



Hawaiian Electric
Maui Electric
Hawai'i Electric Light

Hawaiian Electric Soft Launch NWA RFP

September 9, 2019

Agenda

- ◆ **Soft Launch Schedule**
- ◆ **East Kapolei Area Needs**
- ◆ **Overview of the RFP**
- ◆ **Overview of the Evaluation**
- ◆ **Q&A / Discussion / Feedback**

Soft Launch RFP Schedule

Milestone	Schedule Dates
Draft RFP Circulated to Stakeholders	September 3, 2019
Stakeholder Comments Due	
RFP is Issued	
Prerecorded Webinar Conference	
Proposal Due Date	
Selection of Final Award Group	
Contract Negotiations Start	

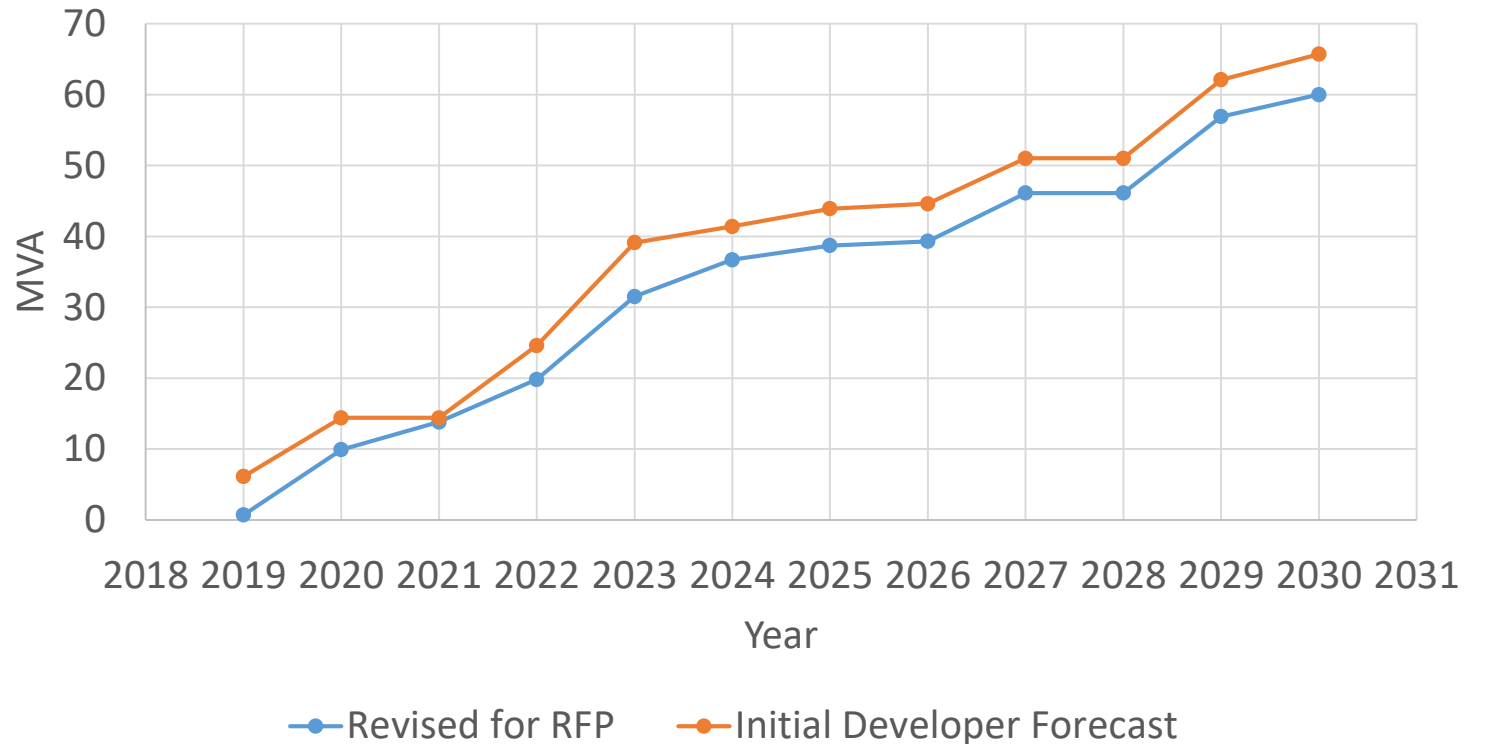
Ho‘opili Load Forecast Update

Residential per unit kW were adjusted downward from the developer’s projections.

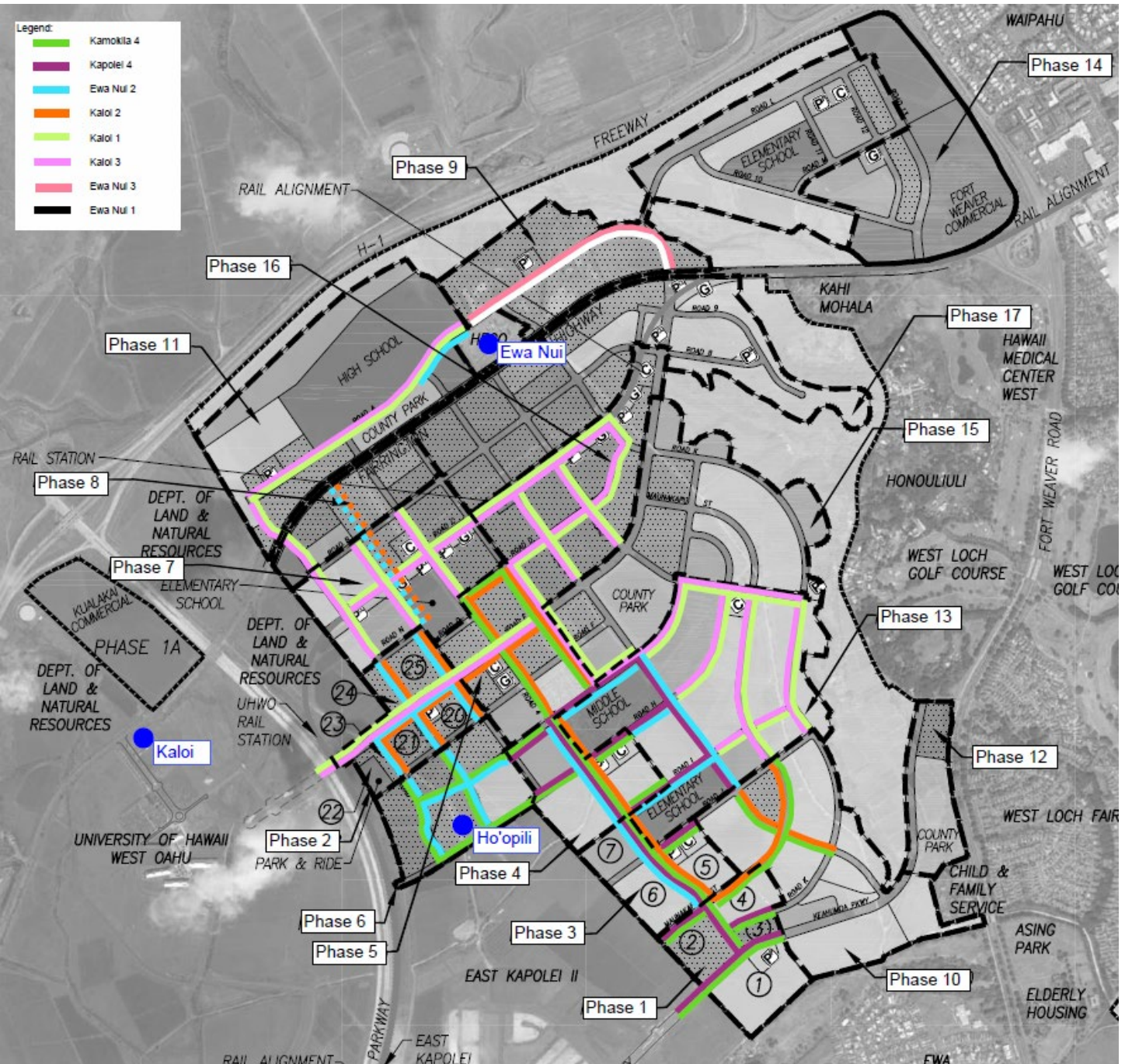
- ◆ Update resulted in the initial need being deferred from 2022 to 2023.

Load forecast may be further updated once the developer updates load projections based on new construction schedules. May result in a further delay in the initial distribution need

Updated Ho‘opili Load Forecast August 2019



Ho'opili Area Plan



Hawaiian Electric
 Maui Electric
 Hawai'i Electric Light

Summary of Ho‘opili Normal Distribution Capacity Needs

Deferral Opportunity	Equipment	MVA Peak	Operational Date	Delivery Months	Delivery Hours	Duration (Hr)	Max # of Days	MVAH
Ho‘opili Substation Tsf 1 and 2	Kaloi 1 Tsf	5.1	Jan 2023	Jan - Dec	1PM – 11PM	10	365	23.3
	Kaloi 3 Ckt	0.3	Aug 2023	Aug - Oct	7PM - 9PM	2	69	0.4

If the Reliability (back-tie) Service is scheduled dispatch (i.e., dispatched each day specified in the “Max # of Days” column) then the normal overload need will also be met.

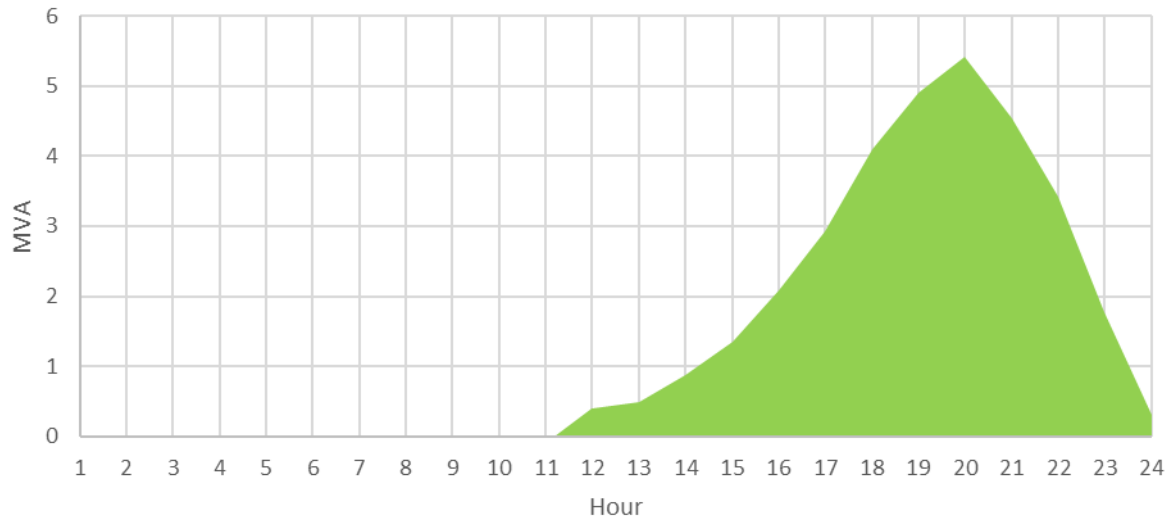
East Kapolei Area Distribution Reliability (back-tie) Service Needs

Deferral Opportunity	Equipment	MVA Peak	Operational Date	Delivery Months	Delivery Hours	Duration (Hr)	Max # of Days	MVAH
Kapolei 4 Circuit Extension	Kapolei 2 Tsf	3.8	Feb 2022	Jan - Dec	5PM - 11PM	6	365	12.4
Ho'opili Substation Tsf 1 and 2	Ewa Nui 2 Ckt	5.4	Jan 2023	Jan - Dec	11AM - 12AM	13	365	32.6
	Kaloi 1 Tsf ¹	10.6	Jan 2023	Jan - Dec	6AM - 8AM, 9AM - 12AM	17	365	68.2
	Kaloi 3 Ckt ¹	2.7	Jan 2023	Jan - Dec	5PM - 11PM	6	365	8.9
	Kamokila 4 Ckt	1.0	May 2023	Jan - Dec	5PM - 10PM	5	226	3.2

