skills in communities or factories. It's not like a school. We don't call it education, instead calling it skills development. We need to get men to step up to the table. Women can't solve everything. We need everyone.
• What work do you do with nonprofits?

The BCCC works with NGOs but doesn't have a specific model. We need to figure out their niche and level of service to member organizations. We pull in people who are working with nonprofits. We want to work more with them in the future.
• Do you ever think about partnering with small businesses?
At Gap, we've worked with small organizations through PACE, but have been consolidating suppliers in order to have more control over the supply chain to address water and energy issues. A lot of global brands have restrictions on how small you can go because of risk can be a huge obstacle, especially when working with local businesses and activist organizations.
Startups are critical too-. We need to support entrepreneurs as a part of the private sector. Half of India's emissions come from small businesses, but there's no way to reach them; and their process of change is more complex. We need to identify creative solutions, like upgrading motors via loans, to reach them.

5. Panelist Quotes
Sasha
"We think about our product as a whole life cycle."
"We are trying to leverage our scale - we are a $16 billion company across all of our brands- on things where we can make a big impact."
"We are trying to make sure that industries and communities have shared access to a resource as important as water."
"It's a complicated systems approach to an already complicated issue."
"We're harnessing a big moment to try something new" Sasha about Women + Water

Brent
"There is an enormous number of opportunities for the private sector to contribute"
"We're seeing companies shift from shareholder to broader stakeholder value"
"There's no shortage of examples of businesses going far into climate action"
"Business leaders have been stepping forward into the vacuum of climate leadership."

Maura
"Companies are getting more bold, more activist, and they're willing to take risks."

B. General Session One: Resource Matching Gallery Walk (Moderator: Mil Niepold)
(based on pre-Summit Survey Monkey results)

Session Objective: To showcase the current array of existing educational tools, strategies, and models and offer participants the opportunity to match their needs to various tools and resources based on survey results.

Participants reviewed the posted, thematically grouped survey results that are related to what participants indicated they were aiming to achieve locally in the coming year, as they address climate change and implement climate action plans.

Effective Climate Change Communication Resources

Material	Information	Suggestor
Powerpoints, videos, films, fact sheets, workshops and activities to enhance climate and resilience communication and understanding		
Fun experiences in climate science (why what the company is doing is important), climate science demonstrations: LIUK (sp) comes to you in the Bay Area, Youtube for the rest of the world		Jim Callahan
CLEAN Project (resources for communicating and teaching about climate change)	https://cleanet.org/index.html	
Social science and psychology of climate communication, youth solutions	youngvoicesfortheplanet.com	
Our Climate Our Future- online climate education resource of videos and lesson plans	ourclimateourfuture.org	Reb Anderson
The Secret to Talking About Climate Change- toolkit to having an open, discussion-based climate conversation	https://ourclimateourfuture.org/video/secret-talking-climate-change/	Reb Anderson
Create storytelling models that connect climate with personal experiences. Also demonstrating strategies for change.		Andrea Torrice
National Network for ocean-climate change interpretation Evidence based communication technique	www.nnocci.org	Bill Spitzer
NCSE teach	ncse.com/dealingwithdenial	Brad H
Cal Academy Educational Videos		
Benevity employee engagement platforms		
CivicLight.org provide behavioral science led communications strategies	CivicLight.org	Mica Estrada
Climate Change Spiral		Barbara
KQED Science	kqedscience.org	
Simple appealing visual arts and animations that engage people i basic climate science especially the carbon cycle.	racheldodge.com	Rachel

Global Weirding with Katherine Hayhoe Videos		
Conservation Psychology		Cynthia
ClimateInterpreter.org		
Sustainability champions awards program		
Interpretation skills making info relevant to audience. National Association of Interpretation workshops to develop these skills.		Constance Taylor

Workforce Skills Development

Material	**Information**	**Suggestor**
Teen Advocates for Science Communication @ Cal Academy		EB
YoungVoicesForThePlanet.com		
NCSE Teacher Ambassador Program ncse.com/teach	vimeopro.com/ccespace/tmeo-webinars	Brad H
Shared internships		MB
GLOBE Program www.globe.gov		
climateinterpreter.org		
Vfeprojects.research.pdx.edu Virtual walkabouts of examples of sustainable development and habitat restoration		Frank Granshaw fgranshaw@pdx.edu
Climate Interpreter	Climateinterpreter.org	Allison Artega
Climate Matters- highly produced scientific material often localized to US cities. Weekly production with vast library, graphics, and videos	http://medialibrary.climatecentral.org/about-us	Bernadette Placky
Surging Seas- sea level rise info localized to US and global. Includes impact info in the US.	http://sealevel.climatecentral.org/	Bernadette Placky
ACE Leadership Development Toolkit- for youth climate leaders	Coming soon!	Reb Anderson
Civic engagement and democratic practice education workshops	https://www.youngvoicesfortheplanet.com/	

CTE Programs and courses- internships/fellowships/projects/partnerships		
Climate Corps: recently graduated professionals in nonprofit, for profit, and government agencies.	SEIinc.org	2 people suggested
CLEAN Project educational materials	https://cleanet.org/clean/literacy/index.html	
Pacific Energy Center- San Francisco Howard Street	https://www.pge.com/en_US/business/services/training/training-centers/pacific-energy-center/energy-centers.page	Jim Callahan
State of WA Career Connected Learning Resources	http://wtb.wa.gov/CareerConnectWA.asp	
State of WA K12 Climate Literacy Network	ClimeTime	
SimScientists climate and weather formative and summative instructed modules	https://simscientists.com/login	Jon Boxerman
Energize colleagues- internships, degree programs, school as a learning lab, fellowship	SEIinc.org	
GLOBE project-based science activities (NASA) CTE schools, climate science institutions, workforce development	https://www.nasa.gov/solve/feature/globe	Jon Boxerman
Workshop/talk on environmental education (teacher training)		Maye Padilla

Community Engagement Programs

Material	**Information**	**Suggestor**
Solar energy education	solarschoolhouse.org	Tor Allen
Project Drawdown: 100 Solutions to Reversing Global Warming	drawdown.org	Tor Allen
"The Parents Guide to Climate Revolution"	Book by Mary DeMocker	Tor Allen
Youth-led community engagement and advocacy	https://www.imatteryouth.org/	Larry Kraft, larry@imatteryouth.org
Guide to Public Engagement with Science	Publicengagementwithscience.org Associated forum archive to launch by 9/30	David Sittenfield

NOAA Education supported resilience education projects	noaa.gov/office-education/elp/grants/awards	
Coal and Ice photography exhibit	NOW at Fort Mason	
School of Environmental Leadership: integrated education engaging hs students in local climate solutions	thesel.org	
Climate Reality Project Communication Resources	https://www.climaterealityproject.org/	
Hands-on activities to engage city residents on climate change and local climate adaptation plans		Rachel Valletta
Increase opportunities for regional cross sector dialogues through art and storytelling		Andrea Torrice
Climate summit embedded in the 2018 CA Science Education Conference (Targeting K-12 +informal educators) Goal to increase content understanding and classroom instruction	Pasadena, Nov 29-Dec 2nd	Jill Grace
CLEAN Project engaging educators	https://cleanet.org/index.html	
Employee leadership campaign support for behavior change in water, waste, energy, and transportation		Emily Courtney
Bolinas Lagoon restoration at Kent Island project	https://farallones.noaa.gov/	NOAA Farallones
Sanctuary Soirees lectures - art and science	https://farallones.noaa.gov/	NOAA Farallones
Sanctuary explorations via kayak, paddle board, ext.	https://farallones.noaa.gov/visit/exploration-program.html	NOAA Farallones
Many climate change adaptation plans for coastal areas	https://farallones.noaa.gov/	NOAA Farallones
Sanctuary Advisory Council	https://farallones.noaa.gov/	NOAA Farallones
Engaging climate change overview, current and projected local impacts, what individuals and communities can do as adaptation strategies		Art Sussman
One Planet lifestyle guide/module	http://wwf.panda.org/wwf_news/?151361/One-Planet-Lifestyle-e-book	Maye Padilla
Community art/murals on environment	Dolphins Love Freedom	Maye

	Network	Padilla
Climate Matters: network of 600 meteorologists, includes library of localized scientific content for 2440 cities	medialibrary.climatecentral.org	
Middle school science curriculum that inspire students to build a more sustainable world	greenninja.org	Rebecca Au
Citizen Empowerment Program- disaster prep, low carbon living, water stewardship, livability, empowerment	coolblock.org	Sue Lebeck
3rd to 12th grade students engage in global dialogue about climate change and teacher training	storypal.co	
ACE Action Fellowship- in person, youth climate leadership development program for ages 15-20		Reb Anderson
Practice Briefs- local ecological knowledge, place based education, language, assessment, indigenous knowledge		Sharon Nelson-Barber
Certified Wildlife Communities		NWF CW
Bioblitzes to document biodiversity		
Free field trips and programming and family nights at Cal Academy		
NCSE Science Booster Clubs	ncse.com/scienceboosterclubs	Brad H
Short videos about how to take action re:climate friendly lifestyle	Ecology Action	
Alaska Arctic Observation Knowledge Hub		
Technology for sustainable communities	tsc@ssuinstitute	
New England Aquarium Models for partnering with local communities to build climate resilience		Billy Spitzer
PolarTREC.com lessons videos webinars related to teachers/scientist partnership in polar regions.		RS
Professional development workshops that individual educators, community members and youth leaders can do.	Arctic and Earth Signs	
Free Online toolkit to plan a youth climate summit		Jen Kretser

USDN A guide to equitable city climate action planning		Garrett Fitzgerald
Framework for an education program that addresses 1). Reducing our carbon emissions and 2). Reducing childhood obesity		Meagan
Climate change tours		Michel Boudrias
Design thinking framework for middle and high school		Nik Evasco
Climate Education Toolkits	www.sandiego.edu/climate	Mica Estrada
Youth Climate Leadership Program Model "Climateens"		Billy Spitzer
Cool Blocks	coolblock.org	Barbara
Outdoor/environmental programs about bay area issues sand ecology		Constance taylor
City as a Living Laboratory		Mary Miss
Eve Mosher: High water line toolkit arts and sea level rise.		
Middle School curriculum	rebecca@greenninja.org	
Professional development training for community leaders		GS
Local Environmental Observation Website	LEO	
Adapt Alaska Website	www.adaptalaska.org	
Network of Climate Adaptation Science Centers	https://cascusgs.gov	

C. Panel Two: Community Leaders – Partnering to Implement Change (Moderator: Gail Scowcroft)

Objective: To highlight the diverse partnerships that are needed to build social momentum and ensure community climate action successes and offer the nuts and bolts of how education can support communities

1. Garrett Fitzgerald, Strategic Collaboration Director, Urban Sustainability Directors Network
The Urban Sustainability Directors Network (USDN) is a very active peer network, developing internal partnerships to learn from one another. Specific problem areas are tasked, and they host groups to work through shared experiences and tools on that issue. There are 17 groups currently running, with each

focusing on a different topic or challenge. The groups meet by phone for an hour each month. It is a forum for sustainability professionals to have a safe space to work together and learn from each other.

Examples of USDN partnerships: Marin County developed the Game of Floods to help people better understand resilience planning. Other educational partnerships have involved higher education institutions, providing training to their students. During other times, it has been joint statements or facilities goals between education campuses and cities.

Real partnerships are action oriented and are not transactional but are meant for the long term. Ask "what are we going to be good at?" Academic and city projects often are based on different timelines, and this has to be taken into account. Inherently, all of us are in a long partnership together. Every collaboration is unique, but the common pieces are an authentic appreciation for each other and their goals and a desire to work together on a big project. Partnerships have to be clear in their roles, have a shared vision, honesty in what they bring to the table and the capacity they have, and accountability to each other. They need mutual agreement to make adjustments to the partnership and ways to communicate when things aren't going as well.

2. Oliver Sellers-Garcia, Director, Office of Sustainability and Environment, Somerville, MA
Somerville is the densest population center in New England, therefore it faces some unique challenges. The city's Office of Sustainability and Environment (OSE) focuses on corporate sustainability, as well as citizen sustainability. It was the first municipality in Massachusetts to have a community-wide carbon neutrality goal. The city has a very action-oriented climate action plan focused on decarbonizing energy and transportation and preparing for heat waves and flooding. Despite having a large higher education presence, at least geographically in the area, there isn't always direct engagement with those partners.

Education is a long term goal for building a constituency for climate action. There needs to be a community that is ready to make big decisions when something that isn't in the climate action plan comes along. Education is the malleable skill set that can be applied when that situation arises. Municipalities would like to engage and put their problems out there.

Example: The Mystic River water association, is a decades old advocacy group focused on recreation and pollution prevention. Complementing the OSE seems obvious, but the nuance is that the two groups not only agree with what each other is doing but can enhance each other's work. The city has jurisdiction over what Mystic does; meanwhile it has a good audience for education, and the city has an audience for policy and rules.
We want to develop surrogates for the climate message - people who aren't in the city government need to go out and empower the message.

3. Enei Begaye, Executive Director, Native Movement
It is important to understand who the ancestral caretakers of the land are and acknowledge them. Education is a tool in the history of colonization and assimilation of native peoples. Remember that history and bring it into education. Native Americans are less than 2% of the U.S. population but are caretakers of 40% of the country's natural resources, especially oil and gas. Native Movement is based in Alaska. Even if everyone meets Paris goals, Arctic temperature rise will still be well above two degrees Centigrade. Even current standards of success with full implementation of Paris is not enough. Note that even "success" is not enough. There is a lot of knowledge and power with the people of the land. It is important to make space for their knowledge and bring in community organizations as equal and knowledgeable partners. Fairbanks Climate Action Coalition is a base of over 600 active members in the interior of Alaska. The Coalition makes it okay for people to speak out and have the strength to push back on those close to them. This educational organization has changed the dynamics of action on climate change. There is conversation about it now with leaders and conversation about their plans, rather than just complaints about inaction. This coalition brings together local knowledge and looks for other partners

to help make things happen. We are also working on bringing 1MW of solar to low income people in Fairbanks.

4. Malinda Chase, Tribal Liaison, Alaska Climate Science Center (ACSC)
When there are representations of Native voices, there is a source of strength to be included in these types of settings. It is important to understand who is being affected disproportionately by climate change and recognize who is not at the table. They should be invited without making them a token or someone to rescue. There is a need for native teachers to drive teaching about their own native knowledge and worldview. Getting their voice involved is really significant, and inviting native people to events like this opens up opportunities that they'd never have access to before and gives everyone else the opportunity to learn from an important but under-heard source. Dialogue between elders, scientists, and young people benefits everyone, because all of those groups don't normally have access to the other's knowledge.

5. Participant Questions for Panelists
• What are examples of risky partnerships you've been involved with?
Native Movement worked on the Just Transition/Green Economy work in CA and Arizona with the Navajo nation. We worked on a partnership with California Ratepayers to make sure money for shutting down a coal plant went to investing in sustainable energy on reservations instead of Southern California Edison. It was a risky partnership, but it worked.

OSE worked with renters, students, young professionals, and other people who won't be in the city very long. We need to engage those people so they don't neglect the city, because they're there temporarily, especially because Sommerville's population is ⅔ house renters.

The ACSC needs to work with the land - what is the land we're living in, how does it work, etc. It's a very important partnership- Partnerships don't just have to be with institutions.

There's a couple of really cool pdfs that the City of Seattle put out and the community organizations in Oakland put out, both concerned with enabling stakeholders who aren't currently involved as much with either side. The Oakland Climate Action Organization wrote more than half of the climate action plan. It was a coalition of 40 social justice, tenants rights, etc. organizations that worked together to create an intersectional plan. The city was afraid to work with the organization, but it worked really well. Cultivating those relationships is really important for cities.

• What happens when you bring militant deniers into the conversation? How can you involve them as community members but not let them control the conversation?
They started an interfaith working group that works with the evangelicals as well as UU churches in Alaska. It's all about the tipping point - you have to build a culture that confirms and celebrates that climate change is real and goes further. It is also necessary to build a base of people calling for action so the people calling for no action can't be heard.

Itis important to spend time with native american scientists who are struggling with how the Native communities have distinct and unique voices in this and their approach to environmental issues. It is essential to reframe the conversation and have the native voice present. It is more than equity and acknowledgement. It is also about allowing for Native leadership and a new voice to be a force in the discussions about climate action.

Native languages are at a critical point. Gwich'in is the most widely spoken in Alaska. Language informs worldview, i.e. we weren't taught to say there's bad weather, but to see the weather and prepare for the day.

Local governments recognize that deep community engagement and education are essential, it falls off the priority list when it comes down to the wire. How can we put an economic value on this work and keep it a priority when stressors need us to focus on say "solar array preparation for upcoming storms."

The Summerville OSE is a service-providing, taxpayer funded office, and we can't do everything. We justify some of the value in our actions by saying we could have done ten things and these are three we did. Accomplishing all of the priorities isn't possible, but we can work with other departments and organizations to cover more. Funding resources are based on what has the most quantitative impact.

