

HAWAIIAN ELECTRIC COMPANY, INC.

Superseding REVISED SHEET NO. 26  
Effective: October 9, 1985

REVISED SHEET NO. 26  
Effective: August 31, 2010

RULE NO. 13

Line Extensions and Substations

Extensions of lines necessary to furnish service to applicants for permanent service will be made by the Company in accordance with the following provisions:

A. GENERAL

The Company will construct, own, operate and maintain electric lines and Equipment, which also includes substations, under, along, upon and over public streets, roads and highways where it has the legal right to do so, and on public lands and private property across which it has otherwise obtained rights of way or other necessary rights satisfactory to the Company.

B. OVERHEAD EXTENSION TO SERVE INDIVIDUAL APPLICANTS

1. Extension Allowance

- a. Overhead line extensions will be made by the Company at its expense provided the cost of the line required does not exceed sixty months' estimated revenue of the applicant. The Company will install, own, operate and maintain the necessary line transformers, meters and service drop in accordance with Rule No. 14 at its expense, except where the customer requests special facilities.
- b. Special Facilities: The Company will install only those facilities which it deems necessary to render service in accordance with the tariff. Where the applicant requests facilities which are acceptable to the Company but are in addition to, or in substitution for, the standard facilities which the Company normally would install, the applicant shall make a contribution of the extra cost thereof.

2. Extensions Beyond Allowance

For overhead line extensions whose estimated cost exceeds the sixty months' estimated revenue, the applicant shall make an advance equal to the difference between the estimated line cost and the sixty months' estimated revenue. The estimated line cost will be exclusive of line transformers, service drops and meters, and will be based on the route determined by the Company.

3. Refunds

- a. If, within ten years from the date service is first rendered, new permanent customers or additional permanent loads are added to the line for which an advance was made, a refund will be made to the customers who made the original advance equal to the line extension allowance for the new permanent customers or loads applicable to the line constructed with the advance, in the amount of the residual from the extension allowance over the cost of the line extension for the new permanent customer or additional permanent load. Such refund shall be credited sequentially from the new permanent customer's or load's point of service toward the source of supply and shall be applicable only to that section of line used for the new customer or load. In no case shall the refund exceed the advance for that section of line. No interest will be paid on these advances.

HAWAIIAN ELECTRIC COMPANY, INC.

Superseding REVISED SHEET NO. 27  
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REVISED SHEET NO. 27  
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RULE NO. 13 (Continued)

Line Extensions and Substations

C. OVERHEAD EXTENSION TO SUBDIVISION OR DEVELOPMENTS

1. Advances

Overhead line extensions to and/or in subdivisions or developments will be constructed, owned and maintained by the Company prior to applications for service by the ultimate customers when the developer or subdivider makes an advance of the entire estimated cost of the line extension. The company may postpone for one year collecting that part of the advance which it estimates would be refunded during the year on the basis of sixty months' revenue from permanently connected customers.

2. Refunds

Refunds will be made to the developer or subdivider making the advance when permanent customers within the subdivision are connected to the lines based on the estimated revenues for sixty months from such permanent customers in the subdivision. If permanent customers within the subdivision require line extension from the existing lines within the subdivision, such permanent customers shall be considered as individual applicants under Rule 13 (B) herein and entitled to the extension allowance in computing any advance that may be due. The developer or subdivider shall only be entitled to a refund in the amount of a permanent customer's extension allowance less the cost of the line extension to serve such permanent customer and shall not be entitled to any credits for individual line extension requests where the permanent customer is required to make an advance payment to the utility. The total amount to be refunded is limited to the amount of the advance made by the developer or subdivider and no refund will be made after ten years from the date of the advance. No interest will be paid on these advances made by the developer or subdivider.

The developer or subdivider shall not be entitled to any refund from permanent customers attaching to the line outside of the subdivision boundaries including another subdivision that may connect to the line to which the first developer or subdivider contributed an advance to the utility. Each developer or subdivider will be subject to Rule 13 (C) and the advance requirements thereto.

D. UNDERGROUND EXTENSIONS

1. General

The Company will construct new 138kV transmission, 46kV subtransmission, and primary and secondary distribution lines underground, and convert existing overhead lines to underground in accordance with the Policy on Underground Lines (December 2009) and the Cost Contribution for Placing Overhead Distribution Lines Underground, Guideline Summary (December 2009). See attached Tariff Sheets 28a to 28c. The type of underground system that will be installed under this rule shall meet engineering construction standards of the Company. In all cases, the Company will own, operate and maintain the underground facilities.