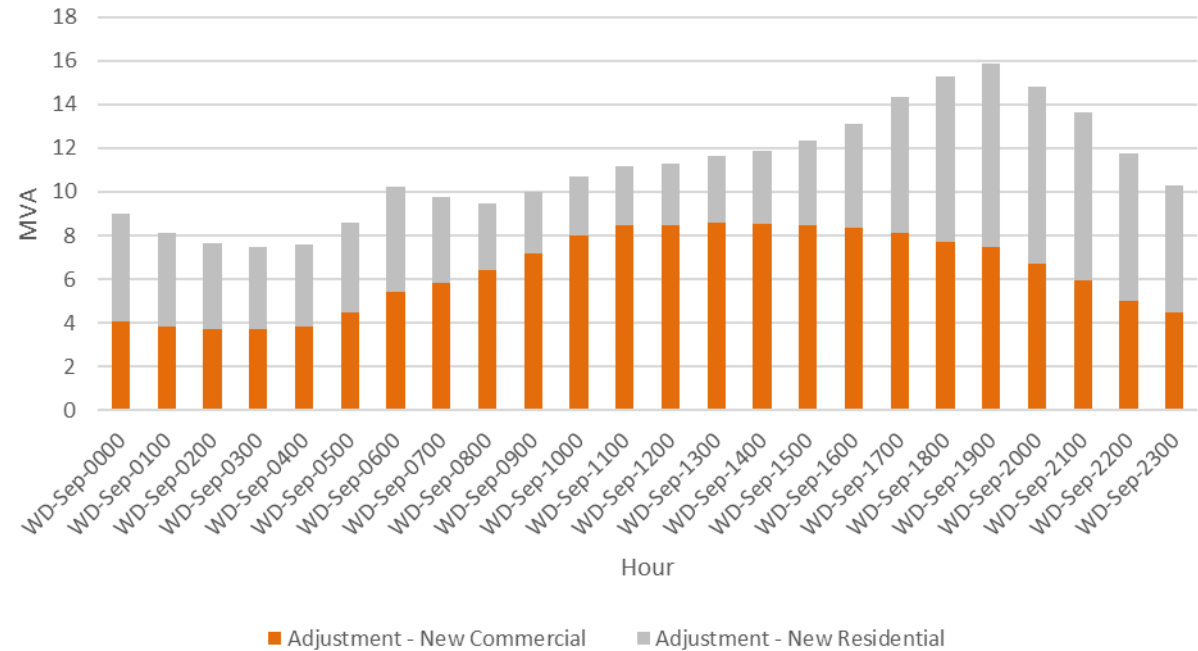


Ho‘opili Overview – Appendix J

Ewa Nui 2 Ckt, Loss of Kaloi 1 Tsf (Kaloi 1 & 2 Ckts), 2024

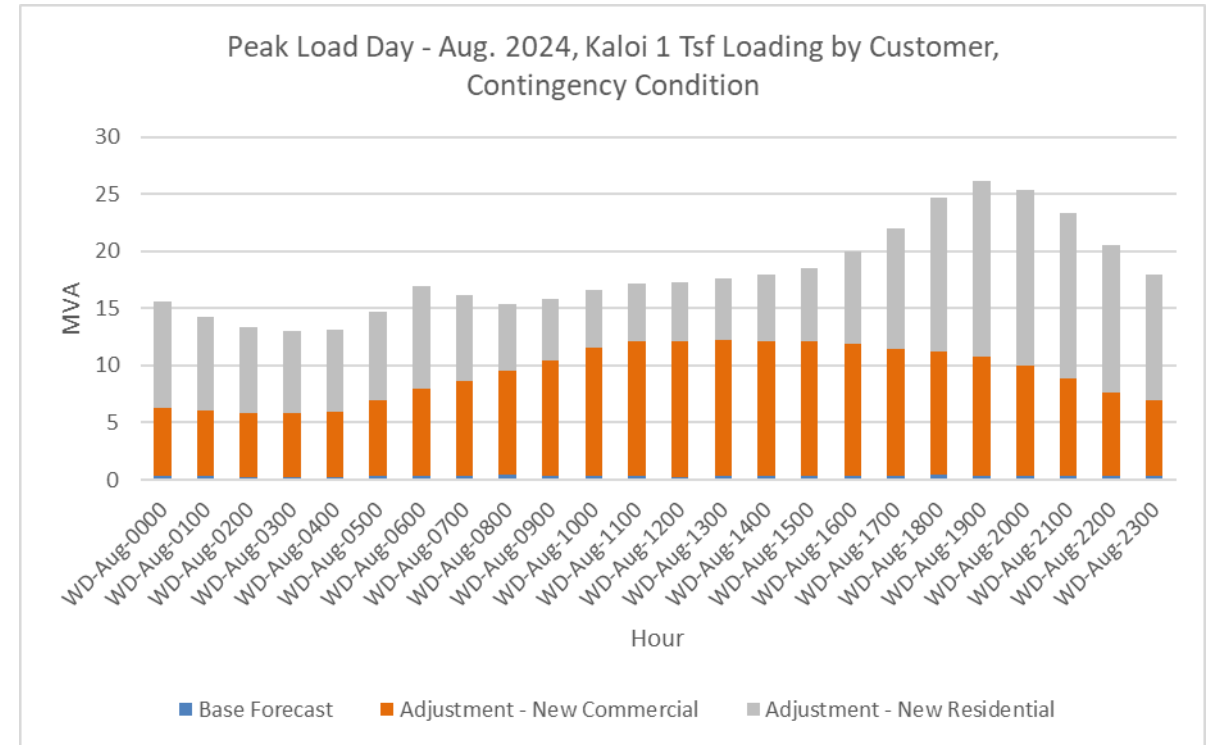
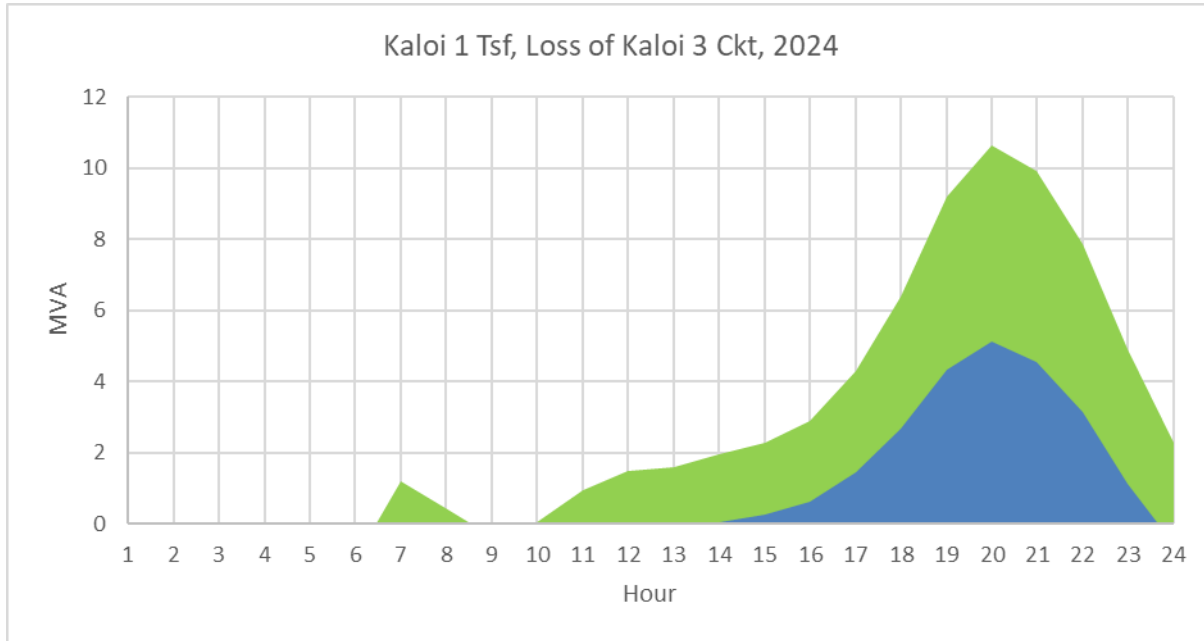


Peak Load Day - Sept. 2024, Ewa Nui 2 Ckt Loading by Customer, Contingency Condition



Equipment	MVA Peak	Delivery Months	Delivery Hours	Duration (Hr)	Max # of Days	MVAH
Ewa Nui 2 Ckt	5.4	Jan - Dec	11AM - 12AM	13	365	32.6

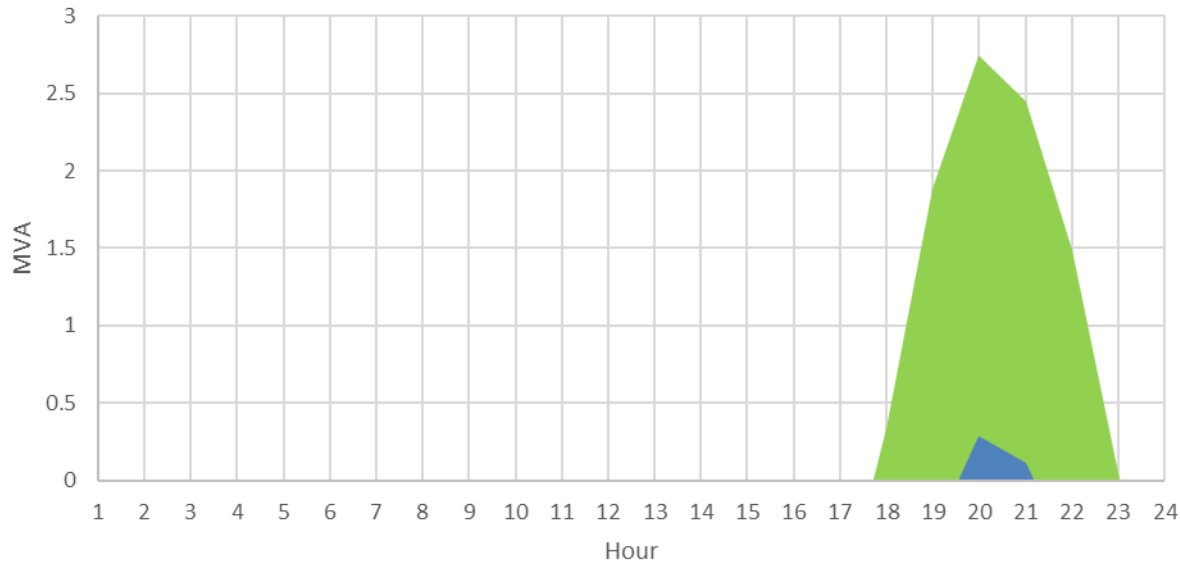
Ho‘opili Overview – Appendix J



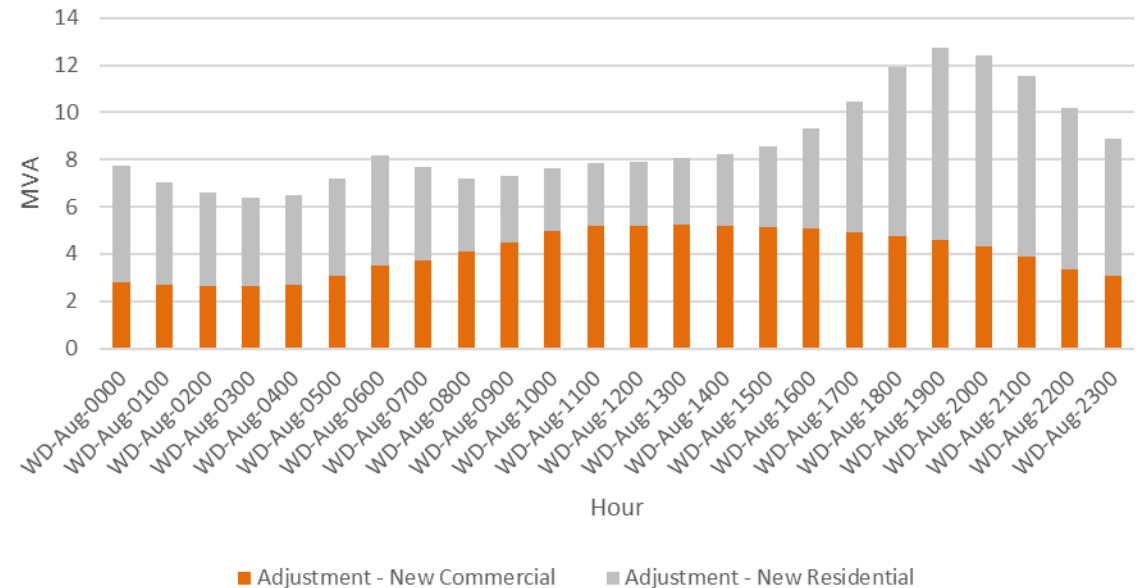
Equipment	MVA Peak	Delivery Months	Delivery Hours	Duration (Hr)	Max # of Days	MVAH
Kaloi 1 Tsf Normal ¹	5.1	Jan - Dec	1PM – 11PM	10	365	23.3
Kaloi 1 Tsf Contingency	10.6	Jan - Dec	6AM - 8AM, 9AM - 12AM	17	365	68.2