6. Panelist Quotes
Garrett
"Partnerships shouldn't just accomplish their goal. They should make each partner better."

Oliver
"Education is a long term goal for building a constituency for climate action."
"We're in the same league but not on the same team - we complement each other"
"We want people that are not the city (government) going out and talking about these issues and projects."
"Sometimes you don't like being yelled at during a city council meeting, but sometimes it's necessary to hear what the people think"

Enei
"Elected leaders are only concerned about the next four years. We need to push them and hold them accountable for the future."
"We have no lack of technology. We know the science. What we're lacking is the political willpower."

Malinda
"If this is about the Arctic, then where are the native people?"
"Have it not be a token representation, and be sure you aren't 'rescuing."
"The language that is used in these convening spaces does make a difference, and balancing the voices heard does make a difference."

D. General Session Two: Education Leaders as Partners (Lightning Round; Moderator: Billy Spitzer)

Session Objective: To give city, community, and company leaders practical guidance on how to integrate education throughout a community and how this accelerates action on climate – while leveraging what everyone does best (further building on the Resource Matching exercise from the morning)

Represented Initiatives (4 minutes each)
1. William S. Spitzer, Ph.D., Vice President - Programs, Exhibits, and Planning, New England Aquarium and Director, National Network for Ocean and Climate Change Interpretation (NNOCCI)
Private activity for public good equals informal science centers. Visitors to these centers are more likely to be voting and actually wanting help to do things about environmental work. Science centers are conveners on these issues and can translate science in a way that is relevant and exciting for the public. Science centers can discuss solutions and make a theme exciting (read: partner with government on their solutions) in a depoliticized setting. The network of science centers is its own powerful tool in itself.

2. Michel A. Boudrias, Ph.D. Associate Professor, Environmental and Ocean Sciences, University of San Diego, Climate Education Partners (CEP)

CEP decided that it was important to work with key influentials (CEOs, elected officials, tribal leaders, etc.). CEP works with an audience that is not the typical audience for educational professionals. We use behavioral psychology to connect and translate science for these influentials. CEP has also worked on workforce development and worked with students at all stages of training. The idea of these projects is to provide the opportunity for decision makers to be engaged in climate change conversations. We did this through physical tours to sites of climate impact and personal discussions with scientists. We also provided opportunities for them to talk amongst themselves.

3. Carey Stanton, Senior Director for Education and International Marketing, National Wildlife Federation (NWF), Eco-Schools
The NWF does half of our work on environmental education. Our Eco Schools program has a 20 year history, being joined by all nations (the U.S. and China being the last two to join). We have 25 years of best practices in greening a school curriculum, their grounds, engaging their parent and administrator communities through project based learning. We are active in 10,000 schools in the United States. There are 12 pathways for schools to follow. More and more we are partnering with school districts and town administrations to move their schools through the process of becoming an eco school. Becoming an Eco School can be a selling point to private and public sector officials because of its cost effectiveness in reducing bills for water, energy, and waste. Eco Schools is relying more and more on partnerships with communities in order to finish their projects.

4. Cyane Dandridge, Strategic Energy Innovations (SEI) Energize Schools
We design curricular units that are implemented in schools, as well as teacher tools to show them how to teach climate. We also conduct college programs around climate and start new climate internship opportunities and job training for students to go into the climate sector. We have established a School of Environmental Leadership in San Rafael and partnered with iMatter to work on resolutions in San Rafael. SEI also has a climate corps program to connect college students with useful positions within municipalities.

5. Jen Kretser, Director of Programs and the Youth Climate Summit Initiative (YCS), The Wild Center
The YCS is a global program that convenese and engages youth to act on climate in their communities. We host youth climate summits for students to come together and learn about local impacts and solutions and then teach them how to write their own action plan for their school and community. We expose students to ways that they can work with their community partners to act on climate. We don't have a curriculum but develop youth leadership and basic knowledge that leads students to action plans that can make current sustainability actions more visible. We have worked directly with the New York State office of climate change, which sees our youth summits as a pathway for promoting their climate smart communities program, finding students as stakeholders that can spark plug climate-smart community work. Each student at summits will write their own action plan, and this leads to diverse impacts. Place based climate education events to build community support from the students up.

6. Reb Anderson, Director of Education, Alliance for Climate Education (ACE)
ACE is involved with messaging and training for students, based in a context of justice and societal involvement. We have extensive partnerships with other organizations. Our work in Reno, based on strong community relationships, has led to high grant funding. We have held place based education events to build community momentum. We also sparked the "idle free campaign" with local partners, and saw a 40% reduction in idling time. This inspired the school district to pass a comprehensive plan for energy conservation and emissions reductions, and this is now leading into Reno's climate action plan.

7. Daisy Meyer, Grid Alternatives
Grid Alternatives installs solar exclusively for income qualified families in the San Francisco bay area. We also work to make solar/green workforce job training available to area low income families. We are working in California, Colorado, Nicaragua, and DC. We bring people out into the field to conduct orientation programs to show organizations and communities the low barrier to entry into the green workforce industry. There is probably something that you're doing in which other underserved populations can realize they are capable of participating. Make the invitation and run the program that will show underserved communities how they can be involved in these trainings. Find new ways to invite the right people to the table.

8. Ann Reid, Executive Director, National Center for Science Education (NCCE)
The NCCE mission is to help teachers cover climate change and evolution correctly. Science teaching require high confidence and competency. The vast majority of science teachers in the country have never had any exposure to climate science training. Only 40% of public science teachers know that there is a vast consensus on climate science. So we disseminate inquiry-based climate teaching lessons to teachers. We work with communities to "lower the temperature" around talking about climate change in a community (called science booster clubs) to get people involved in science and grow an acceptance of science so that teachers are not up against as much of a firewall.

9. Art Sussman, Pacific Islands Climate Education partnership (PCEP)
We have worked in the U.S. affiliated Pacific Islands. There is less denial there, but the communities are very under-seved. Our vision has been to deliver modern science content that is culturally appropriate and includes information that is place specific and integrates local ecological knowledge.

10. Questions for Presenters
• Is Grid Alternatives Expanding?
Yes. LowIncomeSolarPolicy.org is a college spring break program to reach communities which we aren't in already.

• What did you learn from each other listening just now?
That there is great youth engagement going on already to give them the right attitude coming into college.
Let's not reinvent the wheel.
Place based events, youth as a tipping point .
What is the next thing that is going to make a huge difference.
Grid alternatives to National Science Education Foundation partnership?
More of these programs are addressing economic insecurity with climate change.

•How much research have you done into social science and psychology?
ACE has the talk program, promoting methodology of listening basis for climate conversations. We have misconception based learning - lesson plans that specifically call our misconceptions in science education as a part of the actual classroom lesson.

In CEP, we integrate psychology into all of our work, even with these highly educated community leaders.

E. Panel Three: Funding and Resource Models for Climate Action Implementation (Moderator: Frank Niepold)

Session Objective: To highlight new approaches to funding and project resourcing, taking into account the value of synergy [research, development, demonstration, and deployment (RDDD)] alongside

philanthropic and traditional financing of community based education, engagement, and workforce development supporting climate actions

1. Jason Morris, Pisces Foundation
The Pisces Foundation looks for areas in the environmental field that are underfunded and undervalued. We have picked water management, super-pollutants (short lived GHGs), and environmental education. There is little if any connective tissue between funding institutions and organizations. Pisces looks at movement infrastructure and supports it to develop long lasting models that are commensurate with the challenges we have to address. We consciously decided to not only fund organizations that call themselves environmental education to get a broader set of collaborators. We fund people who aren't defining themselves as environmental education but are doing it anyway. Trying to increase visibility and funding for those organizations.

2. Carrie McDougall, NOAA Office of Education
NOAA funds education projects that advance NOAA's mission and projects that use NOAA's resources. Our Environmental Literacy Grant Program started in 2005. Recognize that you need a place based focus, social justice issues, and economic issues incorporated into education, not just scientific facts. Our funding model for resilience education is city-scale. We are always looking for practical projects.

3. Guy Williams, Detroiters Working for Environmental Justice (DWEJ)
We have helped implement the Detroit Climate Action Plan. We have constantly been on the front line of environmental issues. There is a local shift in political will. in 1994, the mayor put forth an anti-environmental justice resolution at the Compact of Mayors, and they adopted it. Any messaging that pushed against manufacturing (and pollution) was immediately shut down. Now, however, the mayor has established an Office of Sustainability. The city has a climate action plan and a public engagement requirement for the climate action plan. Two to three dollars are lost because of sick days traceable to pollution. Forward-looking agendas are being pushed back at the state level. Detroiters Working for Environmental Justice took on a two and a half-year project to develop the climate action plan without funding and agreements because it had to be done.

A lot of the grant process puts people through ridiculous hoops. Good funders tell you no fast, or maybe and what could help strengthen the application. Funders need to be straight with people because organizations don't have time to be chasing random funding opportunities.

4. Participant Questions for Panelists
• Most funders fund innovation, but not scaling, replicating, and that kind of work. Can you speak to this? Funders fund because it resonates with them. There are very few organizations with a commitment to mounting scaled innovation. The problems that we're trying to solve require systemic interventions, but the system is set up to encourage independent interventions. Most funders are looking for an individual widget to sell, not to change an entire ecosystem of widgets. We have to change the paradigm - how can we flip the funding environment around so that it doesn't replicate the existing power structure (when a funder gives a big grant to another org, which doles it out in smaller grants)? If we give grants to individual organizations to do environmental education, we'd run out of money immediately, and the impact wouldn't be coordinated. Pisces is looking for ideas about how to fund differently.

The DWEJ has been purposely focusing on systems change, because we recognize the complexity of the path to solutions. We spent all last year on the governor's panel on environmental justice, which ended up as kind of a wasted year.

• National isn't the best way to work. How do you choose scales?
NOAA funding isn't comprehensive but is attempting to fund models and understand what works in some places and why, and then we disseminate that approach. We are starting to see evidence for city scale initiatives.

• Some places use a grant challenge to fund really big projects. Could we all work together and make one, which would make it much easier to get funding? Can the entire education movement agree on a priority altruistically, just for the good of the movement what are our priorities. Example: Mothers against drunk driving.
Could we put a program like any of the ones from the lightning round into action at the next meeting like this so we could all learn by doing?
Could we work like a watershed funding situation where everyone has to work together in order to get funding?
For innovations to be widely successful, they have to be launched in a functioning infrastructure. Science centers can have more people working on climate than the entire state government.
Youth getting engaged can be a political tipping point. What does success look like? One measure of success for NOAA funded programs includes how many resilience plans include climate education.
There's no proven right or wrong way to do environmental education with youth. For example, young people in Detroit are all excited about environmental justice but the city is still bankrupt and doesn't have the bandwidth to do anything. We need to figure out an elegant and simple way to do it for power to flow through.
Some activist in Oregon decided everyone has to go to outdoor school without a plan, and a bill passed supporting it. Five years later, every 6th grader is doing it. YMCAs had to figure out how to make camps outdoor school and schools had to figure out how to support the education. This was one way that a top down policy idea actually worked and created ripple effects throughout Oregon. A different example is people didn't have access to research, so they funded a database. Then they looked at the barriers to using the database (who can read and understand the research) and created ripple effects going the other way.
We need to find strings that we can pull to create cascade effects to have national impacts from both top-down and bottom-up policies. State funding allowed other funders to go to smaller parts of the program and fund it more fully. Importantly, they didn't call it environmental or climate anything. They called it outdoor school, and no one had a problem with it. Scaling has to include language that will resonate with the people listening.

5. Panelist Quotes
Jason
"Environmental education is a long game towards people and nature thriving together and also provides benefits today in social justice, youth empowerment, and civic action."
"We need to find a way to fund an idea that organizations can collaborate on without empowering one organization to give out subgrants."
"The ability to transcend the language that is exclusive to our work is crucial."

Guy
"Today, instead of them not answering the phone when we tried to call, the city is calling us."
"We need to decode policy barriers- the rulebook of policy is giving us the outcomes we're seeing. We need different rules."

F. Next Steps and Priorities for the Next Five Years

The following ideas emerged from the day's final discussion round:
• Get out of the school space and use our educational power with a new audience.
• Environmental education does not have to be an exclusive K-12 practice.

- Need unified language or new language that is accessible when we talk about the environment.
- What seems to be missing in all models is that we look to capitalism/capitalist thinking as a necessary part of the solution when it's not. We need a new way to look at the world that is not based in economics. The capitalist model doesn't work for us, and it doesn't work for the earth. Need to change how we educate to break the cycle of capitalist thought. Need to teach people that a thriving economy has to be sustainable.
- Need to get away from monetizing, but at least make companies pay for their use and abuse of resources.
- All of the people in power have no incentive to change the status quo.
- Transition design: new Carnegie Mellon idea. Let the community figure out what their problems are and identify solutions.
- Enact a search for a "model town" that is closest to the full package of and educated populus and sustainable actions, i.e. nearly net zero, and is equitable, find our closest version of a utopia and model it.
- Scaled groups of 10,000-1 million people are the groups sizes and compartmentalization at which we can have the most impact. Communicate to convince people that these are the sizes of circuits that we want to pump funding through, work grassroots within these 10,000-1 million people communities and yet top down funded.
- Use drawdown as a reference of the outputs we know we can achieve when utilizing educational resources.
- Need a view within the general public that wouldn't be tied to a specific administration, what is a universal view that we want all public to understand.
- Mission based funding rather than project based funding. Back to the universal goal idea again, we fund towards this mission and actions that support this mission not organizations that will complete a project.
- in 5 years there needs to be a general understanding that climate change impacts everyone's health.
- In 5 years everyone needs grand plans that everyone can get behind- community resilience plans that are based on evidence and prioritize their community's health and safety that every community member is involved with collecting the information for their community climate action.
- Need to start educating people and rethinking our capitalistic model, starting in K-12 and teaching people that they can make a living and sustain the earth at the same time.
- Need an educational effort that allows youth to have a voice in shaping things.
- Need to look at communities that are already modeling the way of life we need to live sustainably.
- Need to work on drawdown
- Need bottom up support through education
- Need 15% climate literacy to force a tipping point in national dialogue
- Need voting engagement and building of public will to focus on energy transition.
- Need course requirements for High School, NGSS and EPNCs, teacher professional development, CTE, outdoor school, and a WPA program to build the solar grid.
- Solar is very exciting to High School kids- could have a public/private workforce development and education program for solar.
- United effort to ask all Americans to be involved in civic climate action.
- Need a network of networks and stable funding.
- Need to determine the population scales where we can be most effective. Scale for most impact at the rate needed, with benefits at the highest is at 10,000 - 1 million people. We're looking at a tipping point of 15% climate literacy. Have policy makers identify the groups of this size that are ready and effective and can handle investment now.
- Move away from branded coalition and hone in on "idea" branding.
- Tied directly with our priorities in energy should be priorities of civic engagement.
- Mandated classroom graduation standards in sustainability, outdoor school.
- Create the vision of "this is the generation that builds out the solar grid."
- Every school as a solar lab, install on each school or carport and design this entire messaging.

- Need to accept that education can move into new audiences beyond what we are currently targeting. It is a tool for more than K-12 and more than appreciation cultivation, it can be a tool for adults and for real life skills and for civic engagement.

Conclusions

The pre-Summit workshop provided the opportunity to identify effective climate change education programs supported by both federal climate change and related philanthropic investments that could be brought to bear in assisting municipalities and businesses in developing and implementing climate action plans. It explored how these capabilities can support business and city and state leadership and support communities progress toward economic prosperity through clean sustainable energy and increased resilience. Businesses, cities, and states have consistently led the creation of significant actions on climate change and new jobs on which that work depends. At this time, coordinated strategies of cities, states, and businesses are even more important to the next generation. To ensure the success of the transition to clean energy and climate resilient economies, a coordinated effort is needed that focuses on applied science, education, and training. Key Solution to Sustained Climate Actions is achieved with effective climate change education, civic engagement, and workforce development. The workshop showed that these under utilized capabilities are critical for communities to reach their climate action goals. The event confirmed that education can support community leaders by building social will, making solutions visible and create the capacities needed to support communities so they can seize the opportunities of a post-carbon and climate resilient future.

Next steps for the workshop participants and the wider community will be crucial. Effective climate change education, civic engagement, and workforce development are important components in supporting communities so that they can reach their climate goals. Over the coming decades, community climate action plans will need to showcase their adaptability, embrace a low-carbon future, and inspire future leaders to create a healthy and prosperous America. A seminal finding of the 2017 Climate Education and Opportunities Collective Impact Summit was if cities and counties want to reach the net zero emissions by 2050 needed to achieve the Paris Agreement's aspiration for a 1.5 degree world, education has the capacity to help them seize the opportunities of a post-carbon and climate resilient future. This workshop at the Global Climate Action Summit reinforced this finding and expanded it to include the business sector. The true success of the 2017 Summit and the 2018 Summit will be determined by what happens next. Since September 2018, numerous encouraging signs of educational commitment turning into supporting community climate actions have been initiated. Time will tell if the community climate action plans will be expanded to include education, civic engagement, and future workforce development. The early results are promising.