HAWAIIAN ELECTRIC COMPANY, INC.

Superseding REVISED SHEET NO. 28  
Effective: October 9, 1985

REVISED SHEET NO. 28  
Effective: August 31, 2010

RULE NO. 13 (Continued)

Line Extensions and Substations

2. Extensions to Serve Individual Applicants

Underground extensions will be installed by the Company provided the applicant makes a contribution of the difference between the estimated underground extension cost and estimated equivalent overhead extension cost. The overhead equivalent cost allowed is subject to the limitations and conditions of paragraph B of this rule. When feasible, the applicant will provide the trenching, backfill and necessary duct work to meet engineering construction standards of the Company.

3. Extensions to and/or within Subdivisions or Development in Advance of Applications for Service by the Ultimate User

Underground lines will be installed by the Company in a subdivision or development prior to applications for service from the ultimate customer when the subdivider or developer makes a contribution equal to the difference between the estimated cost of the underground system and the estimated cost of an equivalent overhead system. The allowance for the overhead costs are subject to the limitations and conditions of paragraph C of this rule. When feasible the subdivider or developer will furnish the trenching, duct work, backfill and miscellaneous construction to meet engineering construction standards of the Company.

4. Replacement of Overhead with Underground Facilities

When mutually agreed upon by the customer or applicant and the Company, overhead facilities will be replaced with underground facilities, provided the customer or applicant requesting the change makes a contribution of the estimated cost installed of the underground facilities less the estimated net salvage of the overhead facilities removed, or in accordance with the Policy on Underground Lines (December 2009). (See Sheets 28a. and 28b.)

5. Special Facilities

Where the applicant requests facilities which are acceptable to the Company but are in addition to, or in substitution for, the standard facilities which the Company would normally install, the applicant shall make a contribution of the estimated extra cost thereof.

E. Dedicated and System Substation Guideline

The Company will install a dedicated or system substation in accordance with the Dedicated and System Substation Guideline (March 2006). See attached Tariff Sheets 28d to 28j.

**POLICY ON UNDERGROUND LINES**  
**Hawaiian Electric Company, Inc.**

**December 2009**

HECO will construct new 138kV transmission, 46kV subtransmission, and primary and secondary distribution lines underground, and convert existing overhead lines to underground lines in accordance with the following guidelines.<sup>1</sup>

**NEW TRANSMISSION, SUBTRANSMISSION AND DISTRIBUTION LINES**

HECO will propose undergrounding of new transmission, subtransmission, and distribution lines:

- When the requestor for undergrounding the lines pays for the cost differential (including engineering, materials and construction) between overhead and underground lines.

HECO will propose undergrounding of new transmission, subtransmission, and distribution lines, and HECO will pay the cost differential for the undergrounding:

- When justified for engineering and/or operating reasons;<sup>2</sup>
- When the cost for underground lines is comparable<sup>3</sup> to the cost for overhead lines and other factors support undergrounding,<sup>4</sup> provided that the project would not cause HECO to exceed an expenditure cap of \$1,000,000 for such project cost-differentials and other conversion projects (see below) initiated in the same year;<sup>5</sup>
- When an evaluation of the factors found in HRS §269-27.6(a) supports undergrounding (for 46kV subtransmission lines);

<sup>1</sup> Responsibility for costs of overhead portion will be determined in accordance with applicable Tariff rules.

<sup>2</sup> In some circumstances, as a practical matter, an overhead installation is not feasible from an engineering and/or operating standpoint. That determination is made in HECO's discretion on a case-by-case basis, and is dependent upon consideration of the existing project site conditions and other factors, such as safety issues, technical feasibility, applicable design, placement and construction regulations, and whether a feasible alternative overhead line routing is available. The following are some non-exclusive examples of situations in which HECO may determine that undergrounding may be justified due to engineering and/or operating reasons: (1) The poles required for the overhead line may not be able to be placed within the City or State constructed sidewalks consistent with the clearance requirements of the American with Disabilities Act or other applicable regulations; (2) An overhead design may not be practical in certain situations (e.g., crossing a large waterway); (3) An overhead line may not be permitted in certain areas (e.g., near an airport); (4) Certain pre-existing improvements and obstructions (e.g., signs, light poles, bridges, buildings, structures, etc.) may prevent or significantly hinder the installation of overhead lines due to the required clearances that need to be maintained from these structures; (5) Access to the required poles for operational needs would be restricted (e.g., within freeway rights-of-way or highly secured areas); or (6) The roadway width may not be large enough to accommodate more than one overhead circuit due to conflicting lines.