Ho‘opili Overview – Appendix J

Kaloi 3 Ckt, Loss of Kaloi 1 Ckt, 2024

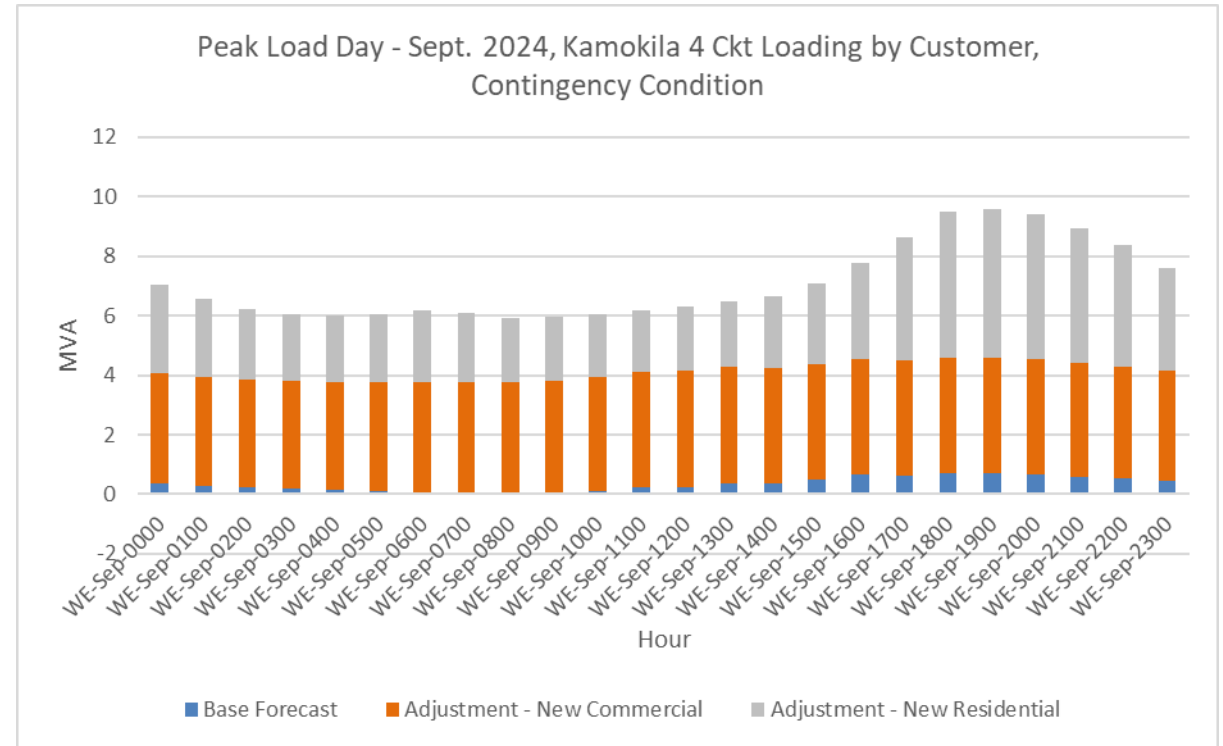
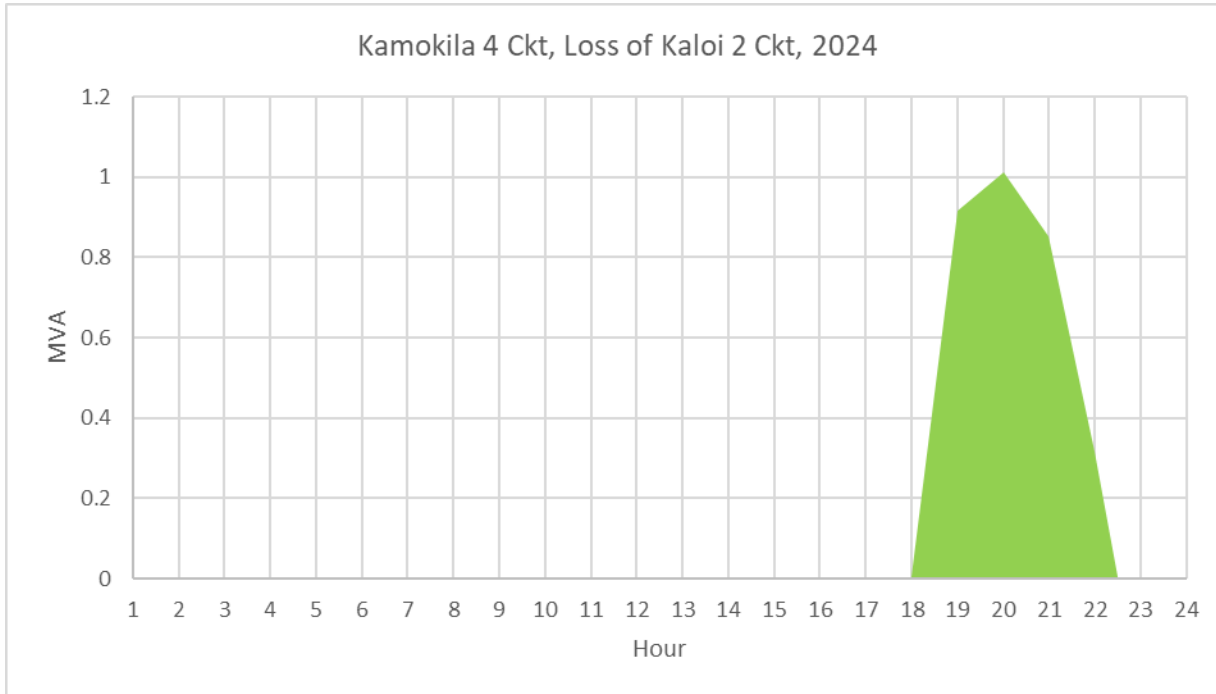


Peak Load Day - Aug. 2024, Kaloi 3 Ckt Loading by Customer, Contingency Condition



Equipment	MVA Peak	Delivery Months	Delivery Hours	Duration (Hr)	Max # of Days	MVAH
Kaloi 3 Ckt Normal ¹	0.3	Aug - Oct	7PM - 9PM	2	69	0.4
Kaloi 3 Ckt Contingency	2.7	Jan - Dec	5PM - 11PM	6	365	8.9

Ho‘opili Overview – Appendix J



Equipment	MVA Peak	Delivery Months	Delivery Hours	Duration (Hr)	Max # of Days	MVAH
Kamokila 4 Ckt	1	May - Dec	5PM - 10PM	5	226	3.2

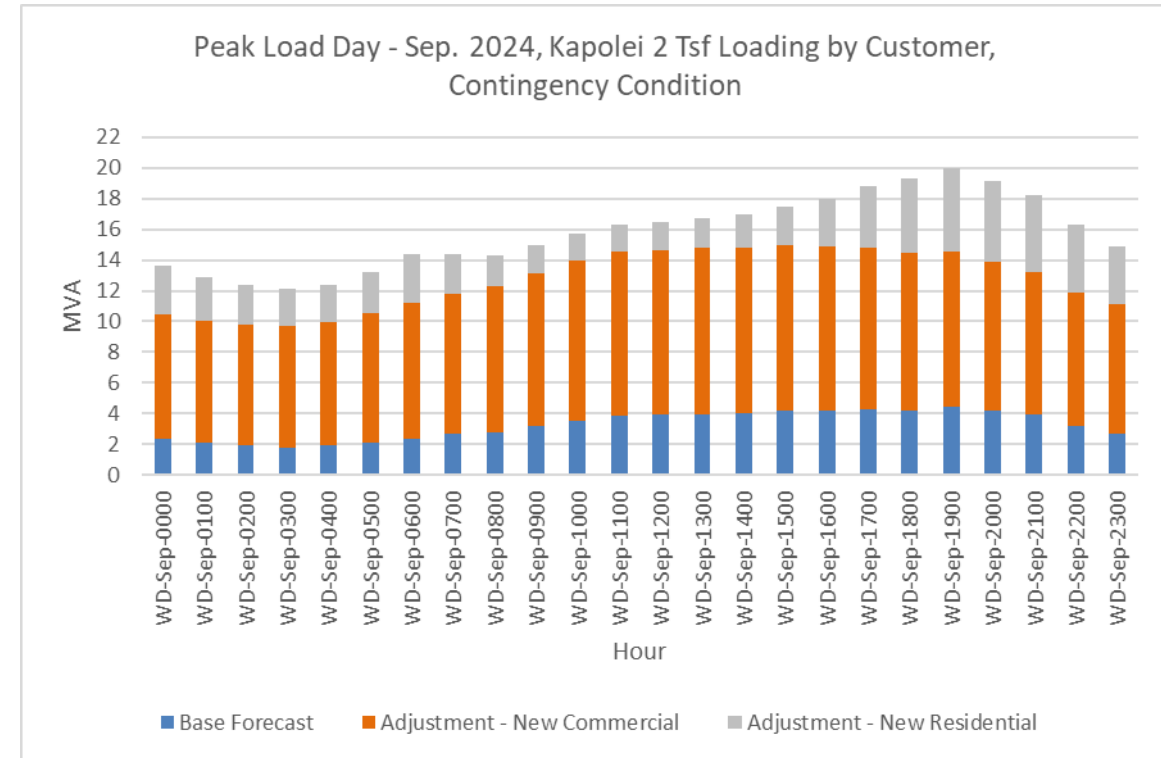
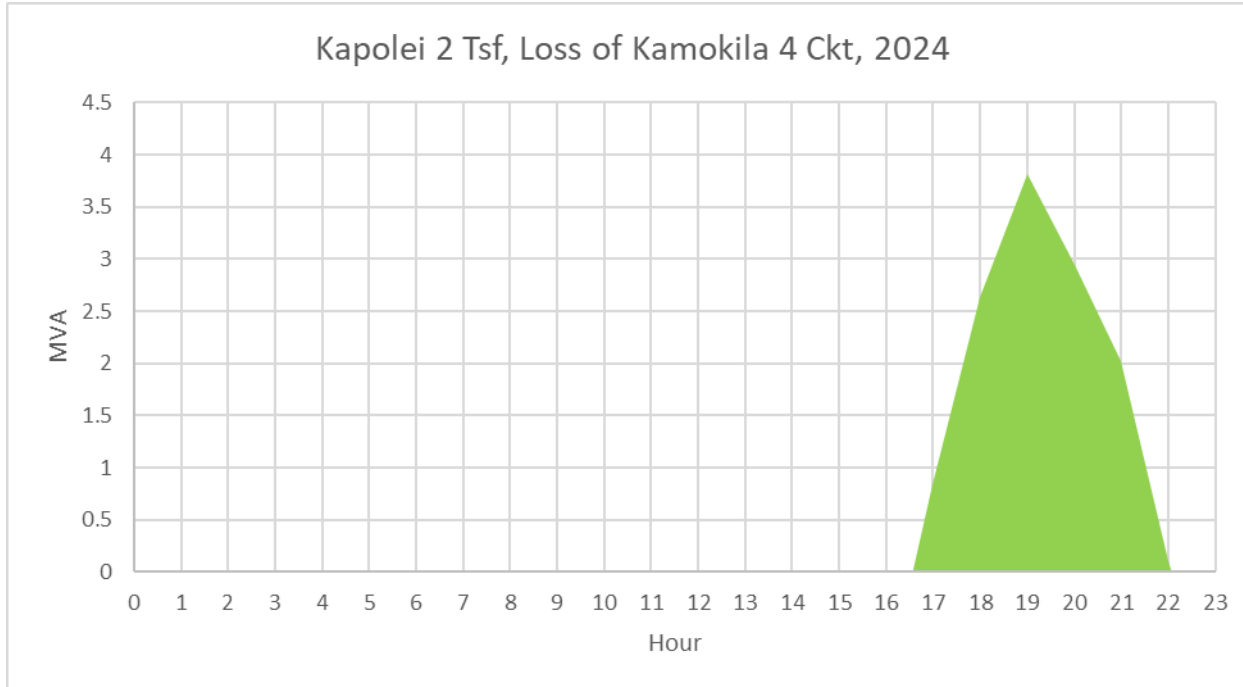
Ho‘opili Customer Composition