Credit: Jim Callahan

Director, Mobile Climate Science Labs

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Appendix A: Participants

Tor Allen, Executive Director - The Rahus Institute - Solar Schoolhouse
Rebecca Anderson, Director of Education - Alliance for Climate Education
Avana Andrade, Sustainability Coordinator - San Mateo County
Yoca Arditi-Rocha, Executive Director - The CLEO Institute
Allison Arteaga, Conservation Interpreter - Monterey Bay Aquarium
Rebecca Au, Community Engagement Coordinator - Green Ninja
Karen Austin, Volunteer organizer - 350 Eugene
Elizabeth Bagley, Sustainability Education and Engagement - California Academy of Sciences
Rhia Bakshi, Manager, Corporate Citizenship - Oracle Corporation
Mark Basnage, Executive Director - MakeKnowledge
Enei Begaye, Executive Director - Native Movement
Michel Boudrias, Associate Professor; CEP PI - University of San Diego
Jonathan Boxerman, Research Associate - WestEd
Katie Boyd, Education & Outreach Project Lead - CIRES
Regina Brinker, STEM Coordinator - Livermore Valley Joint USD
Allen Brown, Principal - IntraSpark Consulting
Joyce Calagos, Senior Empowerment Advisory Board - Senior Disability Action
James Callahan, Director - Mobile Climate Science Labs
Steven Carlson, Coordinator- Instituto de Pesquisas Ecológicas
Christine Castillo, Government Relations Specialist - Scripps Institution of Oceanography, UC San Diego
Malinda Chase, Tribal Liaison - Alaska Climate Science Center
Lynne Cherry, Director - Young Voices on Climate Change
Cristina Cofacci, Industrial Relations Manager - Enel Group
Emily Courtney, Program Director - Strategic Energy Innovations
Haley Crim, Intern - NOAA
Cyane Dandridge, Executive Director - Strategic Energy Innovations
Jodi Davenport, Deputy Director, STEM Program - WestEd
Christiana DeBenedict, Director, Environment Leadership Hub - The Nonprofit Institute, University of San Diego
Shirah Dedman, Filmmaker - YOU A NOMAD
Kathy Dervin, Legislative Coordinator - 350 Bay Area
Mica Estrada, Associate Professor. Director of CEP - UC San Francisco
Nik Evasco, Youth Engagement Fellow - World Savvy
Meagan Fishell, Founder - Make our Kids Healthy Again
Garrett Fitzgerald, Strategic Collaboration Director - Urban Sustainability Directors Network
Lauren Friedman, Workforce Development Coordinator - GRID Alternatives
Barbara Fukumoto, Leader - Sunnyvale Cool
Ryan Gardner, Climate Action Planner - Rincon Consultants
Andrea Gingras, Project Coordinator - URI Inner Space Center
Jill Grace, President/Regional Director - California Science Teachers Association/K-12 Alliance, WestEd
Frank Granshaw, Geology Instructor / GEC Cluster Coordinator- Portland State University
Elizabeth Greenfield, Sustainability Fellow - City of Sunnyvale

Brent Habig, Vice President, International Programs - Institute for Sustainable Communities
Steve Hams, Engagement Director - Business Climate Leaders
Kristin Hansen
Glen Harvey, CEO - WestEd
Patricia Hine, President - 350 Eugene
Nupur Hiremath, Sustainability Coordinator - City of Sunnyvale
Ashley Hodges, Program Manager - Calumet Collaborative
Karen Hoffman, University of Puerto Rico
Bradley Hoge, Director of Teacher Support - National Center for Science Education
Rolland Janairo, COO - World Savvy
Wendy Jewell, Film Producer - YOUTH UNSTOPPABLE
Slater Jewell-Kemker, Film Director - YOUTH UNSTOPPABLE
Marty Jordan, Climate Reality Leader - Climate Reality Project
Justin Kaiser, Founder - ClimateDigital
Linda Kelley, Legislative Coordinator - 350 Eugene
Jen Kretser, Director of Programs & Youth Climate Initiative - The Wild Center
Renee Lazzareschi, Assistant for the Environment - Marin Community Foundation
Sue Lebeck, Application Manager / Program Manager - Cool City Challenge
Rachel Lodge, Program Designer - Carbon Storylines
Carrie McDougall, Senior Program Manager - NOAA Office of Education
Debra McGee, Director - 350 Eugene
Maura McKnight, Executive Director - Business Council on Climate Change
Jason Morris, Senior Program Officer, Environmental Education – Pisces Foundation
Sheila Morrissey, Teacher - Kenwood Elementary
Sharon Nelson-Barber, Director, Culture & Language in Education - WestEd
Melissa Newlin, Director - Monterey & Ft. Ord Hostels
Sally Newman, Air Quality Specialist II - Bay Area Air Quality Management District
Frank Niepold, Senior Climate Education Program Manager - NOAA Climate Program Office
Mil Niepold, Founder/President - The Mara Group
Kathy Nolan, Landscape Architect - Studio Landscape
Maye Padills, Project Officer - WWF Philippines
Gary Payton, Volunteer Sustainable - Santa Fe Commission
Bernadette Placky, Chief Meteorologist, Climate Matters Director - Climate Central
Carol Preston, Education & Outreach Coordinator - NOAA Greater Farallones NMS
Sasha Radovich, Director, PACE Personal Advancement - Gap, Inc.
Muhammad Raza Hussain Qazi, Provincial Coordinator - Plan International Inc.
Ann Reid, Executive Director - National Center for Science Education
Matthew Rusk, Sustainability Manager - Swarovski
Abby Ruskey, Climate Literacy Specialist & Fellow -
US Partnership for Education for Sustainable Development
Janet Sager, Knott Resilience Ambassador - Ojai Valley Green Coalition
Gail Scowcroft, Associate Director- URI Inner Space Center
Oliver Sellers-Garcia, Director, Office of Sustainability & Environment - City of Somerville
Sumbal Shaffi, Content Creation - Storypal
Akin Shoyoye, Executive Director - Autonomous Power Racing
David Sittenfeld, Program Manager, Forum - Museum of Science, Boston

Elena Sparrow, Research Professor & Education Outreach Director - University of Alaska Fairbanks
Billy Spitzer, Vice President - New England Aquarium
Carey Stanton, Senior Director for Education & Integrated Marketing - National Wildlife Federation
Alua Suleimenova, Analyst - Center for Carbon Removal
Art Sussman, Senior Project Director - WestEd
Silas Swanson, Intern - CLEAN, The Wild Center
Constance Taylor, Naturalist - East Bay Regional Park District
Stephanie Thorton - GRID Alternatives
Andrea Torrice, Educational Media Producer - Torrice Media
Rachel Valletta, Environmental Scientist - The Franklin Institute
Cynthia Vernon, Chief Operating Officer - Monterey Bay Aquarium
Kristel Wickham, Volunteer - City of Sunnyvale
Guy Williams, President/CEO – Detroiters Working for Environmental Justice
Kimberly Williams, Communications Coordinator - SMC, Surfrider Foundation
Susan Wright, Program Manager - Ecology Action

Appendix B: Pre-Summit Workshop Agenda

ACCELERATING CLIMATE ACTION: A WORKSHOP FOR COMMUNITY, BUSINESS, AND EDUCATION LEADERS
AFFILIATE EVENT OF THE GLOBAL CLIMATE ACTION SUMMIT

Tuesday, September 11, 2018
WestEd
730 Harrison Street San Francisco, CA 94107

8:30	Registration
9:00	Welcome: Glen Harvey, CEO WestEd
9:05	Introductory Remarks: Building on over a Decade of Progress Gail Scowcroft, University of Rhode Island Frank Niepold, NOAA/CLEAN Network
9:15	Vision for the day
9:30	Panel I: The Private Sector - Innovative Partnerships to Accelerate Implementation of Climate Action Plans (Moderator, Mil Niepold) Objective: Using the power of example to inspire new partnerships between the private sector, communities/municipalities, and education professionals that will accelerate implementation of climate action plans in synergistic ways Panelists: 1. Maura McKnight, Executive Director, Business Council on Climate Change 2. Sasha Radovich, Director of our PACE Personal Advancement, Gap, Inc. 4. Brent Habig, Vice-President, International Programs, Institute for Sustainable Communities
10:30	BREAK
10:50	Resource Matching Gallery Walk : Interactive Session (Moderator: Mil Niepold) (based on Survey Monkey results) Session Objective: To showcase the current array of existing educational tools, strategies, and models and offer participants the opportunity to match their needs to various tools and resources based on survey results. (Participants will review the posted, thematically grouped survey results, that are related to what participants indicated they were aiming to achieve locally in the coming year as they address climate change and implement climate action plans.
11:30	Panel II: Community Leaders – Partnering to Implement Change (Moderator: Gail Scowcroft)

Objective: To highlight the diverse partnerships that are needed to build social momentum to ensure community climate action successes and offer the nuts and bolts of how education can support communities

Panelists (pending confirmation):
1. Garrett Fitzgerald, Strategic Collaboration Director, Urban Sustainability Directors Network
2. Malinda Chase, Tribal Liaison, Alaska Climate Science Center
3. Enei Begaye, Executive Director, Native Movement
4. Oliver Sellers-Garcia, Director, Office of Sustainability and Environment, Somerville

12:30 LUNCH

13:30 Lightning Round: Education Leaders as Partners (Moderator: Billy Spitzer)

Session Objective: To give city, community and company leaders practical guidance on how to integrate education throughout a community and how this accelerates action on climate – while leveraging what everyone does best (further building on the Resource Matching exercise from the morning)

Represented initiatives (4 minutes each):
1. William S. Spitzer, Ph.D., Vice President - Programs, Exhibits, and Planning, New England Aquarium, National Network for Ocean and Climate Change Interpretation (NNOCCI)
2. Michel A. Boudrias, Ph.D. Associate Professor, Environmental and Ocean Sciences, University of San Diego, Climate Education Partners
3. Carey Stanton, Senior Director for Education and International Marketing, National Wildlife Federation, Eco-Schools
4. Cyane Dandridge, Strategic Energy Innovations Energize Schools
5. Jen Kretser, Director of Programs & the Youth Climate Summit Initiative, The Wild Center
6. Reb Anderson, Director of Education, Alliance for Climate Education
7. Lauren Friedman or Stephanie Thornton, Grid Alternatives
8. Ann Reid, Executive Director, National Center for Science Education

14:45 Break

15:00 Panel III: Funding and Resource Models for Climate Action Implementation (Moderator: Frank Niepold)

Session Objective: To highlight new approaches to funding and project resourcing, taking into account the value of synergy [research, development, demonstration, and deployment (RDDD)] alongside philanthropic and traditional financing of community based education, engagement, and workforce development supporting climate actions.

Panelists (pending confirmation):
1. Carrie McDougall, NOAA Office of Education
2. Jason Morris, Pisces Foundation
3. Guy Williams, Detroiters Working for Environmental Justice

16:00	Next Steps
16:40	Closing Remarks
17:00	Adjourn

Appendix C: Climate Change Education Effective Practice Programs

This list of effective programs is not complete and will grow over the coming months and years and new efforts will be added based on evidence and alignment with the priority audiences for climate change education, civic engagement and workforce development.

Alliance for Climate Education (ACE)

An initiative to educate youth on the science of climate change and empower them to take action, with the goal of shifting national discourse on climate in ways that are proven to affect public opinion and policy.

Advancing Climate Literacy through Investment in In-service and Pre-service Science Educators (ACLIPSE)

This university course, and associated grades 6-12 teacher PD opportunities were developed by the Lawrence Hall of Science at University of California, Berkeley, Rutgers University, and Padilla Bay NERR with funding from NOAA. The course, curriculum and teacher PD use climate science as the context for teaching about and applying current teaching and learning research, as well as how to use real and near-real time data in the classroom in authentic and locally relevant ways to build pre- and in-service teachers', as well as their students' data skills. Additionally, the course and materials support understanding of three-dimensional instruction as called for in A Framework for K-12 Science Education and the Next Generation Science Standards. ACLIPSE course materials are available for download at http://mare.lawrencehallofscience.org/

American Meteorological Society (AMS) Education Programs

Professional development programs with tuition free graduate credit and resources for K-12 educators as well as curriculum packages for faculty and students at undergraduate institutions. AMS provides educator instruction, course materials, in-classroom resources, and specialized training in weather, ocean, and climate sciences.

Arctic and Earth SIGNs (STEM Integration of GLOBE and NASA)

A program that explores the impacts and feedbacks of a warming Arctic and making a difference on a climate change issue important to one's community, by training pre- and in-service teachers, youth leaders such as 4-H leaders, and community members on climate change concepts, culturally-responsive curriculum, braiding multiple ways of knowing and environmental observation/measurement protocols in face-to-face and online courses.

Arizona State University: Science Center Public Forums

A set of forums hosted by regional science centers to facilitate public deliberation on real-world climate change issues of concern to local communities. The forum materials were developed in collaboration with NOAA in order to foster better understanding of environmental changes and best practices for improving community resiliency. With regional science centers bringing together the public, scientific experts, and local officials, the project will create resilience-centered partnerships and a framework for learning and engagement that can be replicated nationwide.

Bay Area Climate Literacy and Impact Collective (BayCLIC)

A consortium of over thirty environmental education institutions including parks, zoos, aquariums, museums, energy efficiency nonprofits, local government agencies working in partnership to make the San Francisco Bay Area the leader in climate education and action. BayCLIC is based off of the collective

impact model, and works to collaboratively address the most pressing climate education needs of informal educators in the region and provide targeted resources for this community.

Climate and Urban Systems Partnership (CUSP)

A diverse local network of climate focused organizations in four cities (New York, Philadelphia, Pittsburgh, and Washington, D.C.) that delivers collaborative community-based educational programming.

Video Link: http://stemforall2017.videohall.com/presentations/997

Climate Classroom Kids.org

A carefully designed website with lesson plans and activities designed around animals simple concepts to focus younger children on climate solutions without burdening them with frightening or heavy material. The Federation was commissioned to develop the educational program for the Emmy Award-winning climate documentary series Years of Living Dangerously.

Climate Education Partners (CEP)

An interdisciplinary collaboration among professors, scientists, researchers, educators, communications professionals, and community leaders concerned about the impacts that changes in climate could have on the quality of life in the San Diego, CA region.

Climate Generation: A Will Steger Legacy

Climate Generation: A Will Steger Legacy empowers individuals and their communities to engage in solutions to climate change. Based in Minneapolis, MN, Climate Generation is a nationally connected and trusted nonprofit dedicated to climate literacy, climate change education, youth leadership and citizen engagement for innovative climate change solutions.

Climate Literacy and Energy Awareness Network (CLEAN)

CLEAN builds a community of professionals committed to improving climate and energy literacy, curates a reviewed collection of climate and energy educational resources and supports educators in teaching about climate and energy topics. CLEAN Network – a professionally diverse community of over 570 members committed to improving climate and energy literacy to enable responsible decisions and actions.

Climate Matters

A comprehensive climate change resource created by Climate Central to aid broadcast meteorologists in presenting engaging and accurate climate information in clear, concise and relevant ways.

ClimaTeens

ClimaTeens is a program based on a positive vision of youth as change agents with capacity to engage many other people in efforts to prevent harmful impacts from climate change. The program was developed by the New England Aquarium in partnership with Greenovate Boston, the Center for Teen Empowerment, and the Alliance for Climate Education. Participating teens meet during the school year, twice a month, to explore issues related to climate change and to develop their understanding along with skills and confidence to foster constructive dialogue with friends, family, school clubs, and business and civic leaders. The project goals focus mainly on outcomes for participating teens, including increased understanding of climate change science, increased confidence in presenting information about climate

change to varied audiences, and increased ability and willingness to create change at the community level. After three pilot years, more than 130 teens have participated and they have made 21 presentations for a range of audiences, in addition to many independent conversations. The Program Evaluation Research Group is conducting ongoing formative evaluation and has found positive indicators of learning, growing confidence and positive audience responses to presentations.

Connect4Climate: It Takes Everyone to Make a Difference

A global partnership program launched by the World Bank Group and the Italian Ministry of Environment, joined by the German Federal Ministry for Economic Cooperation and Development, that takes on climate change by promoting solutions and empowering people to act. The Connect4Climate community connects more than 460 partners around the world including civil society groups, media networks, international organizations, academic institutions, youth groups, and the private sector. Connect4Climate interacts with a global audience of more than a million individuals who participate on Connect4Climate's social media channels, including Facebook, Twitter, Vimeo, YouTube, Flickr, LinkedIn, and Instagram.

CYCLES: Teachers Discovering Climate Change from a Native Perspective

CYCLES addresses the need for Global Climate Change Education (GCCE) with a focus on Native perspectives. CYCLES is a three-year innovative professional development program for teachers (grades 5-12) focused on teaching climate change science that is native friendly, place-based, holistic and interdisciplinary, technologically rich, and incorporates NASA data, models, and simulations.