<sup>3</sup> The cost will be considered comparable when (a) the total underground to overhead cost ratio for a particular project is 1.5-to-1.0 or less, and (b) the magnitude of the cost differential between underground and overhead lines does not exceed \$500,000.

<sup>4</sup> If the cost is comparable (see note 3), HECO will then proceed to consider whether additional factors may justify HECO paying the cost differential to underground the line for the project. Thus, a final determination on whether to place the lines underground when costs are comparable would depend on HECO's assessment of factors that may include: (1) Project schedule – An underground installation may have less impact on the project schedule and in meeting service dates. This benefit, if it exists, would need to be weighed against the generally longer construction schedule for underground lines; (2) Land rights – Required land rights may be easier to obtain for underground as opposed to overhead lines; (3) Engineering and operational considerations – These may favor underground installation; or (4) Any other relevant factors, as set forth in HRS §269-27.6(5) and in an Application requesting approval to underground the line.

<sup>5</sup> In any one calendar year, HECO will not incur obligations under this Policy to make capital expenditures in excess of \$1,000,000 total, without prior commission approval, for (a) the overhead-underground project cost-differentials for new transmission, sub-transmission and distribution lines, and (b) the work-share costs incurred by HECO for conversion of existing overhead to underground lines as part of eligible community or government- initiated projects, provided that changes in project schedules after the commitment is incurred or the projects are initiated may affect the actual timing of such expenditures under (a) and/or (b).

- When an evaluation of the factors found in HRS §269-27.6(a) and (b) supports undergrounding (for 138kV transmission lines); or
- When justified as part of an agreement pursuant to which HECO receives some other form of sufficient consideration<sup>6</sup> from the developer/property owner/community group, *etc.* requesting undergrounding of new lines.

Additionally, HECO will consider, consistent with the intent of this policy, undergrounding new distribution lines (25kV and below) when other existing distribution lines previously have been placed underground within the same street, right-of-way or area as the new distribution line.

### CONVERSION OF EXISTING OVERHEAD LINES TO UNDERGROUND LINES

HECO will convert existing overhead lines to underground lines:

- As part of an eligible community or government-initiated project that would result in the replacement of HECO's existing overhead distribution and service lines (25kV and below). Projects that only result in the replacement of the service drops would not be eligible under this policy. Provided that monies are available,<sup>7</sup> HECO shall contribute at 100% its cost, the planning, design, material procurement and construction of the electrical work (e.g., cable installation, transformers, terminations, *etc.*). The community and/or government agency shall perform at 100% its cost, the planning, design, material procurement and construction of the civil/structural infrastructure work (e.g., trenching, ductline construction, manholes, *etc.*) (*see generally*, HECO Cost Contribution Guideline Summary),<sup>8</sup>
- Where federal highway funds are available for the undergrounding of lines as part of a state or county highway project pursuant to HRS §264-33.5 and there is cost-sharing for HECO's portion of the project according to the following formula: 80% - federal, 10% - HECO, and 10% - state or county funds;
- When justified for engineering and/or operating reasons;<sup>9</sup> or
- When justified as part of an agreement pursuant to which HECO receives some other form of sufficient consideration from the developer/property owner/community group, *etc.* requesting an underground conversion.<sup>10</sup>



**Harold K. Kageura**  
Vice President, Energy Delivery

12/23/09  
Date

<sup>6</sup> To be "sufficient," the value of the consideration received by HECO must be greater than or equal to the cost differential between overhead and underground lines. In some cases, HECO may be able to estimate the value of avoiding or settling litigation. HECO may also be able to estimate the value of land or other legal rights obtained as consideration. In other cases, the determination may be based on HECO's informed judgment. In any event, the value of consideration to be received will have to be considered on a case-by-case basis.

<sup>7</sup> See note 5.