Cust. Counts	2022		2023		2024	
Circuit	SF	MF/A	SF	MF/A	SF	MF/A
Ewa Nui 2	580	1,234	580	1,234	580	1,234
Ewa Nui 3	0	0	0	0	0	0
Kalo i 1	92	493	184	1,151	184	1,151
Kalo i 2	651	1,251	651	1,251	651	1,671
Kalo i 3	407	328	407	1,882	407	1,882
Kapolei 4	0	0	0	0	0	0
Kamokila 4	396	366	396	366	396	366

Sq. Ft.	2022			2023			2024		
Circuit	Comm.	Industrial	School	Comm.	Industrial	School	Comm.	Industrial	School
Ewa Nui 2	371,698	0	0	371,698	0	0	371,698	0	666,468
Ewa Nui 3	0	797,039	0	0	797,039	0	0	797,039	0
Kalo i 1	620,730	0	0	1,110,548	0	2,064,744	1,110,548	0	2,064,744
Kalo i 2	703,102	0	0	703,102	0	0	1,107,296	0	0
Kalo i 3	60,984	0	0	551,252	0	0	551,252	0	509,652
Kapolei 4	0	0	0	0	0	0	0	0	0
Kamokila 4	570,331	0	0	570,331	0	0	570,331	0	0



Kapolei 4 Circuit Extension Overview – Appendix J



Equipment	MVA Peak	Delivery Months	Delivery Hours	Duration (Hr)	Max # of Days	MVAH
Kapolei 2 Tsf	3.8	Jan - Dec	5PM - 11PM	6	365	12.4

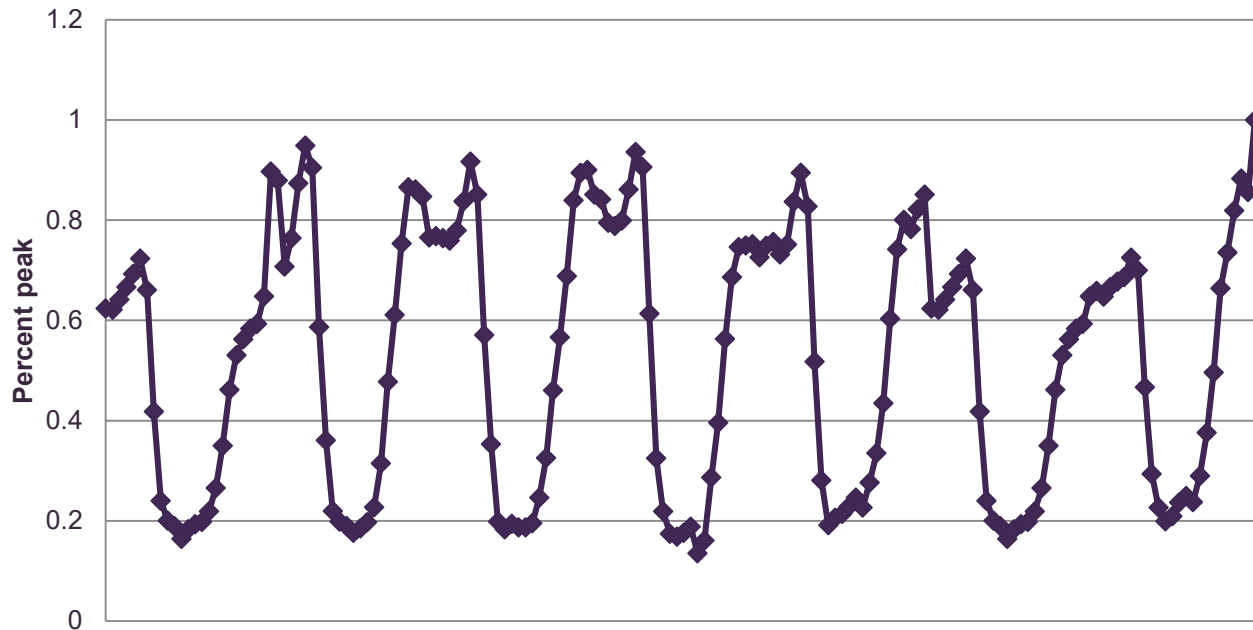
Ho‘opili Sensitivities (*Illustrative*)

Residential Peak Load Default Assumption: Residential 3 KVA for single family, 2.5 KVA for multi family

Smart Export Peak Load Assumption: Residential 1.5 KVA for single family, 1 KVA for multi family

- ◆ Assumes Smart Export can also be put on multi-unit dwellings. Smart Export profiles used represents a typical week from June 2019

Unitized Smart Export Profile (1-Week)

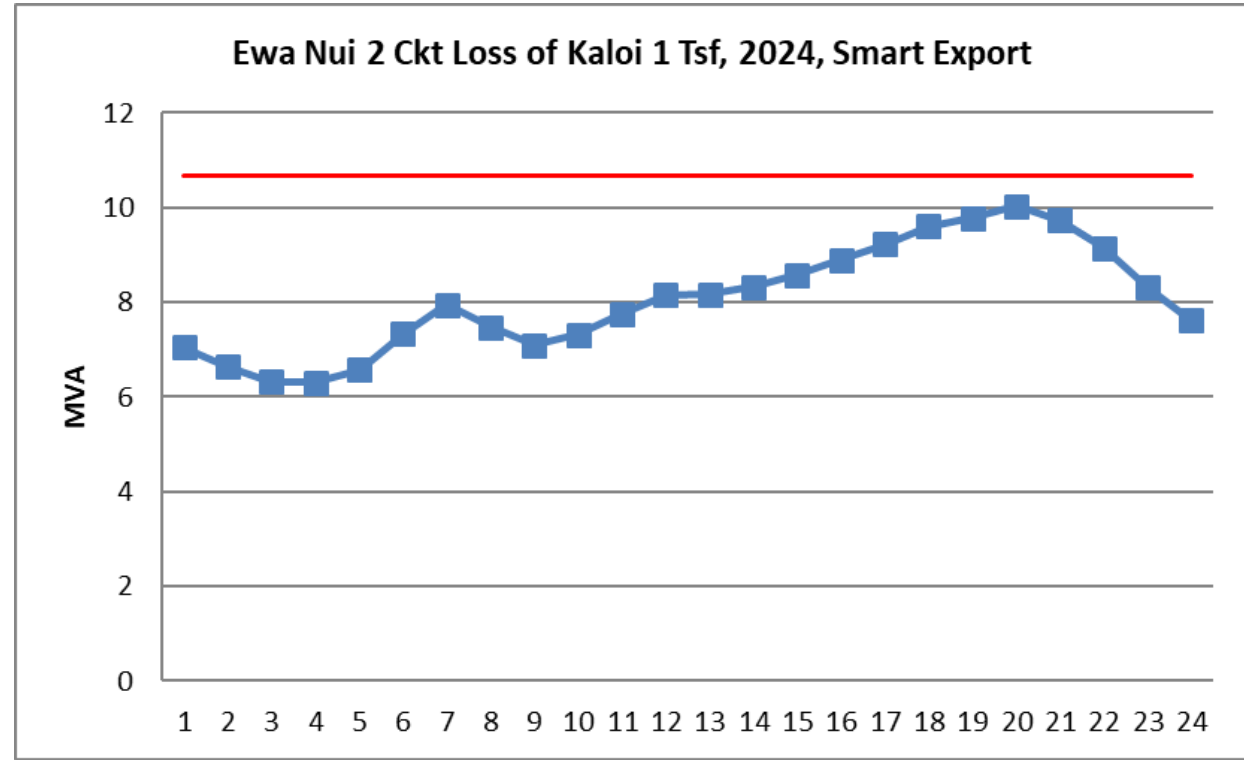
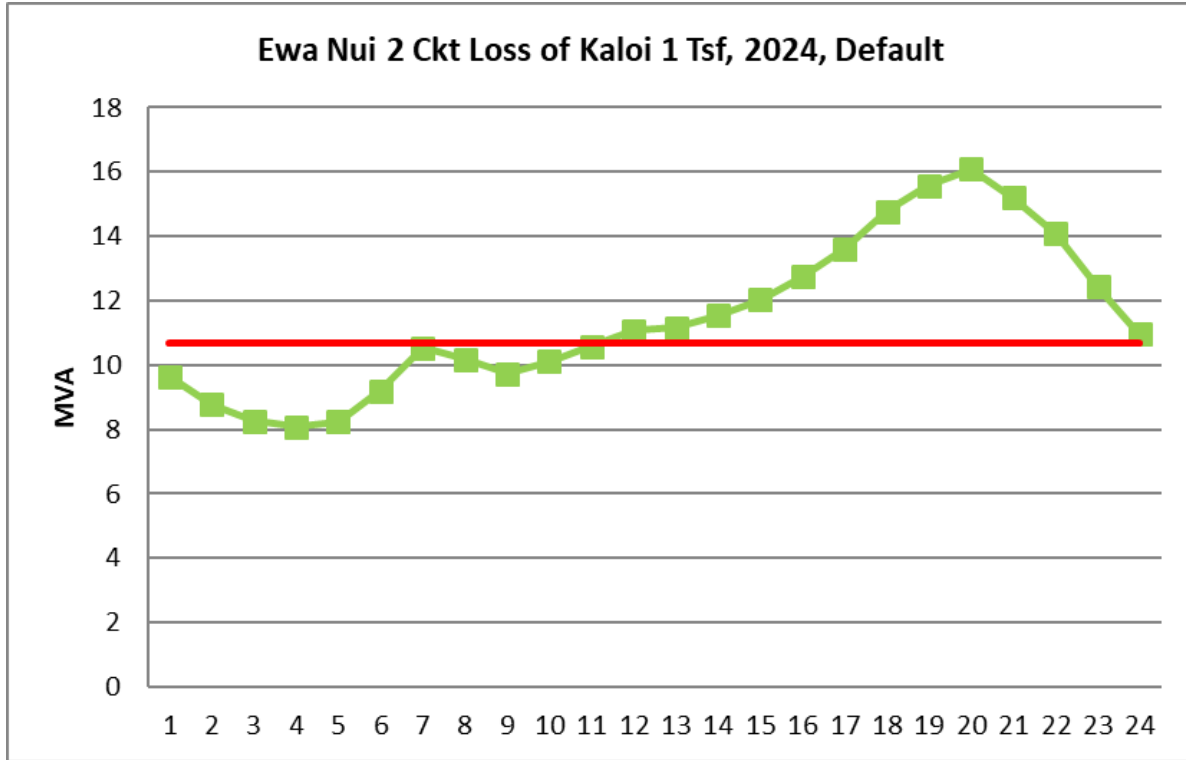