'CYCLES' reflects the similarities between Native American and scientific explanations of the natural world as interconnected processes that are cyclical. In native culture, the medicine wheel symbolizes the interconnectedness of the earth, air, water, and fire. This is recognized in science through an Earth Systems approach based on the interconnectedness of the geosphere, atmosphere, hydrosphere, and biosphere, with the energy flow of these systems derived from the "fire" of the Sun and the interior of the Earth.

EarthLabs

Earth and Environmental science courses haven't always been taught as high-level science courses. The "Big 3" science classes—biology, chemistry, and physics—all have something interesting to offer, but they never pull it all together into a picture as big as our planet. Earth and Environmental science classes are about the real world. The goal of the EarthLabs project was to provide engaging and rigorous laboratory modules that comprises the laboratory component of a capstone Earth science class.. The project which resulted in 9 modules that were funded through grants from the National Oceanic and Atmospheric Administration (NOAA), that National Aeronautics and Space Administration (NASA) and the National Science Foundation (NSF).

Earth to Sky

An interagency partnership of the NASA, the National Park Service, and the National Fish and Wildlife Foundation that brings together interpreters, educators and scientists to learn and share science and communication techniques for use in refuges, parks and other sites of place-based climate education.

Environmental Issues Forums

An initiative of NAAEE and the Kettering Foundation, EIF provides tools, training, and support for engaging adults and students in locally sponsored public forums about controversial issues that affect the environment and communities, with the goal of convening people of diverse views and experiences to

seek a shared understanding of problems and to search for common ground for action. Forums are led by trained moderators, and use an issue discussion guide that frames the issue by presenting the overall problem and then multiple approaches to the problem. Forum participants work through the issue by considering each approach; examining what appeals to them or concerns them, and also what the costs, consequences, and trade-offs may be that would be incurred in following that approach. Environmental issues guides, moderator resources, and EIF in the Classroom teacher guides are all available for download.

The Global Learning and Observations to Benefit the Environment (GLOBE) Program

The Global Learning and Observations to Benefit the Environment (GLOBE) Program is an international science and education program that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to our understanding of the Earth system and global environment. Announced by the U.S. Government on Earth Day in 1994, GLOBE launched its worldwide implementation in 1995. The National Wildlife Federation has a working relationship with the GLOBE program, administered by the University Corporation for Atmospheric Research funded by NASA to improve the earth monitoring science and protocols of the Eco Schools USA program and help some of America's 20,000 GLOBE schools to enroll in Eco Schools.

Green Schools Alliance

Our mission is to connect and empower schools worldwide to lead the transformation to a sustainable future. Our community represents more than 8,800 schools, districts, and organizations from 46 U.S. States and 82 countries. Hundreds of principals and superintendents have set the stage for meaningful change by making leadership commitments affecting nearly 8,000 schools and 5+ million students. We foster communication and interdepartmental learning so sustainability is part of a school's organizational culture. We encourage healthy systems, active design, and progressive efficiencies in the school's physical place. We cultivate charismatic leadership, connection to place, and student-powered action to elevate a school's educational program.Supporters of sustainable communities connect through the Alliance to remove barriers and create the norm for collaborative work.

Maryland and Delaware Climate Change Education, Assessment, and Research (MADE-CLEAR)

A collaborative partnership of Delaware and Maryland institutions that develops and supports the capacity for its partners to deliver research-based climate change education in public schools, on college and university campuses, and in informal education settings.

Video Link: http://stemforall2017.videohall.com/presentations/1030

National Network for Ocean and Climate Change Interpretation (NNOCCI)

NNOCCI is a collaborative effort led by the New England Aquarium with the Association of Zoos and Aquariums, the FrameWorks Institute, the Woods Hole Oceanographic Institution, the National Aquarium, Monterey Bay Aquarium, the New Knowledge Organization in partnership with Penn State University and the Ohio's Center for Science and Industry. With support from the National Science Foundation Climate Change Education Partnership program, NNOCCI is building a national network of professionals who are skilled in communicating and translating climate and ocean science to broad public audiences, and has already reached 170 aquariums, zoos and science/nature centers in 38 states. Following participation in NNOCCI's in-depth training, climate change educators express increased confidence in their ability to communicate science information to visitors and conduct trainings, contribute to journal articles, collaborate on grant projects, and actively network with their peers via social media. Visitor impact to NNOCCI-participating informal science centers is also significant and illustrates the potential for visitors to make an impact in their communities. Evaluation data show that

changes implemented by educators resulted in visitors increasing their understanding of climate change, hope about addressing climate challenges, and intentions to engage in civic climate action. This research suggests a lasting impact on visitors. Compared to visitors to other informal science centers, visitors to NNOCCI-participating centers express greater confidence in their ability to communicate about climate change, believe that it makes a difference when they talk about the issue with friends/family, and report participation in personal and civic actions to reduce climate change.

Video Link: http://stemforall2017.videohall.com/presentations/881

National Wildlife Federation's Eco Schools USA

The Federation supports energy and climate change education in 5,000 K-12 schools

across the U.S. through the Eco Schools USA program. An NWF Eco-School helps its students learn and practice sustainability skills such as energy and, water conservation, climate mitigation, nature and wildlife, sustainable food, gardening, and recycling. Greening the school building and the grounds offers an outstanding laboratory for hands-on learning including

science and technology education and durable climate literacy. The program has currently involves 2.6 million students and 110,000 educators. The climate and energy pathways are major features of Eco Schools. The Eco School program is part of an International network of 50,000 green schools in more than 60 nations worldwide. The Federation is the exclusive United States operator of this program.

National Wildlife Federation's Work Force Preparation

A collaborative effort by the National Wildlife Federation and Jobs for the Future to strengthen the capacity of community colleges to help nontraditional students enter the job market with marketable sustainability skills. It has worked with more than 120 community colleges nationwide to develop incorporate sustainability skills for a lower carbon economy in their course offerings. In addition to supporting community colleges greening their overall curricula, the Federation developed a set of curricula resources to support STEM education through the lens of climate change.

National Wildlife Federation's EcoLeaders Program

The Federation supports a network of more than 500 campuses committed becoming greener and more sustainable including lowering their carbon and greenhouse gas footprints. The Federation has embarked on an effort to support the acceleration of the greening of the nation's high school and community college career and technical (CTE) education programs.

Pacific islands Climate Education Partnership (PCEP)

PCEP is a collaborative network of over 60 partners working together toward a new vision of climate education exemplifies modern science and local ecological knowledge, while addressing the urgency of climate impacts in the Pacific region. We serve the U.S.-affiliated Pacific islands, including Hawai□i, American Sāmoa, Guam, the Commonwealth of the Northern Mariana Islands, the Republic of the Marshall Islands, the Federated States of Micronesia (Yap, Chuuk, Kosrae, Pohnpei), and the Republic of Palau.

Pine Integrated Network: Education, Mitigation, and Adaptation Project (PINEMAP)

A regional initiative to integrate research, extension, and education to enable southern pine landowners to manage forests to increase carbon sequestration and efficiency of nitrogen and other fertilizer inputs and adapt forest management approaches to increase forest resilience and sustainability through climate

changes. They also offer resources and programs to educate high school students and teachers as well as university students about the relevance of forests, forest management, and climate impacts.

Polar Learning and Responding Climate Change Education Partnership (PoLAR)

An interdisciplinary collaboration that includes experts in polar climate science, formal and informal education, learning theory, game design, and climate change communication that develops interactive and game-like educational approaches focusing on the changing polar regions for lifelong learners.

The Presidents' Climate Leadership Commitments

Bold commitments by leaders in the higher education sector yield big changes at the institution that those leaders manage, in the sector at large, and beyond. These commitments require strong leadership, tangible outcomes, and the ability to track progress. Higher Education presidents and chancellors can join the Climate Leadership Network by signing either the Carbon or the Resilience Commitment, or the integrated Climate Commitment. An institution can transition to the Climate Commitment at any time. Between October 5,2015 and April 22, 2016, 91 institutions became Charter Signatories of the Climate Commitment. See a full list of the Charter Signatories. To see all signatories, view our Climate Leadership Network map.

Southeastern Forests and Climate Change

A module for high school biology, agriculture, and environmental science teachers to help students explore the effects of climate change on forests, the effects of forests on climate, and the ways people address these challenges. This is one of the secondary resources offered by Project Learning Tree. Evaluation indicates that students' knowledge and sense of hope was increased after using 5 activities.

Visualizing Change: Training and Tools to Support Informal Educators

A consortium of informal science education institutions (ISEIs) – Aquarium of the Pacific, National Aquarium in Baltimore, New England Aquarium, and Seattle Aquarium — began the Visualizing Change project in 2013 with funding from NOAA. After 3 years of iterative development and testing, they launched the website www.vischange.org, where four "visual narratives" are available that educators may access to learn and present information about sea level rise, ocean acidification, extreme weather and the climate-ocean connection. Each "visual narrative" includes scripts, images to use, background information about social science and relevant ocean and climate science. The project team has presented day-long workshops and online trainings for more than 200 education colleagues from over 120 organizations to help educators make use of the toolkit and materials.

World Climate

A simplified international climate change negotiations simulation for large groups in which a facilitator plays the role of a UN leader while participants play the roles of a delegates representing specific nations, negotiating blocs, or interest groups. Participants have to work together to reach a global agreement that keeps climate change well below 2˚C over preindustrial levels.

Video link: http://stemforall2017.videohall.com/presentations/965

The Wild Center's Youth Climate Program

A full-year program with outreach, educational and leadership opportunities for student participants of the annual Adirondack Youth Climate Summit, which has led to financial savings and shifts in mindsets across Adirondack Park. The Youth Climate Summit convenes high school and college students on

climate change science, impacts, and solutions. The core component is a student driven climate action plan that provides a solutions based framework for students to implement in their schools and communities. The summit model has been successfully replicated and scaled by other informal science institutions, schools, NGOs, and community groups through the youth climate summit toolkit. To date summits have been held in multiple regions of New York State, Michigan, Washington, Texas, and Vermont as well as internationally in Finland and Sri Lanka with an upcoming summit in Germany.

Appendix D: Education for Climate Action Case Studies

Case Study 1: Youth at the Helm of Building Community Climate Empowerment

Photo: Youth Climate Summit students from the Lake Placid Environmental Club alongside Mayor Clyde Randall after signing the New York State Climate Smart Communities Pledge. The newly formed Climate Task Force will officially include youth involvement as the Lake Placid community looks to reduce its carbon footprint.

The Wild Center's Youth Climate Program is a global initiative that convenes, engages, and empowers young people to act on climate change related activities in their schools and communities through Youth Climate Summits. Each Youth Climate Summit is a one or two day event that brings youth together to learn about climate change science, impacts, and solutions. Through speakers, workshops, and activities, the Summit culminates with student participants writing a Climate Action Plan that can be implemented in their schools, communities, and regions. Students gain the knowledge, confidence, and skills necessary to communicate with decision-makers. The solutions-focused education they receive at the Summit inspires them to begin a collaborative and productive dialogue with their respective civic and government leaders

as they seek participation in their communities' climate change mitigation and adaptation plans. Organizing a Youth Climate Summit is a great way to educate and motivate students, connect with new partners, showcase green job pathways, and build capacity for youth leadership. This Youth Climate Summit model has been replicated and scaled in over 35 sites around the globe from New York State to Finland to Sri Lanka. The Wild Center's free Youth Climate Summit toolkit offers a detailed organizational framework, templates, budget, agenda, and timeline that can be replicated in communities and municipalities world-wide.

Case Study

The Case Study below outlines the impact of the Youth Climate Summit on one community and the story of how one school can make a difference.

"Young people have been instrumental in advancing the sustainability work of Lake Placid through educational campaigns, presentations and open dialogue that raise awareness about the local impacts of and solutions to climate change. Lake Placid is a showcase community that draws visitors from all over the world for its world-renowned events and natural environment. The village board recognizes the vital role young people play in protecting our natural ecosystems so that Lake Placid can continue to build on this legacy."

Lake Placid Mayor Craig Randall and Village Board member Jason Leon

Lake Placid is located in the Adirondack Park, a 6-million acre state park in upstate New York. It was home to the 1932 and 1980 Winter Olympics, making it a premier winter sports and tourist destination. Climate change threatens the basis of the region's winter economy and way of life, which has led the village of Lake Placid to take steps toward building a more resilient community and economy. Supporting the implementation of these steps is the village's youth population. Since 2008, Lake Placid's high school students have attended The Wild Center's annual Adirondack Youth Climate Summit. Following the students' Climate Action Plans over the past several years, participating students from the Lake Placid High School Environmental Club have been actively engaged in conversations with their elected officials. They have attended Village Board meetings and worked with the Board to determine how they can work together to increase energy efficiency and transition away from fossil fuels. In addition to their conversations with local leaders, Summit alumni in the Lake Placid region have been leading community-wide climate education events centered on the impacts of climate change on its winter tourism-based economy.The students have also made the village's current climate actions more visible by being active members of key committees. To build on the momentum of all of this work, Governor Andrew M. Cuomo announced in late 2017 that the three New York State-owned ski resorts - Belleayre Ski Resort, Gore Mountain, and Whiteface Mountain - have pledged to be powered with 100 percent renewable energy by 2030. The Summit alumni's work also encouraged the Lake Placid community to sign New York's Climate a Community Pledge in the spring of 2018. With youth at the helm of the town's climate action plan, this community culture encourages sustained action.

Overview

The Wild Center's Adirondack Youth Climate Summit brings together a diverse set of nearly 200 high school and college students, teachers, and faculty from 30 schools across the northeastern U.S., combining informative sessions and workshops in an engaging atmosphere for a powerful two-day experience. The program has been instrumental in building the environmental literacy necessary for Lake Placid's climate resilience through a programmatic focus on climate change impacts in rural and urban New York. This crucial information is presented with an overarching theme of project-based learning, making resilience a more relatable issue by allowing the students to understand how *they* can take action. The culmination of each Summit is the student's creation of a Climate Action Plan for a project to improve resilience in their school or community. For many participants, this is a transformative opportunity to understand the effects of their actions on the world around them. Students make essential connections between their lives and the natural world while acquiring leadership skills, cooperative abilities, a sense of community, and an enduring passion for the environment and a sustainable global future.

Among the goals of the Summit, a few stand out for their importance and direct relevance to the Lake Placid youth community:

Learn place-based strategies to respond and adapt to climate change
Concrete action plans for the greater Adirondack area give student participants an understanding of the stakes for the Lake Placid region and encourage participant leadership to share and implement the strategies within their community. Providing information on the state of the science reinforces the urgency of climate change and its economic and ecological impact. This 10-year old placed-based approach has been replicated across the world in over 30 locations through the use of the Youth Climate Summit Toolkit.

Develop a climate action plan to inform school and community activities
Armed with community-focused action plans, Summit participants can transform the knowledge and experience gained into tangible, local change. As an example, Lake Placid's small population magnifies the actions of its climate-minded youth. In smaller communities, youth have a greater opportunity to affect community resilience building and climate literacy.

Network with regional schools and experts to learn about successful climate action
Discussing specific place-based strategies with students from across New York and beyond works to empower students in developing their climate action plans. The Summit also works to maintain connections among current community resilience initiatives, educators, and its youth participants. Individual participants often maintain contact with other students or schools following the Summit, encouraging future collaboration and continued encouragement. School districts have a large presence and large community influence in cities across the country. To give students within these local institutions the tools to bridge their education into the greater community, and to make connections between communities through their local students' shared climate education, is a powerful dynamic that Lake Placid leaders have recognized.

Regional Impact

"My experience at the Adirondack Youth Climate Summit taught me so many things about climate change and action. Knowledge is power and the youth climate summit gives students the knowledge and skills to take on climate change at full force."

Nathalie Munn, age 17, Saranac Lake High School

To date, the Adirondack Youth Climate Summit has directly reached over 2,000 students at over 60 schools across the northeastern U.S. By implementing climate action plans in their schools and communities, participants have reached over 20,000 of their peers each year for the last nine years. Their dedication has created a network of sustainability initiatives, climate actions, and youth leaders across the state of New York and beyond.

Climate change is a complex phenomenon, and many local government leaders struggle to understand how best to respond and protect their communities. Dazzle Ekblad from the New York State Department of Environmental Conservation's Office of Climate Change (OCC) has found, "Education is a fundamental first step in taking action. The most effective local climate action programs are rooted in smart planning and educational processes that involve gathering information and helping communities evaluate their options." The Wild Center's Youth Climate Summit supported local students by providing guidance on how their communities can plan for climate action through their educational campaigns, which were key components to expanding local Climate Smart Communities programs.