<sup>8</sup> As part of these projects, HECO will consider allowing use of existing ductlines. If HECO allows such use (HECO may need to preserve use for other purposes), the applicant shall also pay contribution in aid of construction (CIAC) in the amount of the cost to originally install the duct.

<sup>9</sup> See note 2.

<sup>10</sup> See note 6.

## **Hawaiian Electric Company's Cost Contribution for Placing Overhead Distribution Lines Underground**

### **Guideline Summary**

At HECO, we want to work with the community to make it possible for more neighborhood power lines to be placed underground. The major issue has always been whether it's fair for electric ratepayers island-wide to bear the extra cost of burying lines in individual neighborhoods. As a way to move forward on this important issue and avoid unduly burdening any one party, HECO has initiated a cost-sharing plan.

In summary, under this plan, HECO will perform and pay for 100% of the planning, design and construction of the electrical work for its facilities if the community and/or government are willing to perform and pay for 100% of the planning, design and construction of the ductline infrastructure to bury existing neighborhood distribution lines (25 kV and below). It is important to note that this cost contribution may be used when no federal, state or local laws governing cost sharing apply.

#### Eligibility

Among other HECO requirements, the proposed project must basically fall within one of the following categories, as agreed to by HECO:

- State/county government sponsored project not otherwise subject to laws governing cost contributions (e.g. HRS 264-33, 264-33.5, county improvement districts, etc.);
- Project sponsored by an organized community-based association or group;
- Project for a "cluster" comprised of 4 or more separately-metered adjacent lots owned by different property owners; or
- Private developer and major landowner projects that benefit the community.

#### Responsibilities

- HECO will plan, design, procure materials and perform the HECO-owned system electrical work at no cost to the Requestor. Examples of this work include cable installation, splicing and termination work, and padmount transformer installation.
- The Requestor is responsible for planning and payment of the remainder of the project. This work primarily includes:
  - Planning, designing, and procuring the necessary materials and equipment to construct the electrical ductline infrastructure and customer-owned electrical facilities (e.g. trenching, ductline, concrete pad for transformer, etc.) consistent with HECO Construction Specifications and Standards, as well as applicable State and County requirements;
  - Acquisition of governmental approvals, permits and easements; and
  - Project and construction management.

#### Conceptual Cost Estimate

For each eligible project, HECO will provide an initial Cost Estimate at no charge to aid the Requestor's initial feasibility evaluation. The initial estimate includes only costs within HECO's scope of work and responsibility. The Requestor has the responsibility to determine the cost of the civil work, and to contact the other utilities regarding their policies and costs associated with undergrounding their facilities. Subsequent to that effort, requestor has the responsibility to determine whether to proceed with effort to pursue the project. In the event other utilities are not willing to share in the costs of the project, the requestor will be responsible for the costs that would have been borne by the other utilities.

#### Formal Agreement

Because of the expense of preparing detailed engineering designs, should the Requestor wish to proceed with actual design and construction of the Eligible Project, a formal agreement, which may be subject to Public Utilities Commission approval, must be executed before further work is performed.

Please speak with your HECO representative for detailed information regarding this policy.

## Hawaiian Electric Company, Inc. Dedicated and System Substation Guideline

March 2006

This guideline clarifies when a substation should be planned as a dedicated substation or as a system substation.

A *system* substation serves the load of two or more customers, while a *dedicated* substation serves the load of only one customer. HECO's practice is to incur the entire cost of constructing system substations to serve all customers that do not require dedicated service. Consistent with its tariff] (i.e., Rules 4, 13 and 14), under certain circumstances described below (such as when Special Facilities<sup>1</sup> are requested), a customer requesting dedicated service may be required to pay for a portion of the costs of construction of the substation.

### Dedicated Substation

#### Description

A dedicated substation is one that is dedicated to serving the load of only one customer.<sup>2</sup> The substation typically consists of transformer(s), switching devices, monitoring equipment, bus structures, and other miscellaneous equipment that are typically owned, operated and maintained by HECO and are required for safe and reliable operation. The distribution system from the dedicated substation (i.e., equipment/circuits on the customer side of the meter) is owned, operated, and maintained by the customer. The customer is responsible for providing a suitable site, at its expense, which is subject to HECO's approval.<sup>3</sup> Generally, HECO will install, at its cost, only those facilities that it deems

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<sup>1</sup> Per Rule No. 13(B)(1)(b), "Special Facilities" are facilities requested by the applicant which are acceptable to the Company but are in addition to, or in substitution for, the standard facilities which the Company normally would install [under the circumstances] to render electric service in accordance with the tariff.