Based on collected data for the month of June

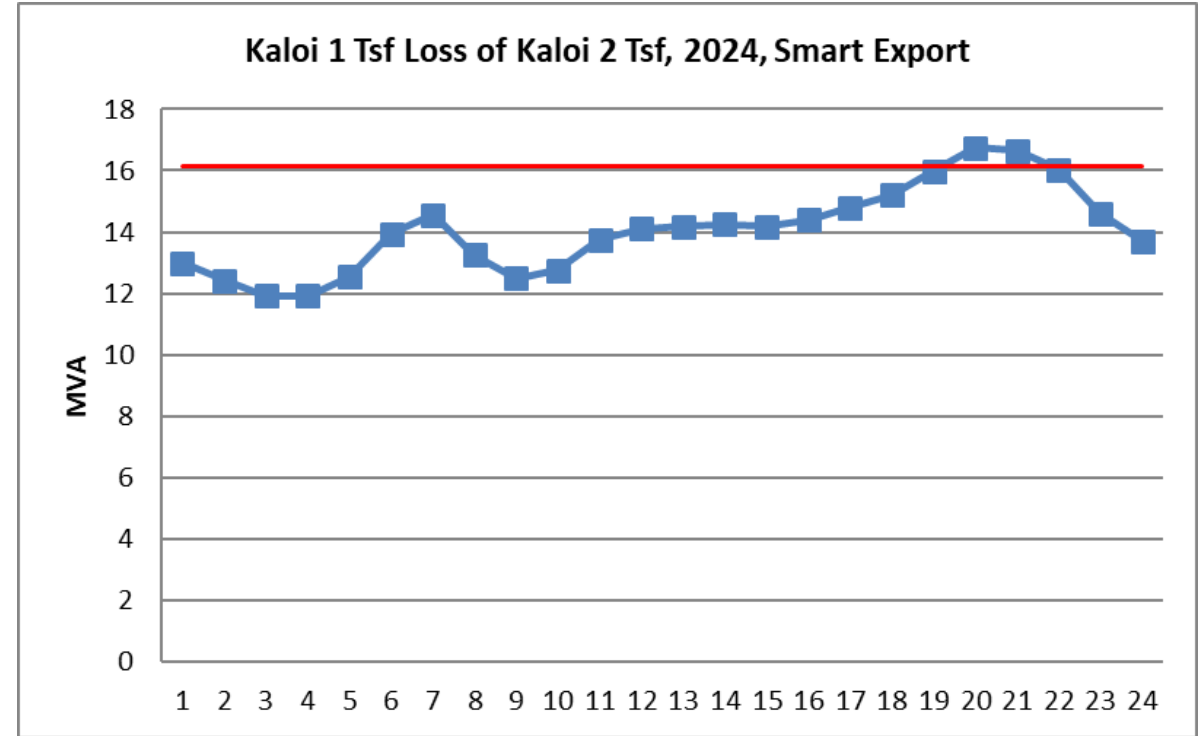
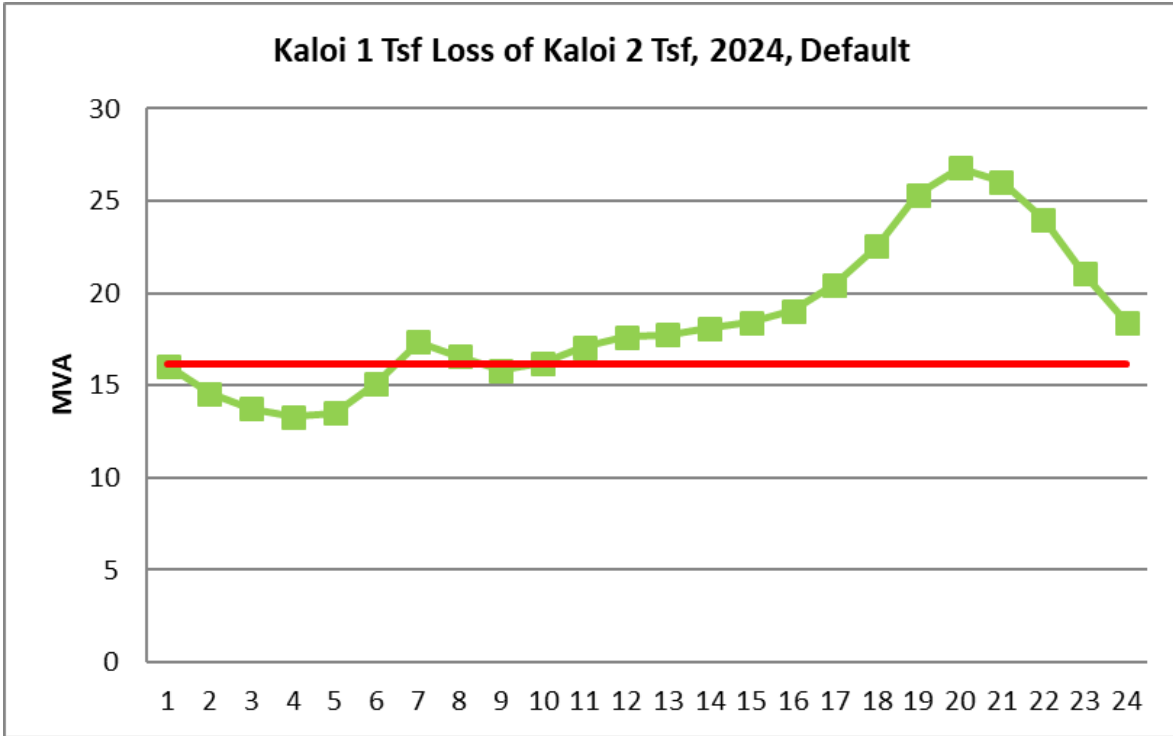


	2024	
Circuit	SF	MF/A
Ewa Nui 2	580	1,234
Ewa Nui 3	0	0
Kaloi 1	184	1,151
Kaloi 2	651	1,671
Kaloi 3	407	1,882
Kapolei 4	0	0
Kamokila 4	396	366

Ho‘opili Sensitivities (Illustrative)



Ho‘opili Sensitivities (Illustrative)



Other Technical Aspects of the RFP

RFP distinguishes between “demand-side” resources and “inverter-based” resources

- ◆ Demand based resources (i.e., EE, flexible loads, etc.) will seamlessly transfer and reduce loads during an auto-transfer of a circuit to its back-up circuit
- ◆ Inverter based resources, due to the 5-minute, anti-islanding feature, upon transfer inverter-based resources will be disconnected from the grid for at least 5 minutes while the load transfers during a contingency within 12 seconds. Therefore, a piece of equipment may be severely overloaded during the duration at which the inverter-based resource is unable to reduce the load.
- ◆ Appendix J and Section 2.1 discuss this issue
- ◆ The different type of resources will be considered in the evaluation (discussed later in this presentation).

The Company is seeking a 5-year service contract between 2023-2027 for Ho‘opili

- ◆ Due to load growth expected in each year between 2023-2027, to simplify the procurement and evaluation the Company will procure the MW and duration associated with the 2024 forecast.
- ◆ The Companies will continue to evaluate in future years whether additional services will be needed to accommodate additional load growth prior to 2027

Overview of RFP

Dispatch

- ◆ **Option A, Automatic Dispatch**
 - ◆ Solution must reach full output within 12 seconds of the contingency event
 - ◆ Examples of this could be SCADA with Direct Transfer Trip for automatic activation
- ◆ **Option B, Scheduled Dispatch**
 - ◆ Pre-scheduled for delivery times
 - ◆ Solution must reach full output at the start of the delivery time

Solution Eligibility Requirement

- ◆ New solutions (in whole or “added on” to an existing system) or existing solutions not utilized in an existing program are eligible for this RFP.
- ◆ The intent of this requirement is to ensure that an existing solution is not double counted or paid more than once for the services it already provides to the grid and already accounted for in the load and DER forecasts.
- ◆ Re-purposing an existing solution to provide the Reliability (back-tie) Service may adversely affect the grid need.
- ◆ If the solution is incrementally participating in another distributed energy resources or demand response program, solicitation or tariff, the Proposal must describe how the solution will perform incrementally differently than its existing operation

Overview of RFP

Reliability (back-tie) Service

- ◆ Seeking reliability (back-tie) service
- ◆ 5-year term
- ◆ Kapolei 4 Circuit Extension COD: Feb 2022
- ◆ Ho‘opili Substation COD: Jan 2023

Project Size

- ◆ For each deferral opportunity (East Kapolei Circuit and Ho‘opili Substation) full need must be met
- ◆ Distribution Capacity Service Requirements (Normal Overloads)
- ◆ Accepting bids in minimum 50 kW, 2-hour blocks
- ◆ Offer must be same size for all delivery months, hours, and for the duration of the contract

Proposed Solution

- ◆ Must meet full need
- ◆ Can be either one or multiple proposals

Project Eligibility

- ◆ In Front of the Meter (IFTM)
- ◆ Behind the Meter (BTM)

BTM M&V

Auto 12 Sec Response

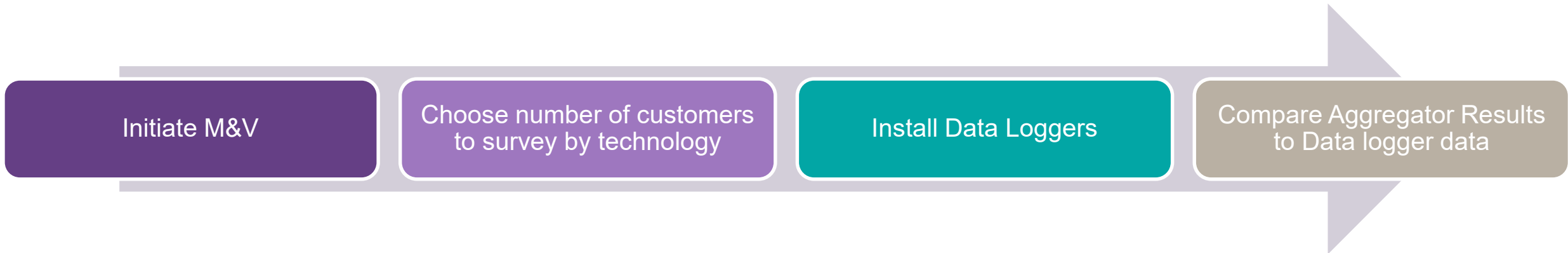
- Advanced Meter -Req 5min
- Baseline - None

Scheduled Daily

- Advanced Meter -Req 15min
- Baseline – Before first event

Manual

- Advanced Meter -Req 15min
- Baseline – 10/10 (Same as FastDR)



GSPA Overview

Basics

Contract Term: 5 years

Non-compete Clause

Co-branding requirements

Payment for Enrollment, Commissioning, and Delivery

AMI meter for all enrolled customers

One Aggregator per customer facility

New for this RFP

Added– Distribution Capacity, Reliability (back-tie) Service

Customer Incentives = \$3/kW

Liquidated Damages = \$xx/kW for Ho‘opili and \$xx/kW for Kapolei



Overview of SCCPA

- **Contract form still under development**
- **Fully negotiable**
- **Compensation: fixed monthly payment in exchange for the availability of the contracted service**
- **Liquidated damages assessed if the project fails to provide the contracted services as and when required under the SCCPA**

Approximate Value of the Distribution Reliability (back-tie) Services

The estimated value of the Reliability (back-tie) Service is based on deferring the traditional solution for five years. This is calculated by converting the capital cost of the traditional solution into annual revenue requirements using a levelized deferral rate.