As seen in the Lake Placid region, the climate action plans of youth leaders encouraged the Village to sign New York's Climate Smart Community Pledge. The community has committed to taking stock of emissions, decreasing energy use, shifting to renewable energy, and enhancing community resilience to climate change, among other goals.[1]

The Youth Climate Program is actively engaged in New York State's climate resiliency planning through collaborations with the NYS Department of Environmental Conservation Office of Climate Change, NYS Energy Research Development Authority, and NOAA's Climate Program Office to provide accurate scientific information, resources, and tools through a three year Environmental Literacy Grant from NOAA's Office of Education. The New York State Department of Environmental Conservation's Office of Climate Change (OCC) works to develop policies that reduce greenhouse gas emissions, increase resiliency for the State, empower its communities, and provide low-emission options for all New Yorkers.

[1] https://www.dec.ny.gov/energy/65494.html

“The vision and enthusiasm that youth bring to local climate action is powerful. The abundant energy and creativity of young people can open minds and unite communities in the fight against climate change. This is why the OCC supports youth climate empowerment. The OCC is honored to join The Wild Center in this work and values every opportunity to participate in Youth Climate Summits.”

Mark Lowery and Dazzle Ekblad, New York State Department of Environmental Conservation’s Office of Climate Change (OCC)

National/International Impact

In the years since the Summit’s inception in 2008, participants and facilitators have encouraged implementation of the Summit model. Their "Youth Climate Summit Toolkit," a guide to replicating and scaling the Adirondack Youth Climate Summit, has reached communities not only across the U.S., but also around the globe. Summits have been held in Seattle, WA; Detroit, MI; Burlington, VT; Columbus, OH; Raleigh, NC; Carbondale, CO; New York City, NY; Houston, TX; Munich, Germany; Liberia; Sri Lanka; and Helsinki, Finland. Summit participants and facilitators have also represented the U.S. on larger global platforms, including the UNESCO World Youth Forum, the UN Youth Assembly, the One Young World Summits in Thailand and Arizona, and the UN COP 21 Climate Talks in Paris. The Summit was also recognized in 2014 as a model for Climate Education and Literacy by the White House Office of Science and Technology Policy.

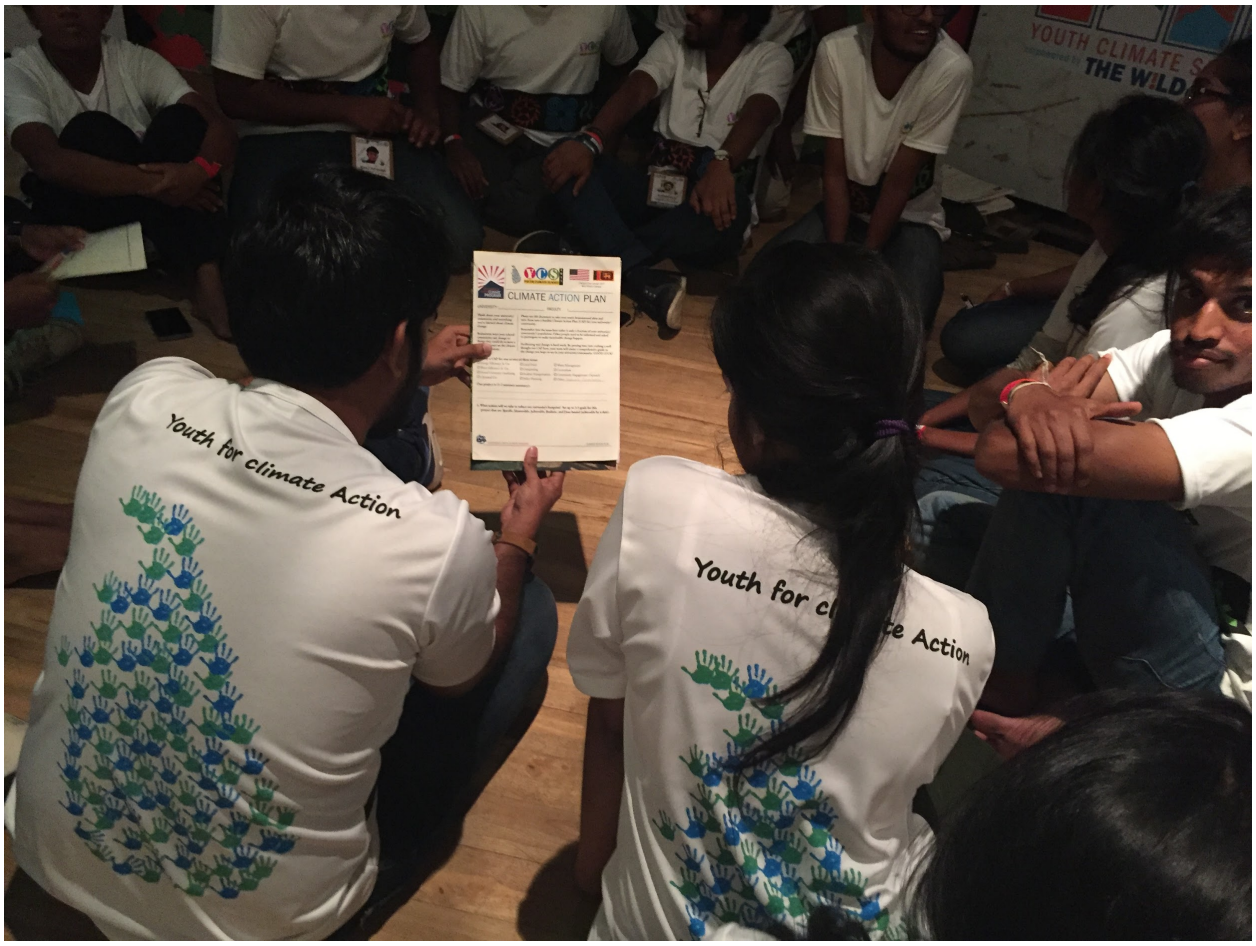


Photo: Youth Climate Leaders at the 2017 Sri Lanka Youth Climate Summit get to work on their climate action plans. Over 100 students from 10 colleges across the country attended the 3 day residential Youth Climate Summit that focused on climate science and impacts, leadership, disaster preparedness, and working towards climate action through the Global Goals.

Photo: Youth Climate leaders from the United States and Sri Lanka gather to celebrate Sri Lanka's Youth Climate Summit. The Summit was organized through Sri Lanka's Community Resilience Center, the Climate Change Secretariat/ Ministry of the Environment, the US Embassy, and Asia Pacific Alliance for Disaster Preparedness.

Lessons Learned

Youth play an important role in building resilience and climate literacy in their communities. As the next generation of leaders, change-makers, and activists, youth are key to a climate resilient and post-carbon future. The Summit and its impact on the Lake Placid region are evidence for several takeaways:

Everyone benefits from convening youth
While youth participants gain confidence, networks, and opportunities for leadership, cities ensure resilience building and community investment. Together, climate-minded students can encourage climate action by a community.

Fostering a sense of community ownership among youth is central to climate action
Providing opportunities for youth to directly respond to local impacts of climate change encourages a sense of community responsibility. Youth empowerment, encouraged by opportunities to respond to the local threats of climate change communities, results in action.

Summits can be implemented to serve communities worldwide
The Wild Center's partner Youth Climate Summits around the U.S. and globe are testament to the successes, and need for, convening youth around climate-centered discussion, and the effectiveness of place-based, and project-based learning.

Point of Contact

Jen Kretser, Director of Climate Initiatives
Email: jkretser@wildcenter.org
The Wild Center
45 Museum Drive
Tupper Lake NY 12986
518-524-5105

Partners

NOAA
New York State Department of Environmental Conservation's Office of Climate Change (OCC)
New York State Energy Research & Development Authority
Alliance for Climate Education
Association for Science Technology Centers

Resources/Website

The Wild Center: Youth Climate Program
Youth Climate Summit Toolkit
https://sites.google.com/wildcenter.org/adkyouthsummit/home

Case Study 2. Community Transformation through Youth Leadership

A Case Study about Multi-Faceted Community Climate Engagement

Photo: Marin School of Environmental Leadership students speak in front of the County of Marin, presenting their iMatter Climate Report Card for the county. Their report leads to a Climate Youth Engagement Ordinance.

SEI Organizational Overview

Strategic Energy Innovations (SEI), a nonprofit organization, inspires and empowers to advance solutions for a thriving, healthy planet. With over 20 years serving communities, and now reaching over 30,000 students each year, SEI continues to focus on building capacity for sustainable communities through its scalable programs and models. Focusing efforts on hard-to-reach and often underserved sectors, SEI projects have at their core climate education, training, and career development. From young students to professionals in transition, SEI programs engage, inspire, and empower local talent to directly address their community's ambitious sustainability goals and needs by leading projects with measurable environmental, economic, and social benefits.

Local Case Study: City of San Rafael

The Case Study below outlines the impact of SEI's interconnected programs on one community, and the story of how we can co-create a more sustainable future by empowering youth leaders.

"We are committed to engaging youth in finding creative solutions to our climate crisis. By working closely with SEI, we have been able to deepen our commitments and broaden our impact by inspiring and empowering environmentally conscious leaders. SEI's Zero Waste Schools Program is helping our community get one step closer to achieving zero waste. The School of Environmental Leadership is engaging high school students at many different levels in community climate leadership. SEI is also actively helping local businesses and government, including the City of San Rafael, create new green jobs through the Climate Corps Fellowship program. Collaborating together we are supporting the San Rafael community, and really all of Marin, to meet ambitious sustainability goals."

Cory Bytof, City of San Rafael Sustainability and Volunteer Program Coordinator

In San Rafael, SEI engages and supports local K-College students and Climate Corps Fellows who are working with local school districts, the county office of education, and local community colleges. SEI coordinates an expansive network of community members to support the transition to a sustainable community, while developing youth leadership and green career skills in San Rafael and many other communities. Through SEI's various programs, students are engaged starting in elementary school through their early workforce experiences.

Photo: Marin School of Environmental Leadership students meet with Governor Jerry Brown to discuss their proposition for a statewide Climate Report Card.

Since the inception of the **School of Environmental Leadership** (MarinSEL), a public high school designed and supported by SEI, MarinSEL has worked on a wide array of projects with the City of San Rafael. For example, students participate in Leadership and Environmental Action Development (LEAD) community projects during their freshman and sophomore years. Over the past eight years of working with the San Rafael community, students have led local resilient neighborhood initiatives, reduced waste by eliminating single use plastic, and successfully petitioned for school districts to move to 100% renewable electricity with local utility MCE. They have also created iMatter Climate Report Cards for the city and county, which have resulted in a city-wide youth ordinance and the City of San Rafael committing to 100% renewable electricity.

In addition to community LEAD projects, students intern with a local organization their senior year of high school to lead a sustainability project. Students have interned at organizations such

as the San Rafael Airport, MCE, Clough Construction, Marin County Office of Education, and Zero Waste Marin.

> "I really cannot speak highly enough of the MarinSEL Senior Internship Program. We have had 3 interns in the last 3 years, and each one has been a huge help to us in conceiving, planning, and implementing our green business practices. They have helped us to achieve our Green Business Certification from the County of Marin, and were instrumental in developing a comprehensive 5 year Sustainability Plan for our company, which we project will save us over $360,000 per year in reduced energy, water, and trash costs, and reduce our carbon footprint by 1.2 million tons per year. They have written press releases, conducted cost feasibility analyses, researched and purchased green products, created utility cost tracking models, and much, much more! And all of this is done at no cost to the employer, other than time spent mentoring and guiding the students.These kids are sharp, tech savvy, and want to make a difference in the world."
>
> Bob Herbst, Manager of the San Rafael Airport

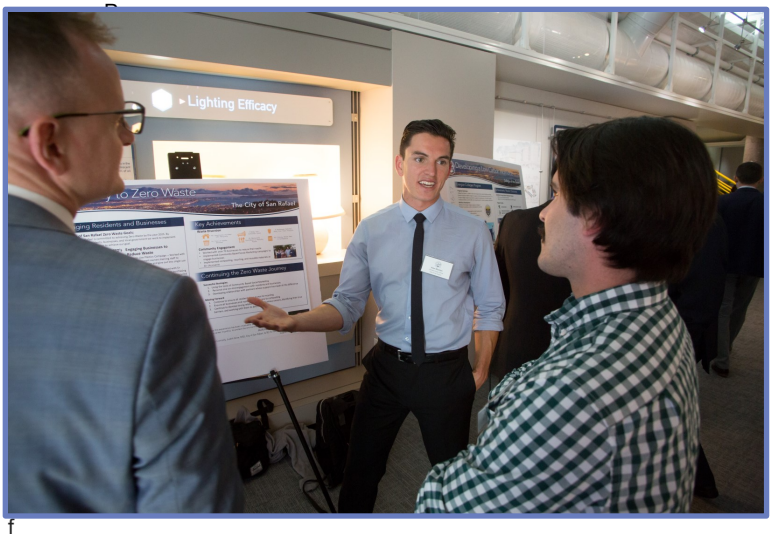
In addition to SEI working with high school students through MarinSEL, SEI's **Energize Schools** program also works with San Rafael's high schools. For example, SEI has led in-classroom and field activities at San Rafael High School to analyze human and climate impacts on our local watersheds, including building watershed models, traveling to San Rafael Creek to observe impacts to the waterway and test water samples, and utilizing ArcGIS to build watershed maps with layers incorporating human impacts to watersheds.

The City of San Rafael also led a three-county effort to install solar panels on public facilities through SEI and Optony Inc.'s **Sustainable Energy and Economic Development (SEED) Fund**. The SEED Fund is a unique opt-in program to empower agencies to evaluate and participate in a regional group purchase of solar PV projects. A key feature of the program is that it leverages revolving funds to defer upfront allocation of funds for project planning, site assessments, or procurement activities; rather these costs will be paid back through solar contracts only if solar is viable for the facility, so participants can fully evaluate their opportunities and costs before committing any resources. SEI supported the City of San Rafael to lead 21 public agencies in the collaborative purchase of 4.3 MW of solar in the region. Climate Corps Fellows participated in the education and recruitment of these public agencies.

> "By adding solar to City buildings, we have increased the City's use of renewable energy and reduced our greenhouse gas emissions."
>
> Damon Connolly, San Rafael City Council Member and MCE Board Chairman

The City of San Rafael also hires a **Climate Corps** Fellow each year to support the city on their energy, water, zero waste, sustainable transportation, and community engagement efforts. Climate Corps is a sustainability workforce development program that identifies meaningful climate action projects with local governments, schools, nonprofits, and for-profit organizations,

and recruits talented, passionate emerging professionals to lead these projects for a 10-month term of service. San Rafael Climate Corps Fellows have worked with businesses to help implement a foam ban ordinance and reusable bag ordinance, and have also implemented a single-use plastics reduction campaign. Recently, Climate Corps Fellow Alex Montes provided 115 apartments with recycling, helped nine businesses switch away from foam products, had 20 restaurants pledge to reduce plastic, helped over 40 grocery stores to be in compliance with plastic bag ordinances, hosted one bulky item collection event, and diverted over five tons of waste from the landfill.



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a
el Climate Corps Fellow, Alex Montes, presents project outcomes at the annual Climate Corps Symposium.

Other local organizations like the local utility MCE, College of Marin, and the San Rafael City School District have also hired Climate Corps Fellows to support their environmental and climate protection initiatives. MCE Fellow Justin Marquez helped enroll over 470,000 new customers in MCE's 61% renewables program, and 1,388 customers in MCE's 100% renewable program, gave 31 community presentations, and attended over 150 community events to speak to residents about MCE's renewable energy options.

Climate Corps Fellows working throughout the community work in collaboration and coordination with one another, SEI K-College students, and local civic and business leaders to accelerate sustainability initiatives. The Climate Corps fellowship program has an 80% success rate of Fellows securing full time employment in the sustainability sector or attending a relevant graduate degree program within three months of completing their fellowship.

Photo: The 2017-18 MCE Climate Corps Fellows.

Climate Corps Fellows at the College of Marin also work within the SEI **Energize Colleges** program. The Energize Colleges Fellow at College of Marin is working with faculty to develop new courses, certificates, and degree programs that will inspire and empower students to enter the green workforce. The Energize Colleges programs creates paid internships for current college students to lead sustainability projects on campus and around the community. The 2017-18 College of Marin Fellow, Danielle Robinson, increased sustainability visibility on campus through over 600 student interactions and over 1,000 interactions with stakeholders in sustainability, equity, and clean tech. She helped create 15 internship positions, which resulted in 650 student intern hours in community organizations. Danielle also hosted the first sustainability mapping workshop focused on cross-disciplinary sustainability education with 28 faculty and staff in attendance.

The City of San Rafael provides a case study for how a broad array of programs and collaborators can cohesively work together to transform the sustainability policies and behaviors in a community. SEI has helped San Rafael to expand the human capital for sustainability engagement through youth leaders and Climate Corps Fellows who are eager and equipped to get work done.

Regional Impact

The ecosystem of SEI programs: Energize Schools, Zero Waste Schools, the School of Environmental Leadership, Energize Colleges, Climate Corps, and SEED work together in communities to transform policy and environmental behavior through youth leadership, while developing a strong network of stakeholders, leaders, and experienced sustainability professionals.