<sup>2</sup> There are reasons why a dedicated substation is limited to serving one customer. For example, HECO does not have land rights regarding the dedicated substation site. In order to serve more than one "related" customer from a dedicated substation, HECO would need to obtain adequate protection that it could continue serving the contractor/tenant in the event the landowner no longer required electric service. As another example, the landowner's load characteristics could cause a degradation of service if other customer's were to be served from the same substation. However, there may be circumstances where HECO would consider serving more than one "related" customer from a dedicated substation. HECO does not propose to change the description of a dedicated substation because in many circumstances, HECO would not want to serve more than one "related" customer from a dedicated substation.

<sup>3</sup> Typically, the site is on customer-owned property and HECO has no obligation to pay for the site or use of it. It is possible that a customer's site is not large enough for the substation. In that case, the customer would be responsible for acquiring adjacent property or, if the property is not for sale, arranging for a lease of the property or obtaining an easement. This would be subject to HECO's approval since the Company would need adequate assurances that the lease or easement was enforceable, as well as other legal protections, e.g., those related to pre-existing conditions at the property. Also, there would have to be terms to allow HECO adequate time to remove all the equipment in the case of termination of the lease/easement.

necessary to render electric service in accordance with the tariff. Based on the load to be served, HECO initially installs one or more primary overhead lines and one or more transformers at a dedicated substation to serve the current and near term load of the customer. The customer pays for Special Facilities, i.e., equipment above and beyond the facilities normally installed to render electric service and that result in extra cost, including redundant equipment.<sup>4</sup> Any such facilities must be acceptable to HECO.

Circumstances under which a dedicated substation may be installed include, but are not limited to:

- If customer's load characteristics may cause a degradation of service to HECO's other distribution customers based on the highest distribution voltage available (including 25 KV) at that location. Degradation of service means the lessening of power quality for other customers where voltage fluctuations are frequent enough and/or large enough in magnitude to be noticeable and/or cause damage to or improper operation of equipment. Degradation of service will be determined by evaluating the voltage limits defined in HECO's Tariff Rule No. 2.B.3 (Character of Service) and General Order No. 7, Part VII (Standards of Quality of Service). Loads that may cause such problems include, but are not limited to, large motors, pumps, arc welders, arc furnaces, and shredders. (Note: If cost effective for the customer, using new technologies such as static var compensation may effectively condition loads such that a dedication substation is not required.)
- If the new load is located in a remote location where service from HECO's distribution system is unavailable.
- If the customer requests dedicated service.
- If the customer's near-term<sup>5</sup> new load is larger than five (5) MVA<sup>6</sup> and there are insufficient provisions for system substation or subtransmission capacity to serve the ultimate system loads based on projected land use.

### Customer Responsibilities

1. The customer shall provide at no cost to HECO, the land required to install the transformer(s) and related equipment to serve their normal load.<sup>7</sup> Where the customer requests redundant capacity, i.e., equipment above and beyond the facilities normally

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<sup>4</sup> If the Company would have served the customer from an existing substation or new system substation but for the customer's request for dedicated service, then the Special Facilities cost shall include the cost of installing the dedicated substation less the cost of installing the facility at another substation to serve the customer.

<sup>5</sup> "Near term" is deemed to be a period of five years or less.

<sup>6</sup> 5 MVA is used as a threshold number because that is the normal maximum load that HECO's 12 kV circuits are designed to carry.

<sup>7</sup> Typically, the customer owns the land on which the dedicated substation is built and HECO, therefore, does not require an easement or lease for the premises. Where the land is not owned by the customer, e.g., where the customer has a long-term lease, the Legal Department must be consulted to determine what type of legally binding arrangement must be made before HECO will construct the dedicated substation.



installed to render electric service to meet the projected near-term loads, the substation site must have the space required for installation and maintenance of the backup transformer and related equipment.