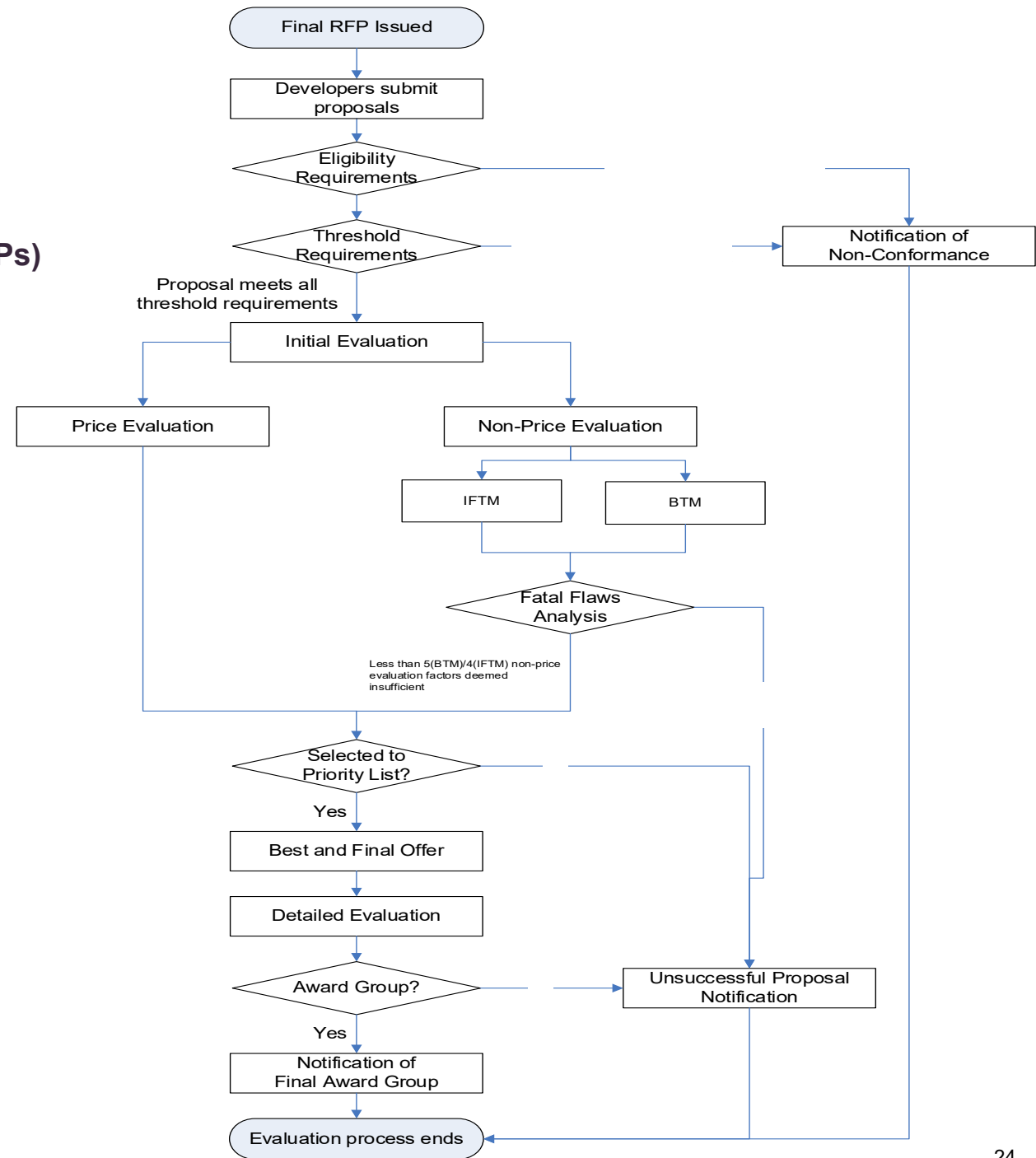
Approximate 5-Year Value of the Distribution Reliability (back-tie) Service:

- ◆ Kapolei 4 Circuit Extension: \$2.3M NPV
- ◆ Ho‘opili Substation Transformer #1 and #2: \$3.9M NPV



Overview of Evaluation

- **Multi-step evaluation process (similar to Stage 1 / Stage 2 RFPs)**
 - Eligibility
 - Threshold
 - Price/Non-Price
 - Detailed Evaluation



Overview of Evaluation

There are four different circuit needs that must be solved to defer the Ho'opili Substation

AA:
Ewa Nui 2

- Loss of Kaloi 1 + Kaloi 2

BB:
Kaloi 1 + Kaloi 2

- Loss of Kaloi 3

CC:
Kaloi 3

- Loss of Kaloi 1

DD:
Kamokila 4

- Loss of Kaloi 2

Resource Buckets

1. Demand based solutions
2. Inverter based solutions that appear similar to a demand based solution
 - ◆ Able to mitigate 5 minute outage due to anti-islanding issue; modifying anti-islanding setting not an acceptable solution
3. All other inverter-based solutions

Initial Evaluation

Category	AA: Ewa Nui 2 (Loss of Kaloi 1 + Kaloi 2)	BB: Kaloi 1 + Kaloi 2 (Loss of Kaloi 3)	CC: Kaloi 3 (Loss of Kaloi 1)	DD: Kamokila 4 (Loss of Kaloi 2)
1. Demand based solutions	Bucket AA – 1	Bucket BB – 1	Bucket CC – 1	Bucket DD – 1
2. Inverter based solutions – (Mitigates 5min issue)	Bucket AA – 2	Bucket BB – 2	Bucket CC – 2	Bucket DD – 2
3. All other inverter based solutions	Bucket AA – 3	Bucket BB – 3	Bucket CC – 3	Bucket DD – 3

The solutions proposed for each need (AA, BB, CC, DD) will be ranked by NPV cost for each solution type (1, 2, 3). In total, there will be 12 separate rankings covering the range of needs and solutions.

Detailed Evaluation

The detailed evaluation will be structured to account for the two-fer value of solutions on Kaloi 1, Kaloi 2, or Kaloi 3

- ◆ Because need BB accounts for the same two circuits that affect needs AA, CC, and DD, a demand based solution (Type 1) or inverter based solution that can mitigate the 5 min issue (Type 2) on Kaloi 1 or Kaloi 2 can potentially reduce the needs at AA, CC, and DD.
- ◆ Similarly, need CC accounts for the same circuit that affects need BB so a Type 1 or Type 2 solution on Kaloi 3 can potentially reduce need BB.

Detailed Evaluation

1. Type 1 and Type 2 solutions for need BB will be evaluated
2. Type 1 and Type 2 solutions for need CC will be evaluated after accounting for any qualified solutions that address need BB on the Kaloii 1 circuit
3. If need BB was not fully met by Type 1 and Type 2 solutions in step 1, need BB will be reassessed to include any qualified solutions that address need CC on the Kaloii 3 circuit
4. Type 1 and Type 2 solutions for needs AA and DD will be evaluated after accounting for any qualified solutions that address need BB on Kaloii 1 and Kaloii 2 circuits
5. Type 3 solutions for needs AA, BB, CC, and DD will be evaluated

Detailed Evaluation

Category	AA: Ewa Nui 2 (Loss of Kaloi 1 + Kaloi 2)	BB: Kaloi 1 + Kaloi 2 (Loss of Kaloi 3)	CC: Kaloi 3 (Loss of Kaloi 1)	DD: Kamokila 4 (Loss of Kaloi 2)
1. Demand based solutions				
2. Inverter based solutions – (Mitigates 5min issue)	3	1	2	3
3. All other inverter based solutions	4			

High level overview of the detailed evaluation process:

1. Evaluate type 1 and type 2 solutions for need BB
2. Evaluate type 1 and type 2 solutions for need CC
3. Evaluate type 1 and type 2 solutions for needs AA and DD
4. Evaluate type 3 solutions for needs AA, BB, CC, and DD

Next Steps

We value your feedback!

Submit feedback to: responses@hawaiianelectric.com

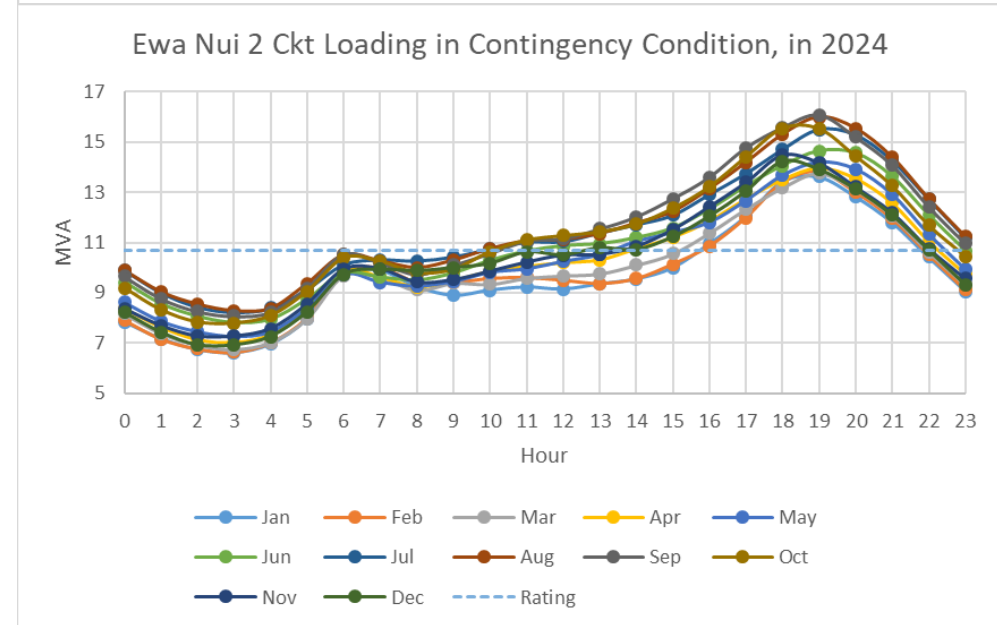
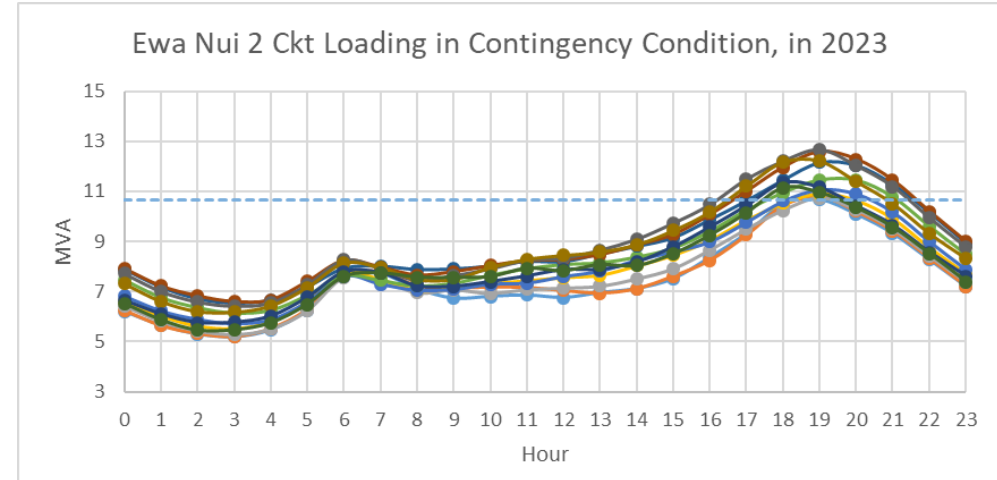
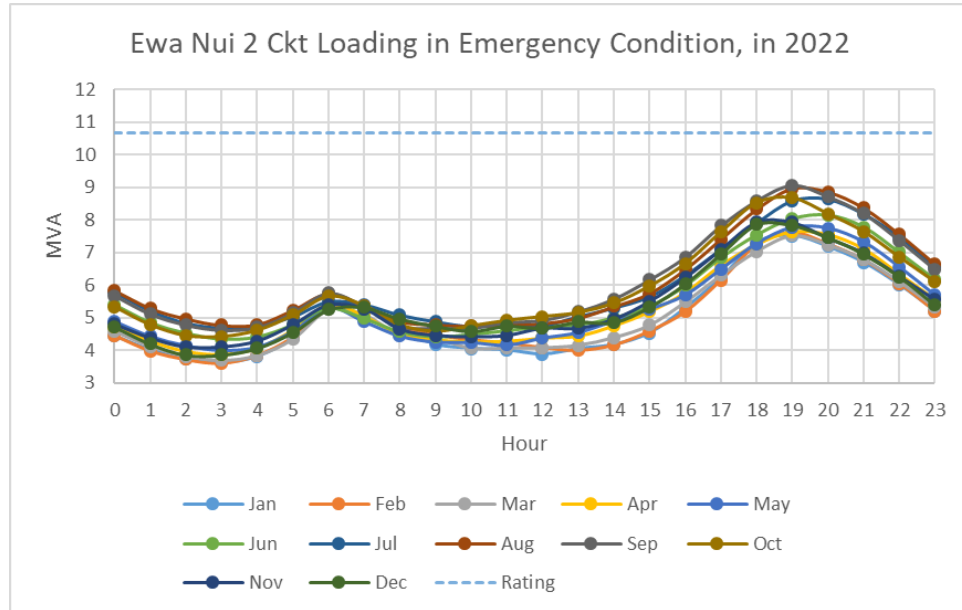
Please submit feedback by October 1, 2019.