SEI partners with EAH Housing, based in San Rafael, to implement sustainability initiatives within EAH Housing's affordable housing properties. Throughout SEI's partnership with EAH Housing, SEI has led the initiative to set up all 104 properties in the EPA's online benchmarking tool Portfolio Manager; developed an effective protocol for individual and portfolio-level affordable housing developments to achieve over $14,000 in savings per year; brought together groups of interested elementary and middle school students to form Green Teams and run a 2-month water conservation competition; and designed and implemented a Water Contest challenge, engaging more than 6,500 residents and saving more than seven million gallons of water over a three month period.

The School of Environmental Leadership currently has one flagship school at Terra Linda High School in San Rafael. As of 2018, four classes have graduated from the MarinSEL. On average, 85% of graduating seniors have attended a four-year university and the Class of 2018 received over $520,000 in merit scholarships and institutional grants.

> "High school can be a really challenging time and the MarinSEL program not only empowers me to grow as an intelligent leader and empathetic person, but also provides support through the struggles of the intense academic and social demands of high school. In this way, MarinSEL provides a learning style that cannot be obtained in a general high school."
>
> Cameron Evans, Class of 2019

National/International Impact

The SEI **Energize Schools** Program has worked with over 230 schools and over 70,000 students on sustainability projects and lessons focuses on topics such as climate change, watersheds and public water systems, green building, solar design, aquaponics, biomimicry, energy auditing, and more.

> "The SEI program, specifically the Energy Audit lessons and tour of the SDG&E Energy Innovation Center, helped my AP Environmental Science students this year. All of my students said that the AP Environmental Science Test Free Response Questions were super easy thanks to the lessons and the field trip."
>
> Megan Jones, Teacher at Mt. Carmel High School

The SEI **Energize Colleges** program serves as a catalyst for campuses to provide for student career exploration and deeper learning through new and expanded courses of study, and applied learning through internships. Through Energize Colleges, SEI has supported more than 300 student internships; 20 post-baccalaureate fellowships; over 40 faculty projects to develop new sustainability courses, certificates and degree programs; and meaningful college student green career connections with 15,000 high school students.

> "This has been a wonderful experience for me. I feel that these past few months have been the most educational months of my life because I was learning both in and out of the classroom. My mentors offered great guidance throughout the internship and always encouraged me to put academics first. After seeing the green industry in action first hand, I have even begun to reevaluate my career choices, and am considering pursuing a profession within the realm of environmental sustainability now."
>
> Justin Yu, Energize Colleges Intern, Skyline College

Over 350 **Climate Corps** Fellows have served since the program's inception. This has resulted in over 450,000 hours of Fellow climate project leadership at host organizations. The work of Fellows has prevented the equivalent of over 30,000 cars from being driven for one year, diverted over 250 million pounds of waste, and saved enough water to serve over 13 million

California homes. In addition to the sustainability work Fellows do during their fellowship, over 80% of Fellows continue to develop careers in the sustainability field after they have completed their fellowships.

> "Climate Corps has been an amazing first career step for me. I appreciate the time Climate Corps gives its Fellows to pursue professional development opportunities. This fellowship helped me build a great professional network right out of college and has given me the knowledge and experience I need to confidently develop myself as a young sustainability professional. Through this experience, I reaffirmed my passions for education, environmental health, and sustainable living. The invaluable skills and connections I have gained through my fellowship will greatly serve me as I move onto being a Sustainability Specialist for the County of Alameda, where I will be leading waste management projects."
>
> Stacey Lee, Climate Corps Fellow at UCSF

Point of Contact

Emily Courtney, Program Director, Education
Email: emily@seiinc.org
SEI

Websites

SEI
School of Environmental Leadership
Energize Schools
Energize Colleges
Climate Corps

SEI Climate Education and Workforce Development Programs

School of Environmental Leadership: The School of Environmental Leadership (SEL) is a four-year comprehensive high-school program designed to develop environmental leaders. During their time in the program, students focus on developing four critical 21st Century skills: Communication, Collaboration, Critical Thinking, and Creativity. Classes are focused on project-based, experiential learning about real-world environmental problems. By integrating academics, leadership, career skills, project management, and community service, we provide students with preparatory college and work experiences to catalyze their environmental leadership career.

Energize Schools: The Energize Schools program supports project-based learning and community-

based sustainability projects for K-12 students. Our program engages, inspires, and empowers students to pursue sustainability careers through curriculum, teacher training, classroom instruction, community projects, and resource conservation competitions. Energize Schools also hosts Green Career Conferences to excite, inform, and prepare students for future careers in the environmental field.

ENERGIZE COLLEGES

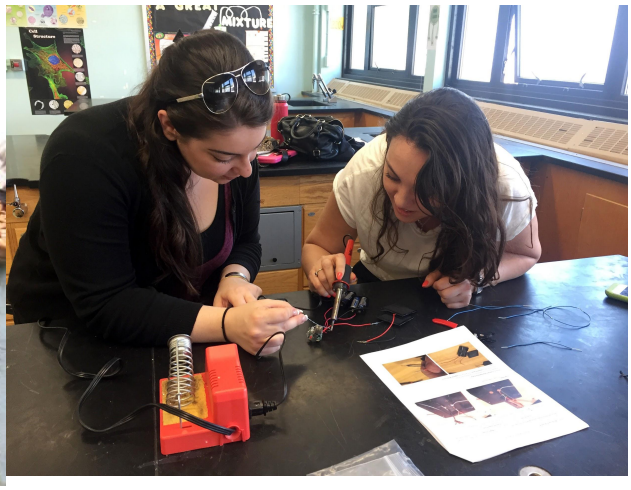
Energize Colleges: The Energize Colleges program helps build a highly qualified energy and sustainability workforce. We partner with colleges and universities to provide academic and internship opportunities for student sustainability career exploration, and resume and skills development.

Climate Corps: Emerging climate professionals learn cutting-edge professional and leadership skills by working with communities and organizations to develop and implement projects that address climate change. Host organizations receive the support of qualified, passionate, dedicated Fellows, who gain expertise in sustainability project implementation.

CLIMATE CORPS

Case Study 3. Comprehensive Workforce Development for Social and Environmental Justice

Solar One's Green Workforce Training Program and Green Design Lab Program



Solar One delivers environmental education programing to New Yorkers of all ages through five distinct programs aimed at different audiences. The organization was founded in 2004 to manage Stuyvesant Cove Park- an all native plant park located on the banks of the East River in Manhattan, but has since grown into a multifaceted renewable and energy efficiency education operation. In addition to their workforce development programs, Solar One has installed over 2 megawatts of photovoltaics on low income housing in New York City, become a central coordinator of citywide and regional climate and energy discussions, set in motion the construction of a state of the art environmental education center, and continued to manage and improve the park that was their birthplace. Solar One is supporting NYC's climate action plan by implementing high impact actions that accelerate near-term greenhouse gas (GHG) reductions.

Overview

"Increasing the sustainability of New York City's systems is of critical and growing importance. Solar One's Solar Schools and Career and Technical Education Programs bring our solar program to life for school communities in an engaging way, connecting the benefit of resilient infrastructure with the value of career preparation. Green jobs have earned a place on the radar of our youth, and we are thrilled that Solar One strongly supports student learning and leadership in this workforce development!"

Meredith McDermott, Director of Sustainability, NYC Department of Education

Solar One has two workforce development programs aimed at different audiences: the Green Workforce Training program and the K-12 Green Design Lab Program. These programs help to ensure that all New Yorkers can contribute to a more just and sustainable city by providing traditionally underserved populations access to workforce training.

Green Workforce Training Program

Solar One's green workforce development program is located at Solar One's training facility in Queens. Enrollment provides hard skills technical training and certifications in green construction, green building operation and maintenance, or solar panel installation. The program offers entry level training specifically for unemployed or underemployed individuals to successfully enter the workforce, as well as certification-based courses for incumbent workers. Solar One partners with multiple high-profile nonprofit organizations across NYC to provide these hard skills training programs to cohorts of under and unemployed students in an effort to provide them with new skills to enter or re-enter the workforce.

Solar One's workforce program also partners with the New York State Energy Research and Development Authority (NYSERDA) and local property management companies in NYC to train building staff in energy efficiency measures. Workshops focus on efficiently maintaining heating and cooling systems in every type of building stock to minimize wasted energy. A key component is a top to bottom implementation so that multiple levels of staff are trained to help support building-wide success. Afterwards, building managers develop a corporate strategy and sustainability plan to integrate new training initiatives within standard business procedure. This ensures continuation of training to address specific skills gaps and changing market needs.

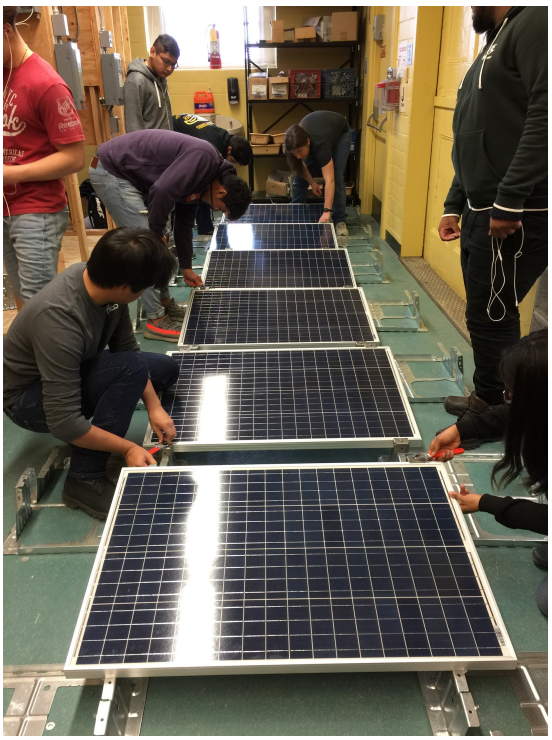
Since 2016, Solar One has worked with the Fortune Society's I-CAN program to deliver hard skills training onsite at Rikers Island Prison Complex to inmates in two and four week long cohorts. Students receive an experience similar to that of the classroom in Queens and participate in hands-on training projects onsite in the prison facilities. By incorporating the hands-on component in these trainings, students are extremely engaged and able to build their skill set directly in the classroom. Courses that have been taught at Rikers Island include green carpentry, electrical, plumbing, green building operations and maintenance, and solar PV installation. Following release back into the community, students are encouraged to attend additional training opportunities at Solar One and further advance their skills.

Solar One's Green Workforce educators also lead on-site building walkthroughs as part of NYC's Retrofit Accelerator program to help building managers adopt simple and low-cost retrofits. This collaborative initiative allows the city to reach goals in the climate action plan by utilizing the expertise of the green workforce educators.

Green Design Lab

Solar One runs a K-12 education program, called the Green Design Lab (GDL). GDL is an environmental and sustainability education program that offers activities and lessons, professional development for teachers, and field trips to Solar One's green education center. The Green Design Lab curriculum focuses on environmental sustainability and climate change through 5 units- energy, food, water, air quality and materials science. GDL activities are tied to state and national learning standards so that teachers can utilize these activities to support classroom learning objectives.

A major component of GDL's programming is to train students and teachers to use the classroom and school building as a tool for environmental change. For example, students and teachers are trained to conduct energy audits of their classrooms and homes and then implement energy conservation measures. Solar One partners with the NYC Department of Education to train Sustainability Coordinators to use their activities and resources to green their schools.



<u>High School Vocational Programs</u>

GDL also partners with the NYC DOE's Office of Career and Technical Education to provide training to high school students who attend vocational programs in electrical engineering, HVAC and construction. One of the flagship programs is the "Solar CTE Program" which trains high school electrical students in basic solar installation. Through this program, students learn foundational solar pedagogy and explore the breadth of the solar industry through field trips, guest speakers and independent research. Students then participate in a hands-on installation of a stand-alone solar system. Students complete the program by taking a solar installation exam. Students who perform well on the exam are given information on how they can receive more training to become NABCEP certified, once they are 18 years of age.

GDL also collaborates with the Green Workforce Program to provide hard-skills training for high school students that are interested industry certifications such as GPRO Fundamentals plus electrical and BPI Building Science Principles. These trainings consist of 20 hours of training plus the examination.

<u>CareerCLUE</u>

In 2016, GDL launched CareerCLUE (Community Learning, Understanding & Experience), a partnership with the NYC department of Education (DOE), Office of Community Schools and the NYC Center for Youth Employment (CYE) and the Department of Youth and Community

Development Summer Youth Employment Program to engage students from high-risk high schools in programming that blends environmental science, green career exploration and personal development. Now in its third year, this 6-week summer program for 14 and 15 year olds exposes students to green career opportunities through hands-on GDL activities, guest speakers, field trips and service learning projects. Students are paid for their participation in the program and they receive a science credit. For their capstone project, students must tie their learning to the goals outlined in the Mayor's sustainability plan.

New York City Impact

Green Workforce Training Program

"We must all do our part to make New York a more sustainable city. The Solar One Workforce training program provides needed green job training skills to New Yorkers, and I'm proud to support this important initiative"

City Council Speaker Melissa Mark Viverito after visiting Solar One's Solar Installer Class In Long Island City

Over the past 8 years, the Green Workforce Training Program has graduated almost 3,000 individuals. Of the 596 students who completed Solar One's workforce development program in 2017, 323 were entry-level unemployed individuals, 195 were existing building staff, and 78 were incarcerated individuals at Rikers Island.

2017 Green Workforce Program Job Placement Data

Number of students that completed a training program	233
Number of students placed in jobs	164
Number of students placed in green jobs	133
Out of all job placements, percentage of green jobs	81%
Percentage of students still employed as of June 2017	69%

Green Design Lab

"Making batteries, testing building materials, making the thermal water heater– all of the activities were great. This was, by far, the best PD I've ever attended. This had activities that are so relevant and applicable, and also things kids will enjoy doing. I will integrate some of these into my classes next year."

NYC School Teacher, Attended Solar One PD Workshop

During the 2017-2018 academic year, GDL worked directly with over 6,000 K-12 students, a 233% increase over the previous year. GDL also worked with 375 teachers in 2017-2018.

Regional Impact

The Green Design Lab is expanding its programming outside of New York City. GDL is in its third year of partnership with the New York Power Authority (NYPA) to offer professional development training for teachers and classroom residencies for students across New York State. GDL has also delivered trainings in New Jersey and is currently exploring a potential partnership with the city of Newark to bring some of the workforce and GDL programming in Newark. We are hoping to continue to expand programming to other cities in the Northeast including Baltimore and Boston.

Lessons Learned

Workforce development can happen at any age, and Solar One is approaching it from many angles. The green workforce of the future will be strengthened by students right out of high school, formerly unemployed individuals, veterans, and formerly incarcerated individuals doing a variety of jobs.

These are some of the main takeaways from Solar One's job training programs:

The future green workforce is diverse
Green workforce development programs can include a wide variety of trades. Training building managers and carpenters to work sustainably is as important as training solar technicians.

City agencies can support workforce development
One area for future development is to work with city agencies to encourage city contractors in solar and construction to interview candidates that come directly out of workforce programs for potential employment. This would help to boost job acquisition amongst underemployed individuals and help participants to gain valuable experience interviewing for jobs.

Workforce development starts in high school
Introducing students to green jobs and the principles behind them better prepares them to choose a career, and providing paths to certification and employment for individuals not inclined towards college can be a valuable way to grow the green workforce.

Educational networks can connect an entire industry
Community based organizations play a critical role in helping cities achieve their climate action goals. All facets of the energy industry benefit from information sharing between existing initiatives, and find greater success when connected to an educational organization's outward facing programs to a city wide community. This collective education creates a greater cohesiveness that allows for partnerships with current government initiatives, increasing visibility for both parties.

Point of Contact

Sarah Pidgeon, Co-Director of Programs
pidgeon@solar1.org
Solar One

Partners

Solar One partners with government agencies and organizations across New York City and New York State. Here are just some of our partners:

The Fortune Society
NYC Retrofit Accelerator
New York City Department of Education Office of Sustainability
NYC Department of Citywide Administrative Services
New York Power Authority Environmental Justice Department
WEACT for Environmental Justice
Urban Homesteading Assistance Board
NYC Environmental Justice Alliance
The POINT Community Development Corporation
UPROSE
NYC Department of Housing Preservation and Development
The Joint Ownership Entity NYC
The Fortune Society
STRIVE International
Green City Force
Brooklyn Workforce Innovations
BuildingWorks
LaGuardia Community College
St. Nicks Alliance

Resources/Website

Solar One
2017 Annual Program Report
Green Design Lab Classroom Residencies

Case Study 4: Empowering Communities through Workforce Development

GRID Alternatives
Oakland, CA

GRID Alternatives is a United States-based nonprofit solar installer that provides solar power to low-income communities and tribes in the US as well as energy access to rural and urban communities in Nicaragua, Mexico, and Nepal. In keeping with their mission to increase diversity, equity, and inclusion in the field of renewable energy, the organization has robust and differentiated workforce development programs focusing on women, veterans, tribal and low-income communities. GRID helps create communities that are both environmentally and economically sustainable, addressing economic inequality and un/underemployment while mitigating further degradation to the climate.

