

Integrated Grid Planning (IGP) Resilience Working Group: Kick-off Meeting

July 22, 2019

7:30 am – 12 pm

Ka Waiwai, 1110 University Ave, Honolulu, HI 96826

Attendees

Name	Organization	In Person	WebEx
Carilyn Shon	Hawaii State Department of Business, Economic Development and Tourism, Energy Office	X	
Chris Yunker	Hawaii State Department of Business, Economic Development and Tourism, Energy Office	X	
Marcey Chang	Hawaii State Department of Commerce and Consumer Affairs, Division of Consumer Advocacy	X	
Dean Nishina	Hawaii State Department of Commerce and Consumer Affairs, Division of Consumer Advocacy	X	
Jay-Paul Lenker	Hawaii State Department of Commerce and Consumer Affairs, Public Utilities Commission	X	
Samantha Ruiz	Hawaii State Department of Commerce and Consumer Affairs, Public Utilities Commission	X	
Thomas Travis	Hawaii State Department of Defense, Hawaii Emergency Management Agency	X	
Jade Butay	Hawaii State Department of Transportation	X	
Ross Higashi	Hawaii State Department of Transportation, Airports Division	X	
Gary Yokoyama	Hawaii State Department of Transportation, Airports Division	X	
Joseph Beagley	Hawaii State Department of Transportation, Harbors Division	X	
Peter Pillone	Hawaii State Department of Transportation, Harbors Division	X	
Hirokazu Toiya	City and County of Honolulu, Department of Emergency Management	X	

Crystal van Beelen	City and County of Honolulu, Department of Emergency Management	X	
Lori Kahikina	City and County of Honolulu, Department of Environmental Services	X	
Chris Cunningham	City and County of Honolulu, Office of Climate Change, Sustainability and Resiliency	X	
Christian "Kaliko" Kabasawa	City and County of Honolulu, Office of Climate Change, Sustainability and Resiliency	X	
Rocky Mould	City and County of Honolulu, Office of Climate Change, Sustainability and Resiliency	X	
Kevin Ihu	Honolulu Board of Water Supply	X	
Keith Okamoto	County of Hawaii, Department of Water Supply	X	
Jeffrey Pearson	County of Maui, Department of Water Supply	X	
Alex de Roode	County of Maui, Energy Commissioner	X	
Herman Andaya	County of Maui, Emergency Management Agency	X	
Keith Yamanaka	United States Army	X	
Glen Yanagi	United States Coast Guard	X	
Raymond Tanabe	United States Department of Commerce, National Oceanic and Atmospheric Administration	X	
Jeanne Johnston	United States Department of Homeland Security, Federal Emergency Management Agency	X	
Janet Yocum	United States Department of Homeland Security, Federal Emergency Management Agency	X	
Joe Baysa	United States Marine Corps	X	
Robert Malaca	United States Marine Corps	X	
Sonny Rasay	United States Marine Corps	X	
Shaun Sakai	United States Marine Corps	X	
Dan Lougen	United States Navy	X	

Shereen Wachi	United States Navy	X	
Dan Kouchi	Chamber of Commerce	X	
Tristan Glenwright	Energy Freedom Coalition of America, LLC		X
William Rolston	Energy Island		X
Robert Harris	Hawai'i PV Coalition	X	
Tony Moiso	Hawaii Society of Healthcare Engineers	X	
Dan Masutomi	Hawaiian Telcom	X	
Jonathan Choi	Par Hawaii	X	
Wren Wescoatt	Progression Hawaii Offshore Wind, LLC	X	
Erik Kvam	Renewable Energy Action Coalition of Hawaii, Inc.	X	
Murray Clay	Ulupono Initiative	X	
Corey Shaffer	Verizon Wireless	X	

Hawaiian Electric Companies Attendees

Karina Abenoja

Ken Aramaki

Marc Asano

Keith Asato

Collin Au

Colton Ching

Karen Chung

Edine Clemente

Kaanoi Clemente

Ronald Cox

Brandi Crabbe

Rey Crisostomo

Darcy Endo-Omoto

Phillip Gerwien

Lisa Giang

Alan Hirayama

Robert Isler

Christy Kaneshiro

Sorapong Khongnawang

Christopher Lau

Tracy Lum

Earlynne Maile

Mahina Martin

Saaya Miyashiro

Jessica Mow

James Ogata

Rick Pinkerton

Kevin Saito

Kimberly Seto

Christine Shigetomi

Donna Stinefelt

Kurt Tsue

Joseph Viola

Lena Young

Presentation Highlights

Purpose and Overview of the Working Group

- This is the Companies' first attempt at trying to develop generation, transmission, and distribution plans that incorporate resilience. Integrating resilience into the IGP process is relatively new for the industry.
- Hawai'i is unique.
 - Island economy
 - No market to purchase or sell power
- The IGP process has established seven working groups along with a Stakeholder Council and a Technical Advisory Panel.
- Resilience is one objective the Companies are planning around.