Appendix – 2022 through 2024 Load Forecasts

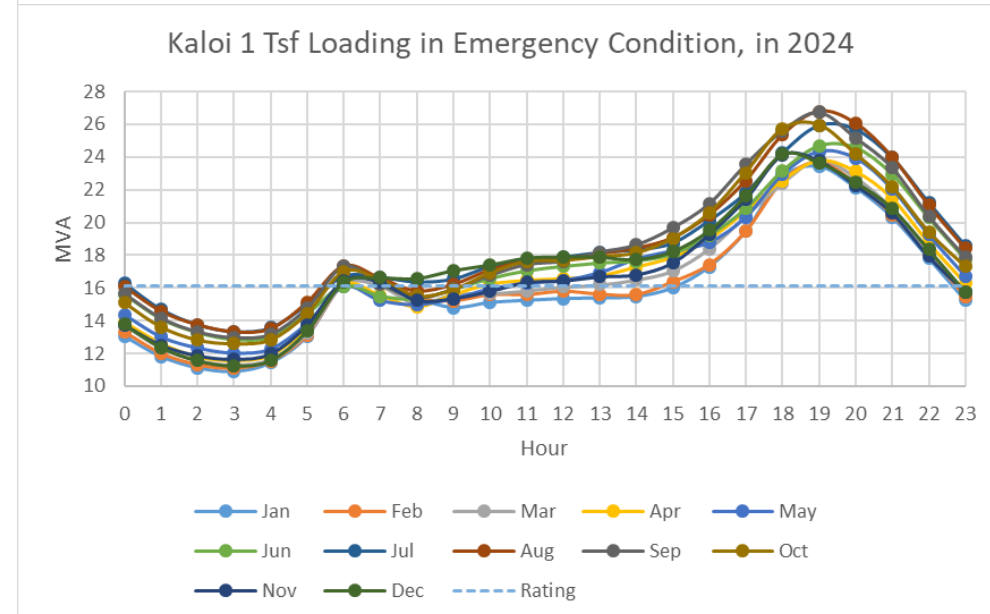
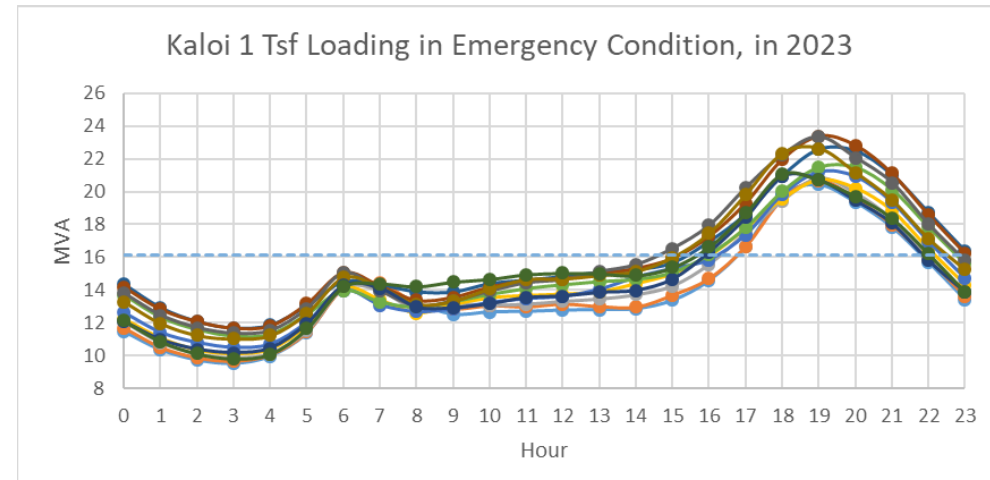
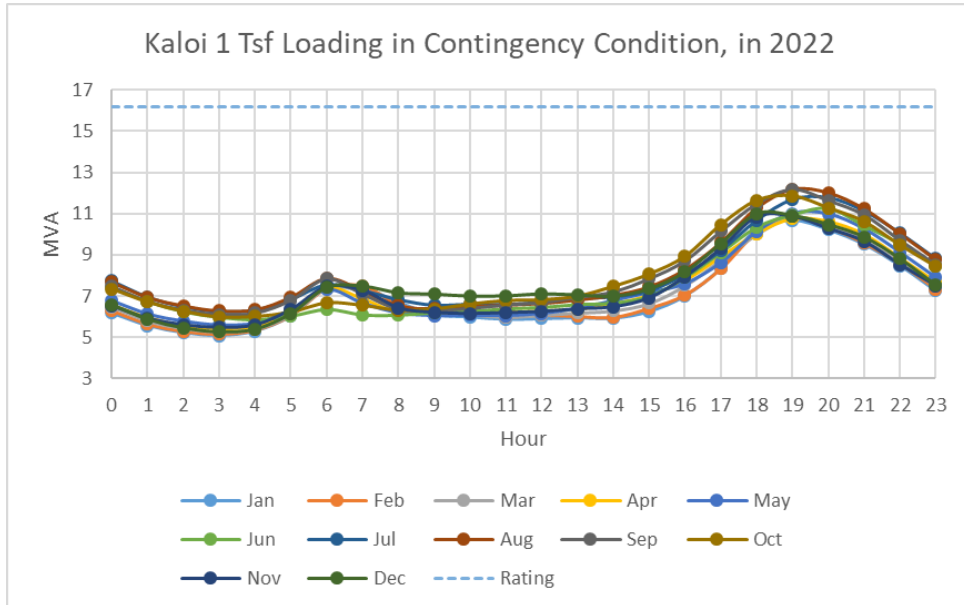


Hawaiian Electric
Maui Electric
Hawai'i Electric Light

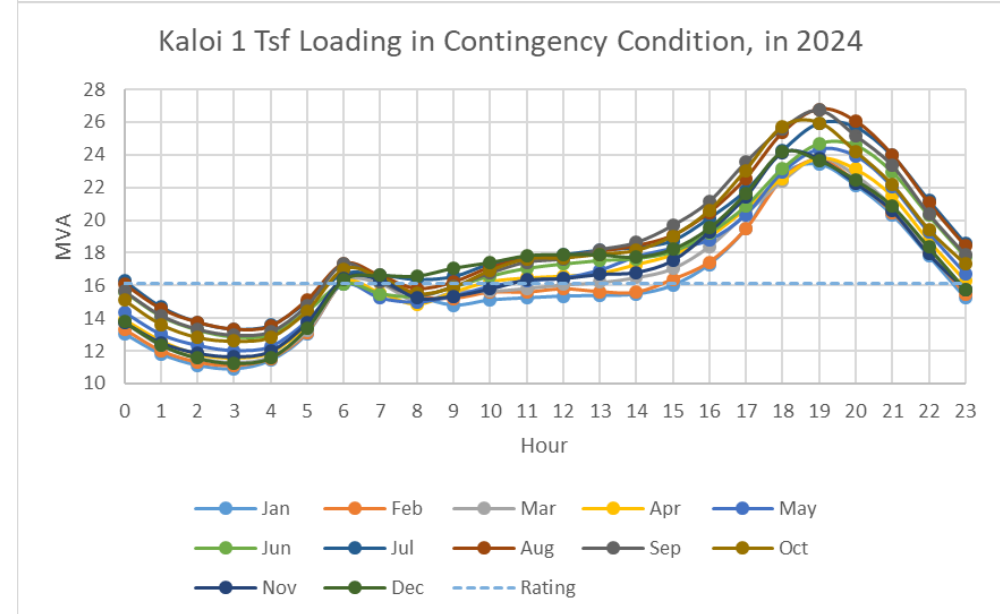
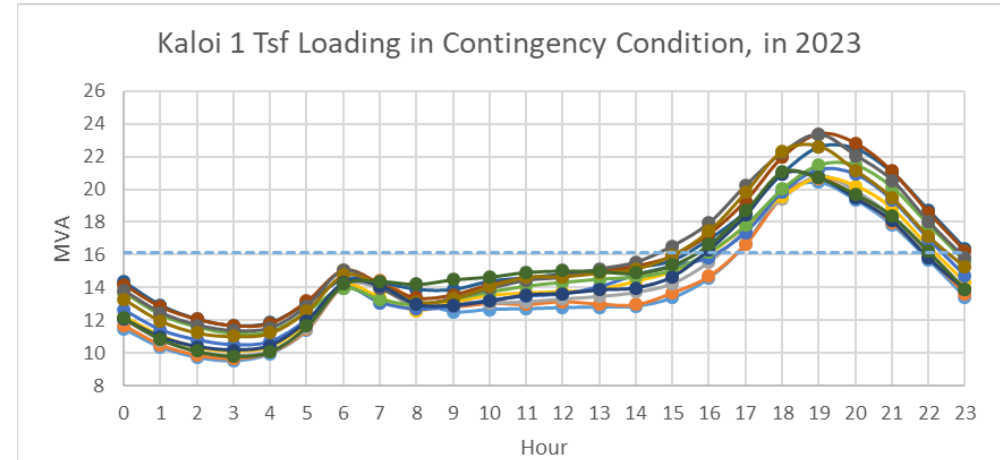
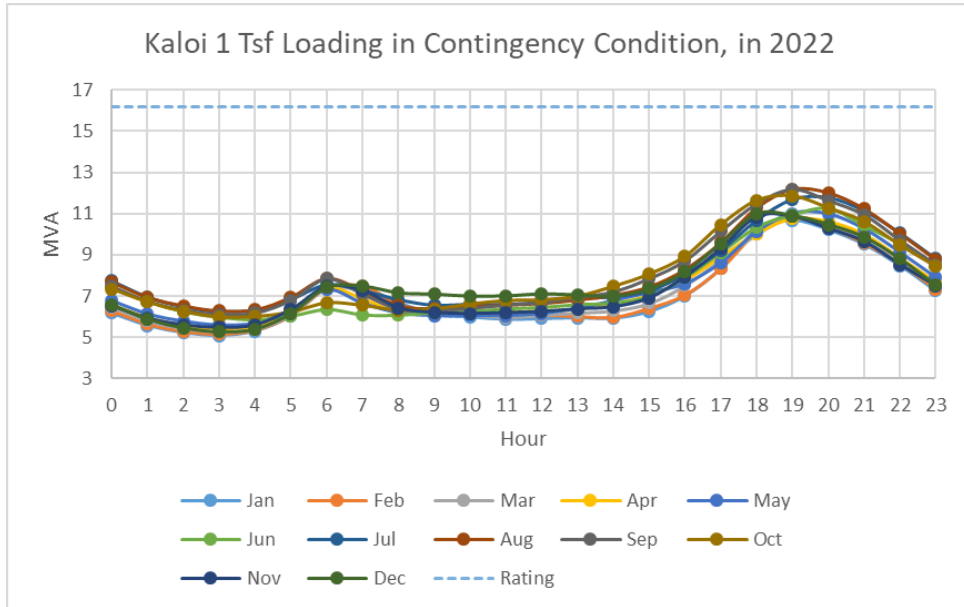
Ho‘opili - Ewa Nui 2 Ckt, Loss of Kaloi 1 Tsf (Kaloi 1 & 2 Ckt)