"By preparing Washingtonians for careers in rapidly expanding green industries and making it easier for residents to access clean energy, we are taking our commitment to the environment and DC's green economy one step further and modeling how cities can lead the way on this critical global issue."

Washington D.C. Mayor Muriel Bowser, speaking about Solar Works DC, a solar job training program GRID Alternatives runs on the city's behalf

Overview

GRID Alternatives is a full-service solar installer that works exclusively with low-income communities. GRID uses a service learning model of installation, inviting local community members, solar job trainees, students and other volunteers to learn solar installation skills onsite. Through strong community partnerships and individual outreach to homeowners, GRID finds income-qualified clients then engages job trainees and volunteers in installing the solar systems under the supervision of trained constructions staff. GRID funds it's model through a variety of resources, including donations, foundation and government grants as well as in-kind equipment donations from the industry. GRID's funding streams eliminate cost barriers for participants, maximizing the long term benefit for the household and their community.

To achieve its mission of making solar job training accessible to all, GRID has several workforce development initiatives and programs focused on specific groups that have been historically underrepresented in the industry including, women, people of color, veterans and tribes; these few stand out as exemplary of GRID's values of inclusion, equity, and diversity in renewable energy:

Tribal Workforce Development and Education

GRID's Tribal Program, based out of Denver Colorado, partners with Tribes across the country to install solar systems on tribal lands. GRID maintains its workforce development model in the tribal program, engaging local community members, K-12 students, tribal

colleges, and existing job training programs to train tribal members in solar installation and energy efficiency and promote renewable energy awareness with all age groups.

Women in Solar

As part of GRID's deep and ongoing commitment to Equity, Inclusion and Diversity GRID launched a Women in Solar initiative in 2014 to build a diverse, equitable and inclusive solar industry by providing pathways to technical careers for women, highlighting the voices of women in the industry, and providing leadership on solar workforce diversity. Women's voices, talents and leadership are needed more than ever to build a strong and sustainable industry worldwide. Across all of its workforce development programs both domestically and internationally, GRID specifically recruits women from colleges, job training organizations, and the communities they work with to participate in installations and provide resources and support for women to build community and thrive in a mostly male dominated industry.

Solar Futures

GRID Alternatives partners with high schools in underserved communities to introduce students to career pathways in renewable energy and provide both classroom and hands-on training. While the programs vary in length and depth with the needs and interests of the school, many students leave the training job-ready.

Impact

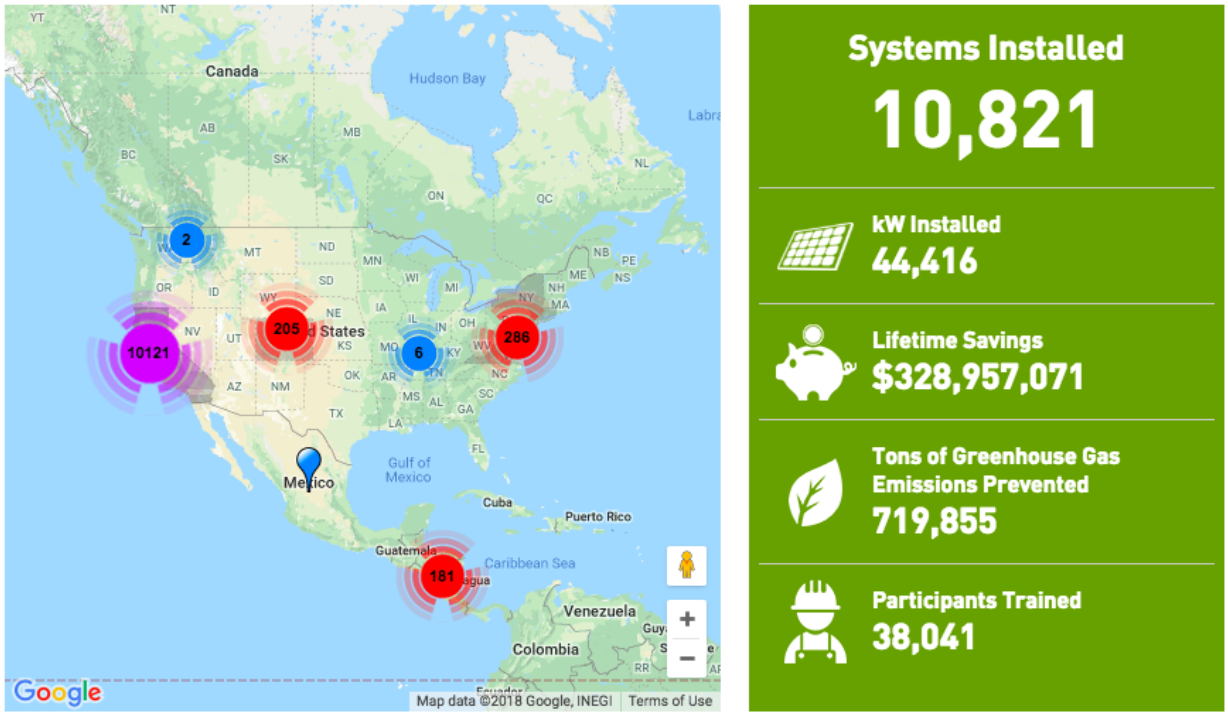


Image: Grid Alternatives program impact

Domestic Impact

"GRID Alternatives develops unskilled, untrained workers at no out-of-pocket cost by combining local renewable energy installation and job training. Last year GRID Alternatives connected 87 volunteers to solar energy jobs and apprenticeships based on the workforce training and grit validation that they provided.

For many students who do not seek college education, our schools don't provide sufficient hands-on workforce experience. This education gap is where GRID Alternatives' fantastic work comes into play. Long Beach as a whole is better for GRID Alternatives' efforts. They educate and activate residents, and put real resources into the changes we need to increase energy independence for the vulnerable, safeguard our environment, and put residents on the path to strong and sustainable careers."

Long Beach City Councilwoman Jeannine Pearce, speaking about GRID Greater Los Angeles

Since 2004, GRID has installed over 10,500 solar electric systems in the US and engaged more than 37,711 volunteers and job trainees in their mission. GRID's approach to solar installation has prevented 720,000 tons of greenhouse gas emissions while providing pathways into the renewable energy industry for participants, many of whom come from traditionally underrepresented groups. GRID's domestic workforce development programs seek to not only increased the number of trained workers in the renewable energy industry but also ensure that the solar workforce better reflects the country they serve.

International Impact

"Beyond bringing electricity to this community, without knowing it, we were planting a seed that will continue expanding its roots. In a small but profound way, we are empowering young women to make tangible changes in our society, in spite of the adversities and the gender norms that have held us back and categorized us as the weaker sex."

Paola Pérez Belli, Mujeres del Sol participant in Nicaragua

GRID Alternatives' International Program (formerly Power to the People), has been working in Nicaragua since 2008, expanding to Nepal in 2016, and Mexico in the fall of 2017. To date, GRID has installed over 200 off-grid and grid-tied solar electric systems and 1 microgrid across the three countries it works, bringing energy access to more than 35 communities, and providing training and workforce development for over 400 local and international participants. In 2015, GRID launched Mujeres del Sol (Women in Solar) in Nicaragua, a program that offers unique, hands-on training opportunities for Nicaraguan women to gain practical knowledge, build their skills and resumes, and be more competitive as they pursue employment in the heavily male-dominated solar industry. Since its launch, GRID has trained 40 Nicaragua women pursuing college degrees, working, or interested in the renewable energy field in a hands-on solar installation. Two Nicaraguan Women in Solar participants have been hired as full-time Solar Technicians with GRID in Nicaragua, and many more have carried enhanced skills forward with them in their careers. Replicating its success in the US and Nicaragua, GRID plans to launch a Women in Solar Nepal program in 2019 to empower and train Nepali women to enter and be competitive in the growing, and male-dominated solar industry in Nepal.

Lessons Learned

The just transition to renewable energy has to include everyone and the clean energy workforce of the future must reflect the diversity of the places it serves in order to create an equitable post-carbon world. GRID Alternatives is evidence that this belief can be put into practice. Their workforce development programs support several takeaways:

Low-income, rural, and communities of color can not be left out of the just transition

Environmentally burdened communities, often low-income, rural, or communities of color must be part of the climate change solution. Offering job training is a powerful way to expand the renewable energy workforce and diversify access to renewable energy jobs.

Working with many different organizations can be a strength
GRID Alternatives' accomplishments are a testament to the success of its network partnerships with local and regional governments, philanthropic institutions, private companies, nonprofits, and individual volunteers.

Decarbonization and social action can happen at the same time
The statistics speak for themselves: GRID has been able to simultaneously mitigate thousands of tons of carbon emissions, expand the renewable energy workforce, and work towards environmental and economic justice in disadvantaged communities.

State policy can make or break workforce development programs
GRID's model works best in areas with a vested interest in low-income solar and growing the solar workforce. The growth of the U.S. solar market provides an opportunity for municipalities to address economic and environmental injustice through programs that help make solar accessible to lower-income communities and incorporate solar job training to support the industry. States like California, Illinois and the District of Columbia lead the way by requiring hands-on training on installs within their incentive programs, exposure that goes a long way in an industry that values experience as a top hiring requirement.[2] To help drive the creation of low-income solar policies and program, GRID partnered with Vote Solar to create the Low Income Solar Policy Guide at lowincomesolar.org.

GRID Alternatives works locally through ten regional and affiliate offices to serve families in California, Colorado, and Mid-Atlantic region. We also have an International Program serving Nicaragua and Nepal, and a Tribal Program serving families nationwide.

Point of Contact

Domestic:
Lauren Friedman
LFriedman@gridalternatives.org
GRID Alternatives

International:
Stephanie Thornton
SThronton@gridalternatives.org

[2] Solar Foundation, 2017 Solar Job Census

GRID Alternatives

Partners

Corporate Sponsorships
Utility partnerships
Affordable housing partnerships
Job Training Partnerships
Government partnerships

Resources/Website

https://gridalternatives.org
https://gridalternatives.org/what-we-do/international-program
www.lowincomesolar.org
Triangle Court case study
Sun Crest Heights case study

Case Study 5: Building Capacity for Productive Public Engagement

NNOCCI Program

Photo: Visitors to a aquarium that have staff who are trained in effective climate change interpretative practices to provide opportunities for participants to explore local relevance and solutions. (link)

Studies have shown that nearly two-thirds of Americans talk about climate change only occasionally or not at all, resulting in a lack of community action to address one of the most important issues of our time. The National Network for Ocean and Climate Change Interpretation (NNOCCI) has demonstrated that by activating the resources of widely trusted institutions such as aquariums, zoos, museums, and other informal science education (ISE) institutions, we can break through obstacles such as the perceived complexity of science and political polarization to create a space in which productive, fact-based climate change conversations can be had and barriers to community climate action can be overcome. We now have abundant evidence that these conversations inspire ISE institution visitors to drive community-level strategies in addressing climate change. Through NNOCCI's success, we have integrated the power of climate communication within the New England Aquarium visitor experience, and have built on our knowledge to extend our strategy into Boston-area communities, particularly to coastal communities that are especially vulnerable to the impacts of climate change. By building on solid empirical research to understand what people already value, believe, and understand, networks of ISE institutions have designed communication strategies that helped translate complex science in a way that allows people to examine evidence, make well-informed inferences, and embrace science-based solutions. The impact to

date has been extensive and many more institutions support their community's climate actions in the Boston area and across the United States.

Case Study

The Case Study below outlines the impact of the New England Aquarium's climate change education programs on the climate actions in the Boston region and communities across the country and beyond.

> The outcomes that New England Aquarium sets out to achieve are directly in line with MAPC's strategic goal of helping the region reduce greenhouse gas emissions and adapt to the physical, environmental, and social impacts of climate change and natural hazards through community education and an informed public. This work also supports our mission of promoting smart growth, regional collaboration, inclusive community engagement and advancing equity in the region,
>
> Emily Torres-Cullinane, Community Engagement Manager, Metropolitan Area Planning Council

ISE institutions can serve as conveners and facilitators, bringing together people to discuss important social and environmental issues. They can help to build relationships and trust both within and beyond their walls. In an era where partisanship has increased and trust in many institutions has decreased, the general public continues to view ISE institutions as trusted and unbiased. By building on empirical research to understand what people already value, believe, and understand, networks of institutions have designed communication strategies that helped translate complex science in a way that allows people to examine evidence, make well-informed inferences, and embrace science-based solutions. The impact to date has been extensive and many more institutions support their community's climate actions.

To build on the public's trust in ISE institutions, the New England aquarium and a wide group of partners have developed a strategy that extends outside the four walls of the Aquarium to build new kinds of community partnerships aimed at catalyzing responses to climate change. With funding from Institute of Museum and Library Services (IMLS), National Science Foundation (NSF), and National Oceanic and Atmospheric Administration (NOAA), they are piloting this work in a new community climate resilience initiative in East Boston and in nearby municipalities, including Chelsea, Lynn, and Hull. They will then leverage the NNOCCI network to expand to other urban areas that will be similarly impacted by climate change.

Through a City Team approach, the aquarium is bringing together ISE educators with city planners and scientific/technical advisors (e.g., Climate Ready Boston, NOAA, Coastal Zone Management (CZM), University of Massachusetts Boston, and Metropolitan Area Planning Council), community organizations (e.g., Green Roots, Harborkeepers, and ZUMIX in East Boston), and education partners in Innovation Lab Training (ILT). They are working with the Harwood Institute for Public Innovation and FrameWorks Institute to develop a training program for City Teams, followed by action planning, follow-up coaching, and evaluation. This ILT introduces theoretical perspectives on community engagement and science communication, as well as practical strategies for aligning community needs with learning goals and developing action strategies to respond to community challenges. Training includes specific tools for: listening to community concerns, identifying "unusual suspects" (trusted partners in communities

who can accelerate progress), developing partnerships, convening community meetings, and linking scientists and grassroots community organizations in collaborative goal setting.

> CZM is currently assisting coastal communities with climate change vulnerability and risk assessments, and is committed to helping advance the Aquarium's work to develop school and community partnerships to increase public dialog about increasing climate resiliency. This work supports the goals of the Commonwealth's StormSmart Coasts Program to provide information, outreach, and tools to help communities address climate change.
>
> Bruce Carlisle, Director, Office of Coastal Zone Management, Commonwealth of Massachusetts

In addition, the Aquarium's ClimaTeens program in Boston, which serves 40 teens per year over a nine-month leadership training and development program, has demonstrated the potential for youth to serve as environmental leaders. Over 65% of ClimaTeens participants live in low-income communities, which are often hardest hit by climate change. ClimaTeens participants are empowered to serve as vectors for change. Evaluation results for this program are positive, showing 94% indicated they increased their ability in and confidence to provide leadership to their peers, and 100% indicated they increased their ability in and confidence to persuade someone that an environmental issue is important.

Key outcomes of the community climate resilience initiative include the following:

- Community organizations in participating communities gain new tools, information, and resources that, combined into shared action plans, can advance community climate know-how and community-driven responses to the threats and challenges they face, and to increase the potential for shared action to help create more livable and sustainable communities.
- Community leaders demonstrate increased science know-how on climate change issues and more broadly see the role of the New England Aquarium as an integrated community partner, rather than simply a destination to visit.
- The Aquarium deploys new strategies and tools for community engagement and facilitating community change; builds new partnerships with which to define shared priorities moving forward; and develops new perspectives on our role in helping communities better address their needs and priorities.
- Other communities and organizations in the Boston area and beyond can participate in and build on this new capacity-building model.

NNOCCI Overview

> "… NNOCCI has completely changed the way I approach communicating our agency's research and mission. I feel more confident in my abilities to communicate complex and controversial subjects as a result of my NNOCCI training."
>
> Science Educator

NNOCCI is a network of individuals and organizations in ISE, the social sciences, and climate sciences currently working in 170 institutions in 38 states. The network shares a commitment to using evidenced-based communications methods and providing the social and emotional support needed to engage as climate communicators. By working together, they develop the knowledge, techniques, community, and confidence needed to empower their audiences. NNOCCI is a generative social impact network that advances the educational role of ISE institutions, collaborates on research and development, and continues to support a community of practice and a powerful social movement. Our consistent messaging about climate change across the country is changing public discourse to be positive, productive, solutions-focused, and supportive of community climate action.

NNOCCI provides in-depth training, called Study Circles, for ISE educators from aquariums, zoos, and science/nature centers across the U.S. Led by the New England Aquarium, NNOCCI's network structure empowers members to support and complement each other's skills. In addition to the 170+ ISE institutions in the NNOCCI network, our strategic partners are:

- Monterey Bay Aquarium: leads social media strategy, coalition-building expertise, and updating and managing NNOCCI's website, Climateinterpreter.org
- FrameWorks Institute: ensures integrity of strategic framing content in training materials and activities
- New Knowledge Organization: assesses and evaluates NNOCCI's impact in the community
- Association of Zoos and Aquariums (AZA): ensures alignment between NNOCCI and AZA initiatives, advises on best practices for structuring professional development for informal educators, and facilitates dissemination to AZA member institutions
- Woods Hole Oceanographic Institute: ensures the integrity of climate science content and dissemination to climate scientists.