Three Pillars of Resilience

- All three pillars are important.
- Community discussions for Ko'olaupoko have started and are on-going.

Integrated Grid Planning Resilience Working Group Process

1. Awareness – What are the issues? Potential impacts?
2. Define resilience – Agree to a definition in a way that we all feel is appropriate for Hawai'i. What threats should be considered?
3. Priorities – What are the priorities: locations, customers, sectors?
4. Identify potential impacts – What would be the potential map due to priority?
5. Identify options – How can we respond and address threats?
6. Put it all together – Finalize resilience assumptions (planning criteria) for input into the IGP planning process

Lessons Learned from Recent Experiences

- Future does not always follow the past.
 - Historically, Atlantic storms do not turn west into the coast, causing Superstorm Sandy to be dismissed early on and many people did not evacuate coastal areas.
 - Many backup generators, along with equipment of major communications service providers, were in the basements which were flooded rendering these equipment unavailable for weeks.
 - Had a lot of volunteers but help was hindered by the availability of equipment.
- Traditionally, utilities do not plan for 1/100 year event. However, there is more than one potential 1/100 events that can occur in a 20-year planning horizon (often dozens) so planning should consider this.

Defining Resilience

- Building resilience means not just focusing on generation, but also transmission and distribution
- May be more expensive to build a resilient system up front, but after considering alternatives after a major storm, this may be cheaper overall to plan for (tradeoff)

Breakout Session

A breakout session was conducted and groups reported on results. Raw results of group discussions are attached as a separate file.

Breakout Session Results

- The Working Group was broken into six (6) groups. Each group had a scribe for the discussions.
- The groups were tasked to answer three questions.

Question #1: What threats should be considered?

Tier 1: Most critical issues to address

Tier 2: Moderately critical

Tier 3: Important, but address as time resources permit

Threats: Hurricane, Flooding, Tsunami, Earthquake, Volcanic activity, Wildfire, Landslide, Cyber attack, Physical attack

Group participants were allowed to add threats, as they saw fit, to the list. Each participant was then asked to decide on a tier level for each threat. (Table below reflects poll results for each group.)

Question #1 Consolidated Results

Threats	Tier	Group					
		Red	Yellow	Blue	Green	Orange	Pink
Hurricane	1	6	5	7	7	8	7
	2	0	0	0	0	0	0
	3	0	0	0	0	0	0
Flooding	1	5	0	5	2	3	1
	2	1	4	2	5	5	5
	3	0	1	0	0	0	1
Tsunami	1	4	5	3	4	6	5
	2	2	0	4	3	2	2
	3	0	0	0	0	0	0
Earthquake	1	0	0	1	0	2	0
	2	4	4	4	4	6	3
	3	2	1	2	3	0	4
Volcanic activity	1	0	0	1	2	0	0
	2	2	0	0	5	3	1
	3	4	5	6	0	5	6
Wild fire	1	0	0	2	0	1	0
	2	3	2	1	6	3	3
	3	3	3	4	1	4	3
Landslide	1	0	0	0	0	0	0
	2	2	0	2	2	4	0
	3	4	5	5	5	3	6
Cyber attack	1	3	1	5	6	4	4
	2	3	2	1	1	3	1
	3	0	2	1	0	1	2

Threats	Tier	Group					
		Red	Yellow	Blue	Green	Orange	Pink
Physical attack	1	0	0	4	0	0	1
	2	3	1	3	6	3	4
	3	3	4	0	1	5	2
Fuel Supply	1				7	2	
	2				0	2	
	3				0	3	
GHG Emissions	1					1	2
	2					2	5
	3					5	0
High Winds	1						0
	2						1
	3						6
Lightning	1						0
	2						0
	3						7
Resources (eclipse/strike)	1				2		
	2				0		
	3				5		
Demand (system issues and threats)	1		1				
	2		0				
	3		4				

Question #1 Discussion Highlights

After each group’s results were tallied, where there was a large disparity between two (or more) groups’ responses, the groups were asked to elaborate on their thought process.

- Anything that affects O’ahu will affect the other islands as well. When one thinks of tsunamis, tsunamis can have a bigger impact on the generators that are close to the water.
- If the question had been asked specifically for island to island, you would have gotten different answers.

Question #2: What criteria should be used to prioritize customer segments with regard to grid resilience needs?

Tier 1: Critical customers, cannot lose power

Tier 2: Priority customers, cannot lose power for an extended time

Tier 3: Other customers, extended period of time before health and well-being impacted

Customer Segments: Defense, Hospitals and healthcare, Water and sewage, Public safety, Transportation and fuel, Telecommunications

Group participants were allowed to add customer segments, as they saw fit, to the list. Each participant was then asked to decide on a tier level for each customer segment. (Table below reflects poll results for each group.)