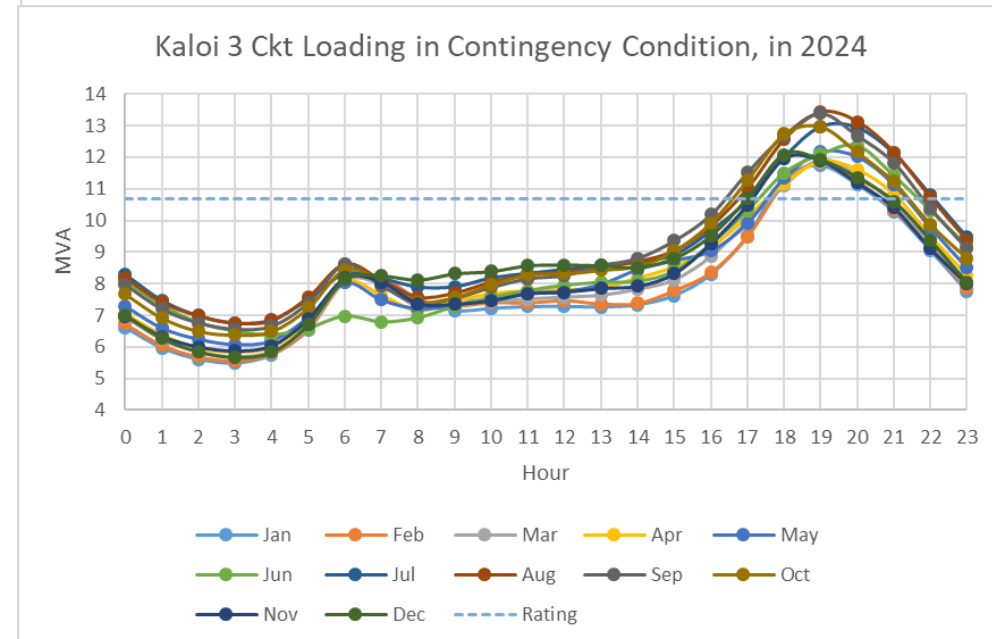
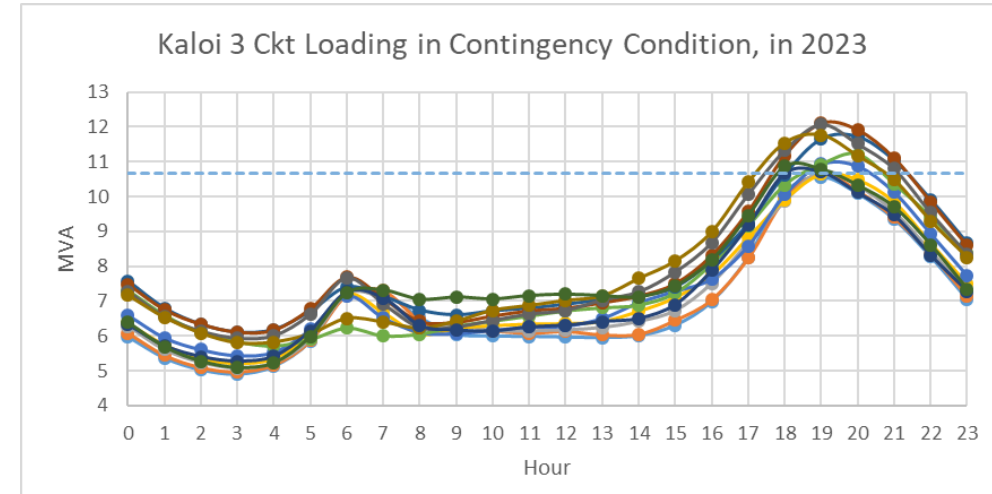
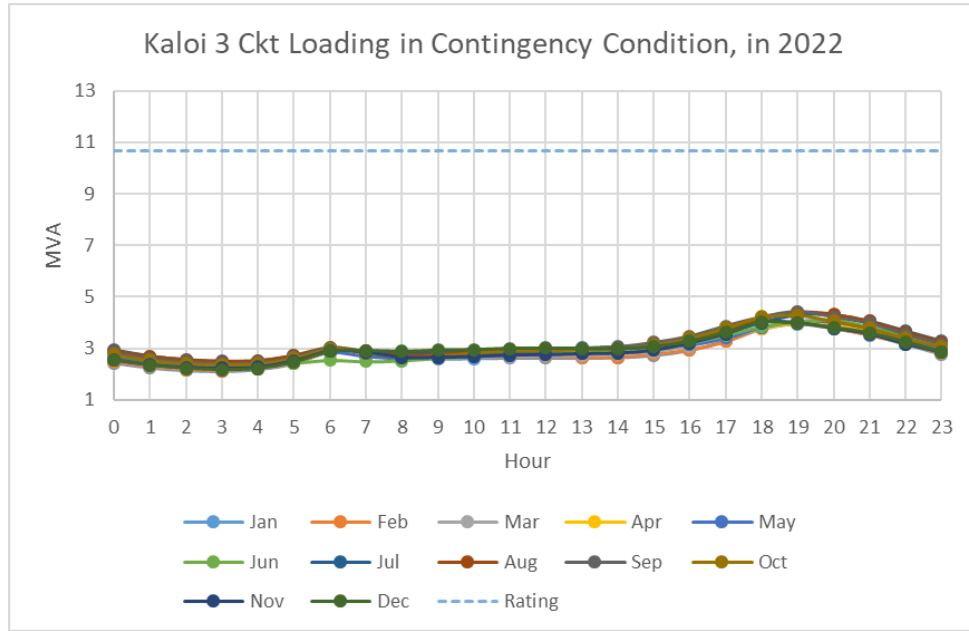
Ho‘opili – Kaloi 1 Tsf (Kaloi 1 & 2 Ckt), Loss of Kaloi 3 Ckt



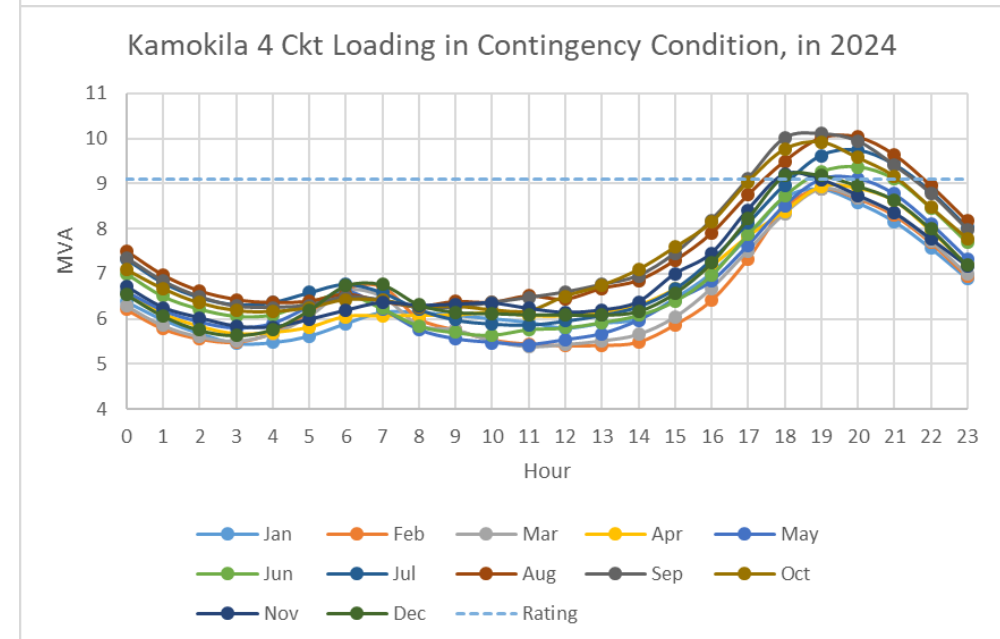
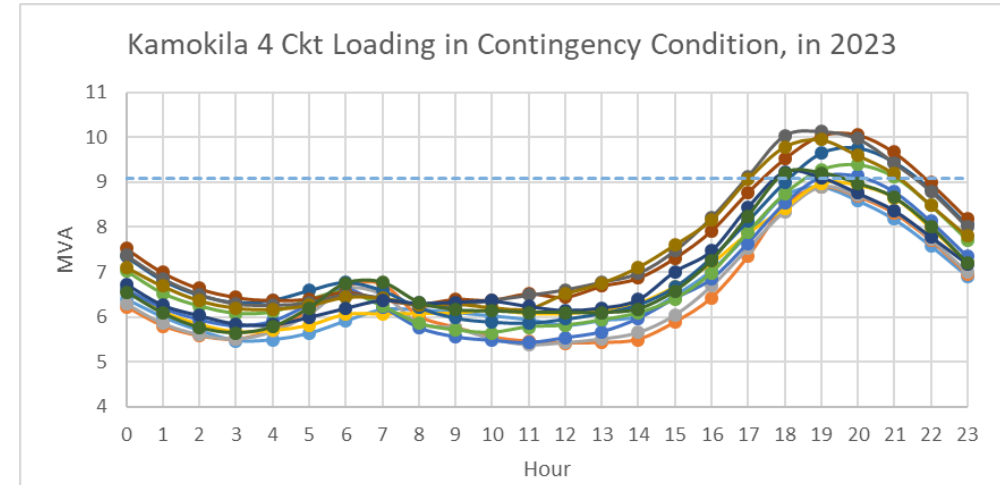
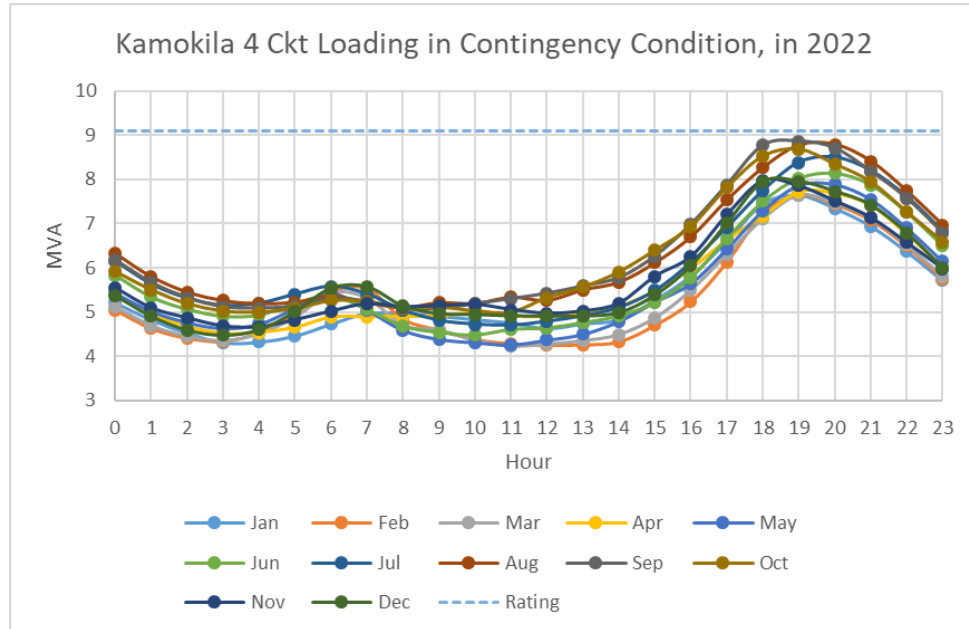
Ho‘opili – Kaloi 1 Tsf (Kaloi 1 & 2 Ckt), Loss of Kaloi 3 Ckt



Ho‘opili – Kaloi 3 Ckt, Loss of Kaloi 1 Ckt



Ho‘opili – Kamokila 4 Ckt, Loss of Kaloi 2 Ckt



Kapolei 4 Circuit Extension – Kapolei 2 Tsf, Loss of Kamokila 4 Ckt