Informal science educators possess a high level of public trust (The Ocean Project, 2009; Fraser and Sickler, 2009). Properly equipped, they can accelerate effective public engagement. However, informal educators need training to increase their confidence in scientific knowledge, guidance on interpreting the complexity of climate change, and support from their peers to take on a leadership role in addressing this often distressing and controversial topic for society.

Among the goals of the NNOCCI Network, a few stand out for their importance and direct relevance to community climate action:

Engaging in place-based solutions empowers communities
By focusing on specific applications and solutions to real-world problems, crisis-framing and despair is minimized. Appealing to strongly held universal values and concepts, such as responsible management and stewardship, can minimize polarization and contention. Interpreters trained by NNOCCI help the public to see themselves as potential participants in community issues, rather than simply as individual consumers of knowledge.

Being a part of a network increases confidence which leads to more dialogue and action
The NNOCCI initiative has reached aquariums, zoos, and science/nature centers across the United States and beyond. As shown in ”Catalyzing Public Engagement with Climate Change Through Informal Science Learning Centers” in the journal of Science Communication, visitors to institutions that have participated in NNOCCI training are significantly more:

- Knowledgeable about climate change science
- Hopeful that we can solve climate change challenges
- Confident talking about climate change with others
- Likely to believe that talking with community leaders lead to community level change
- Likely to engage in community-level community action to address climate change.

Examples of these community actions include engaging local policy makers, joining a local climate action organization, donating to an organization addressing climate change, voting for candidates who pledge to address climate change, signing petitions, and personal activities such driving less and purchasing energy efficient appliances. Positive impacts created by these

NNOCCI-inspired community leaders illustrate how NNOCCI can effect on-the-ground, community level change by changing the conversation around climate change.

A "train the trainer" model has a high return on investment

Since its inception in 2009, NNOCCI has trained 400 individuals, who have, in turn, trained more than 38,000 people to use NNOCCI's communication techniques, influencing 150+ million visitor interactions per year. NNOCCI members also build exhibits, create educational programming, foster community partnerships, and develop training programs that engage millions of Americans in climate conversations every day.

Photo: Climate change interpretation in action at the New England Aquarium

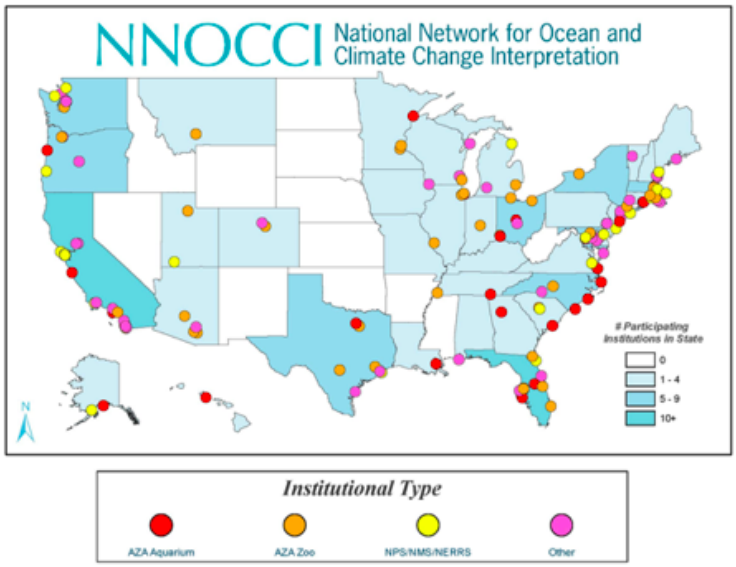
Lessons of what works inform other institutions programs

The New England Aquarium has been applying the lessons learned from NNOCCI in the Visualizing Change project, a related NOAA-funded collaboration among several aquariums, focused on developing strategically-framed "visual narratives" that take advantage of global datasets presented on platforms such as the Science on a Sphere. Observations during formative evaluation demonstrate that after listening to a strategically-framed presentation, visitors can describe climate change causes, impacts, and solutions.

National/International Impact

NNOCCI's approach to communication can be impactful at scale because we provide techniques and tools – instead of a "script" – which educators can adapt to resonate best with their communities. NNOCCI's work has already had an impact on a national level, and exploratory work has been done on extending this approach to Canada, United Kingdom, Brazil, and China.

NNOCCI training focuses on how to increase public understanding, self-efficacy, and support for solutions related to climate change causes and impacts. Each Study Circle brings together pairs of educators representing ten institutions from across the country with two climate scientists and three facilitators. Participants invest approximately 70 hours over 4-6 months, learning and practicing research-based communication techniques and climate science.



Graduates of these workshops become part of our national network in the United States. They then implement new messaging techniques at their respective institutions and train volunteers, staff, and community partners to communicate using NNOCCI's proven, evidence-based method. Network members receive continued support via webinars, network newsletters, and online social groups to share their successes and innovations, incorporate the latest science, ask for help, and improve our collective practice.

Map of NNOCCI Network

Study Circles use a strategic framing™ approach (Gilliam and Bales, 2004), which supports effective communication by (1) building on careful empirical research to understand what people already value, believe, and understand and (2) designing and testing communication strategies that help translate complex science in a way that allows people to examine evidence, make well-informed inferences, and embrace science- based solutions.

By using scientifically accurate, tested language, the complexity of earth and climate systems can be more easily understood. By connecting to widely held values – such as protection and responsible management – people can be helped to understand what is at stake and how the ocean and climate connect to their daily lives. By helping people understand human impacts, people will gain awareness that their involvement makes a difference; and, by emphasizing actionable, community-level solutions, community climate action can be initiated.

This approach explains causes and consequences to orient thinking and discourse toward effective interventions. For example, explaining that burning fossil fuels releases large amounts of carbon dioxide into the atmosphere, where it acts like a heat-trapping blanket, has been shown to help non-experts think more effectively about ways to address the root cause—burning fossil fuels (Frameworks Institute, 2014). Understanding the chain of cause and effect helps individuals to appreciate the root source of the problem, and what kinds of solutions are likely to be effective.

Based on attendance records from zoos, aquariums, and other informal science education institutions, attendance at NNOCCI-affiliated institutions is estimated to exceed 150 million people, or about 45% of the US population. When the social networks of these visitors is considered, in addition to the social networks of the communicators and their colleagues, it is no surprise that the national dialogue on climate change is moving toward finding effective solutions to one of the great environmental challenges of our time.

> "I think the government has to be involved in finding a solution. For example, where we live there is some type of public transportation, but I think the schedule is one bus every hour. If you rely on that as your main form of transportation, you're going to get to work in two hours. So it's not feasible, and therefore you have to drive your vehicle. If we had a good public transportation system, we could use it, instead of relying on our cars."
>
> Visitor to a NNOCCI-affiliated institution

Lessons Learned

Informal science centers can play a pivotal role in strengthening climate know-how, promoting effective public discourse, and motivating community climate action. The NNOCCI model has shown that a motivated group of communicators – armed with effective messaging techniques and emotional support from members of a tight-knit community of practice that shares their values and concerns – can shift the national dialogue about climate change. There are several key takeaways from this work:

Community fosters climate action
The Climate Interpreter portal supports educators or volunteers at aquariums, zoos, national parks, national marine sanctuaries, and other informal science education institutions that are addressing climate change. They can join and connect and share with a community of colleagues and peers.

Local resources support climate engagement and action
Providing opportunities for educators to directly respond to local impacts of climate change encourages a sense of community responsibility while increasing people's understanding, talking about, and acting on climate change.

Museums Can Be Leveraged To Increase Local Climate Dialogue
Museums have a large reach and are highly trusted. Sixty-one percent of Americans regularly visit ISE institutions and represent a wide swath of society. So if they can be reached, a significant impact can be achieved. The ripple effects of effectively engaging ISE institutions has been surprisingly extensive, with lasting impacts documented on trained informal educators; their colleagues, friends, and families; and the millions of visitors with whom they engage. These impacts include improved understanding of the causes of and challenges created by climate change, greater hope about addressing climate challenges in their communities, and increased motivation to engage in community climate action.

Point of Contact

Point of Contact
Billy Spitzer
Email: nnocci@neaq.org or bspitzer@neaq.org
New England Aquarium

Partners
Monterey Bay Aquarium

New England Aquarium
New Knowledge Organization Ltd.
Woods Hole Oceanographic Institution
Association of Zoos & Aquariums
FrameWorks Institute
NOAA

Resources/Website
National Network for Ocean and Climate Change Interpretation - NNOCCI
NNOCCI: Changing the Conversation on Climate Change Video
National Network for Ocean and Climate Change Interpretation (NNOCCI) Recommendations
ClimaTeens
Community Partners for Resilience

Case Study 6: Education to Support Informed Decision Making by Key Influential Community Leaders

Climate Education Partners

Climate Education Partners is a member of the Climate Change Education Program Alliance, a group of climate education projects that were formed 8 years ago to develop new resources and new ways to inspire diverse audiences to make informed decisions regarding climate change. Climate Education Partners (CEP) is composed of an interdisciplinary team of experts that have worked together integrating climate science, science education, behavioral psychology, strategic communication and real-world experiences to develop of suite of resources and processes to support informed decision making by key influential community leaders. The National Science Foundation supported Climate Education Partners by providing $6 million

dollars across 8 years to develop a strategic plan for comprehensive education of community leaders and implement a suite of activities to engage the influential decision makers in the San Diego region.

CEP has been working to share science about the changing climate with Key Influentials (KIs)—leaders in the community who include elected officials, tribal leaders, academics, and representatives from local businesses, nonprofits, ethnic and cultural communities, faith-based groups, and special interest groups. The project seeks to provide solid scientific information that enables KIs to make informed decisions on how best to protect the spectacular natural beauty, economic vibrancy and preserve the quality of life in San Diego, not just for today, but for all future generations. Though the CEP materials are targeted specifically at San Diego's leaders, the model was built from the start to be replicated in cities across the country.

"Climate Education Partners is an example of a collaboration that is happening in the San Diego region that can really teach some lessons to other places around the country."

Scott Peters, US House of Representatives, CA-52

Overview

Taking care of our environment is not just good for our health and quality of life; it also strengthens our economy. Together we are working with leaders throughout the region who understand the importance of investing in more energy-efficient technology to create high-quality jobs and expand business opportunities in San Diego County. We can put people to work while having a clean and healthy environment.

Kevin Falconer, Mayor, City of San Diego and Todd Gloria Assemblymember of the 78th California Assembly District

At the core of our project was a partnership with Key Influentials - the decision makers and community leaders in San Diego County. CEP conducted nearly 100 interviews with Key Influentials in the San Diego area which informed the framing, content, and goals of the 2050 Report. The report describes the driving climate factors and five major impacts to the San Diego region and highlights the community of concerned leaders that currently exists. Easy to understand graphics, quotes from key leaders in the area, and a nod to the importance of doing this for the next generation provide important climate information in an way that is easy to digest and share. By relying on the direction of the KIs themselves, the guide reaches both the climate conscious and the more skeptical. The report was used in tandem with other educational resources and outreach activities, which included presentations at board meetings, city council meetings, government working groups, academic and technical conferences, corporate lunch-and-learn events, and more, to reach a wide variety of KIs and hammer home the importance of climate action. It is available in English and in Spanish as a way to engage the key audiences in San Diego County.

In addition, KIs attended local tours that provide place-based learning and offered KI “ambassador” opportunities designed to encourage the KIs to bring the message of climate action to their home communities and organizations. As part of CEP’s replication efforts, an online community toolbox resource, "Your Community Toolbox for Leading in a Changing Climate" was released early in 2017 and updated several times to include new case studies, reports on lessons learned and new material. The CEP team also presented on the toolbox at several different venues and to different audience showing the power and versatility of this comprehensive resource.

Regional Impact

Many organizations adopted CEP methods and materials broadly within their structure once a KI was introduced to CEP. For example, the San Diego Airport Authority requested access to the *2050 Report* content, quotes, and information to be used to inform interested supporters of their Good Traveler campaign. The Union of Concerned Scientists and the Public Health Alliance of Southern California requested permission to use CEP’s infographics. The City of San Diego is partnering with CEP to train a marine science graduate student to develop skills in the policy arena and support their climate action plan. Other partners such as SDG&E became a key collaborator and host for both a Lunch & Learn event for their own employees (including many in upper management) and for CEP’s tours on wildfires and drought. We also partnered with a group helping businesses develop sustainability plans including potential future impacts of climate change.

Actions we take now to reduce emissions of heat-trapping gases can slow warming in 2050 and beyond. In fact, what leaders at all levels decide to do in coming years will determine the climate and quality of life that our children and grandchildren will inherit.

Dr. Margaret Leinen, Director of Scripps Institution of Oceanography UC San Diego

National/International Potential

Furthering the work of Climate Education Partners' (CEP) signature report, "*San Diego, 2050 Is Calling. HOW WILL WE ANSWER?"* – a first-ever collaboration among community leaders and world-renowned scientists – CEP has launched its new website, "Your Community Toolbox for Leading in a Changing Climate," which provides a comprehensive and multimedia resource for other cities and regions looking to incorporate climate change education and leader engagement into their climate action planning efforts. The Toolbox walks you through the processes needed to put together a team dedicated to climate change education and resilience planning as well as providing a template to develop the resources that could reach a key audience in another city, region, or country.

View the resource website or download the PDF text-only script of this entire resource.

Lessons Learned

CEP's client-led approach to outreach and education ensures that their materials reach KIs in the most efficient and useful way possible. CEP's enthusiastic reception by large organizations like the San Diego Airport Authority, the Union of Concerned Scientists, and tribes is a testament to the effectiveness of this approach. The following are some key takeaways from CEP's success:

Widen and deepen the "Community of Leaders" by being organized
Critical to being able to respond to KIs' needs is having a database that enables contact information to be sorted and organized by categories so that engagement with each group is more deliberate and aligned with project goals and the needs of the KIs. A talented support staff dedicated to this and other logistic support is critical to the success of these types of ambitious programs.

Capitalize on opportunities to engage more deeply with partners

Several of the outreach activities have resulted in new opportunities for engagement with the same partners. As an example of adaptability of our resources and the reach of our program, CEP was invited to help tribes develop a greenhouse gas inventory and to participate in their major Earth Day community event. This also led to a more engaged participation in the U.S. Environmental Protection Agency Tribal Conference held in San Diego last year.
This shows how CEP has chosen to respond to the needs of KIs, as opposed to dictating their needs.

Building capacity to support communities climate action teams
CEP has been able to build capacity at multiple levels to connect to the needs of local communities, businesses, NGOs or universities. Throughout the course of the project, we have provided employment and internship opportunities for undergraduate and graduate students engaging them in multiple facets of our project from logistics, to data analysis, to presentations, and even to opportunities for post-graduate experiences. We have created opportunities to work with our local partners and prepare for more projects in the future like the Climate Collaborative and the Environment and Social Justice Leadership Hub. Finally, the Toolbox will allow for other communities across the nation and beyond to educate their decision makers and to prepare for the impacts of climate change.

For any similar program to succeed in the long-term, an organization must: (1) build a connection to a University which provides institutional support, connections to students, and a stable organization for long-term planning; and (2) establish an interdisciplinary team with a broad and complementary set of skills including organizational skills, communication skills and interpersonal skills.

Respond to demand for educational resources
Several groups reached out to CEP to utilize CEP's resources. CEP has made infographics, educational videos, and all reports available to KIs and their staff to use as needed to further KI climate education efforts on their website. Being responsive to the needs of KIs and community partners is a high priority.

Use an action research model to test theoretical models and evaluate activities
CEP collects and stores data gathered through surveying, polling, and other evaluation tools. Communication and social science theories have been used to help diagnose barriers and opportunities. After taking action, data helps the CEP team identify effective practices and test theoretical educational models. This action research process helps CEP to iteratively refine its outreach, resources, and activity engagement.

Point of Contact

Michel Boudrias, Ph. D., Assoc Prof. & Principal Investigator
Email: boum@sandiego.edu
Climate Education Partners

Mica Estrada, Ph.D., Associate Professor
Director of Climate Education Partners & Co-Principal Investigator
Email: mica.estrada@ucsf.edu

Christiana DeBenedict, MBA

Director, Environmental Leadership Initiative, Non Profit Institute, USD
Email: cdebenedict@sandiego.edu

Partners

University of San Diego
Scripps Institution of Oceanography
California State University San Marcos
University of California San Francisco
The San Diego Foundation
The Steve Alexander Group

Resources/Website

Climate Education Partners
San Diego 2050
Your Community Toolbox for Leading in a Changing Climate