Due to the time constraint, participants were not asked to define criteria on which customer-segment prioritization would be based.

Question #2 Consolidated Results

Customer Segment	Tier	Groups					
		Red	Yellow	Blue	Green	Orange	Pink
Defense	1	3	3	5	2	1	7
	2	2	2	2	4	3	0
	3	1	0	0	1	3	0
Hospitals and healthcare	1	6	4	7	7	6	6
	2	0	0	0	0	1	1
	3	0	1	0	0	0	0
Water and sewage	1	0	5	3	6	7	4
	2	3	0	4	1	0	3
	3	3	0	0	0	0	0
Public safety	1	5	4	5	7	6	7
	2	1	1	2	0	1	0
	3	0	0	0	0	0	0
Transportation and fuel	1	4	4	3	4	5	5
	2	2	0	4	3	2	2
	3	0	1	0	0	0	0
Telecoms	1	4	5	3	7	2	4
	2	2	0	4	0	5	3
	3	0	0	0	0	0	0
Schools/Shelters	1		3		4		2
	2		1		3		5
	3		1		0		0

Customer Segment	Tier	Groups					
		Red	Yellow	Blue	Green	Orange	Pink
Hospitality (hotels)	1				0		
	2				3		
	3				4		
Vulnerable Customers (health)	1					1	
	2					3	
	3					3	

Question #2 Discussion Highlights

After each group’s results were tallied, where there was a large disparity between two (or more) groups’ responses, the groups were asked to elaborate on their thought process.

- If the question had been asked specifically for island to island, you would have gotten different answers.
- The majority of each group categorized Public Safety and Hospitals/Healthcare as a Tier 1 customer.
- Telecom
 - Green group ranked this as Tier 1; Orange as Tier 2
 - Orange: Tier 2 because not as important when looking at life-sustaining things such as water and food. Most telecom companies have redundancy built in that would reduce impact.
 - Green: Tier 1 because, at high level, if there is no telecommunication between emergency services affecting public safety, that will be critical. Having cell phone service will help the general population deal with the emergency.
- Defense
 - Pink: Unanimously categorized Defense as a critical customer – The military has done resiliency studies and after a number of hours, most military facilities would run out of fuel. If there was a major event, the harbor is still protected. Would get visitors off the island to reduce food required.
 - Orange: Mixed Tier 2
- Transportation
 - Blue: Mixed; It was challenging in the context of backup generators and having fuel delivered to those facilities. Most of them already have backup generators. Hard to have discussion in a consistent way. Transportation and fuel may be too broad. Are we talking about airports, or ability to process and deliver the fuel? Could be looking at it from different perspectives.

Question #3: What kinds of mitigating actions should be taken to address grid resilience needs? By whom?

U: Utilities, C: Customers, O: Other

Open ended with no pre-defined mitigating actions.

(Table below combines similar mitigation actions.)

Question #3 Consolidated Results

Mitigation Actions	Tier	Groups					
		Red	Yellow	Blue	Green	Orange	Pink
Resilience analysis (hardening, microgrids)	U	X	X	X	X	X	X
	C	X	X	X	X	X	X
	O	X	X	X	X	X	X
Generation (central, distributed, demand-side, supply-side) and backup power	U	X	X	X	X	X	X
	C	X	X	X	X	X	X
	O	X	X	X	X	X	X
Best Practices (O&M, new technology, improved standards and codes)	U	X	X		X	X	X
	C		X		X	X	X
	O	X	X		X	X	X
Education and training, manage post-event	U		X	X	X	X	
	C		X	X	X	X	
	O		X	X	X	X	
Infrastructure (communication, harbor, highway)	U						
	C						X
	O	X					

Question #3 Discussion Highlights

- Some priorities, e.g. infrastructure investments, need to be invested at a state level not at the utility level. The utility may do a benefit-cost analysis of its own infrastructure to determine which is best for each geographic area. Community infrastructure is growing. There needs to be a tiered category in infrastructure and perhaps different approach.
- Microgrids are currently primarily a utility investment; there are only small groups that are investing on their own.
- Self-generation for critical loads is a customer-driven initiative.
- It is important to have a contingency plan in place and plan ahead so that we are not making it up as we go.

- Training is critical, and training should be done around different scenarios. Various organizations should do incident training involving processes from operations through maintenance
- On managed retreat, for areas where there is a specific asset and vulnerability, an appropriate level of protection is essential. Codes and standards will be important.

Next Steps

- Information is needed from Working Group members for the next meeting.
- Precautions will be taken to protect sensitive information not only from the utilities, but also the participants in the Working Group.
- Participant were asked to fill out an evaluation form
- Next meeting is scheduled for August 29.