2. The customer shall install, own, operate, and maintain the primary distribution system beyond the metering point or other negotiated point of service. Non-HECO standard equipment and configurations on the customer's side of the substation may be used to reduce the substation size requirements, if acceptable to HECO. (For example, it may be acceptable to HECO for the customer to install reclosers instead of metal-clad switchgear on its side of the substation.) For safety and operational considerations, HECO must approve such non-standard equipment in writing.<sup>8</sup>
3. The customer will work cooperatively with HECO to ensure that the customer's system protection scheme coordinates with HECO's system requirements. (For safety and system stability, HECO will not energize the new substation until HECO is ensured that the customer's protection scheme will coordinate with HECO's requirements.)
4. The customer shall be served under HECO's appropriate rate schedule and service voltage.
5. If the customer requests Special Facilities that are in addition to or in substitution for the standard facilities that HECO would normally install, the customer shall pay for the additional costs of the Special Facilities, as provided for in HECO's Tariff Rule No. 13.

Example 1: If the customer requests redundant capacity<sup>9</sup>, the customer shall pay the extra cost for the additional facilities such as an additional transformer, second primary source, and/or automatic transfer.

If the customer does not request redundant capacity, the customer shall accept planned and unplanned shutdowns. Planned shutdowns include transformer and breaker maintenance, and usually occur approximately one (1) day each year at a mutually agreeable or acceptable date and time. Unplanned shutdowns include transformer or equipment failure within the substation, and may take HECO several days or longer to repair or replace the equipment, even if it is available. This could result in a prolonged outage to the customer.

If the customer desires power during scheduled maintenance, and if a mobile substation is available and can be installed at the dedicated substation, HECO will charge the customer for installation and removal costs of this mobile substation. HECO will apply the amount of revenue paid to HECO by the customer for

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<sup>8</sup> Generally, the approval process requires about six weeks and the customer will be notified if additional time is required.

<sup>9</sup> Redundant capacity generally refers to additional equipment and/or facilities (i.e., backup circuits and/or transformers) that would need to be installed to maintain service to the customer from a dedicated distribution substation during routine maintenance or single-contingency outages on the HECO system. (Single contingency means a loss of equipment, i.e., a failure of a circuit or a transformer.) HECO may, at its option and cost, install equipment and/or facilities necessary to address load growth, if it determines that it is cost-effective to install such equipment and/or facilities when the substation is installed.

electrical energy supplied by the mobile transformer to the cost of installing and removing the mobile transformer.

Example 2: If the customer requires a substation design that is more costly than the substation HECO would normally design for the site, i.e., requires facilities that are acceptable to HECO but are in addition to, or in substitution for, the standard facilities that HECO would normally install to render electric service in accordance with the tariff, the customer shall bear the additional cost of these special facilities. If the customer requires a totally enclosed substation, the customer shall furnish a building shell and ancillary systems such as ventilation, sound and vibration dampening, and fire protection, which are acceptable to HECO, as well as adequate access to install and remove the largest piece of HECO equipment. For safety and operational considerations, HECO must approve the design of any customer-furnished facilities in writing.

6. For overhead line extensions to serve dedicated substations, the customer shall pay in advance that portion of the estimated project costs (i.e., the cost of the lines and related equipment, and HECO's cost for the dedicated substation) that exceed the sixty (60) months' estimated revenue. HECO shall bear the remaining expense for overhead line extensions and related equipment.
7. In general, HECO's practice is to install overhead lines. Customer requests for underground lines shall be governed by HECO's Policy on Underground Lines.
8. If the customer requires relocation of the dedicated substation in the future, the customer shall bear all relocation costs.

#### HECO Responsibilities

1. HECO shall install, own, operate, and maintain the transformer(s), primary feeder(s), and other equipment up to the point of interconnection (i.e., not including the customer's switchgear or distribution equipment). HECO shall determine whether to install one or more circuit breakers on the secondary side of the transformer(s). HECO shall specify the interconnection point.
2. HECO shall select the primary voltage and circuit to serve the substation.
3. The dedicated substation shall be constructed for the purpose of serving only one customer's load.
4. A Service Contract as provided for in Rule 4 of HECO's Tariff, shall be prepared, when required, for all customers that are subject to this policy.

5. HECO shall replace any HECO maintained equipment that has failed or is in need of replacement at its own expense. This includes equipment initially paid for by the customer.<sup>10</sup>
6. HECO will install at its own cost, operate and maintain any additional equipment (beyond the initial installation) needed to serve a growth in load.

## **System Substation**

### **Description**

A system substation is one that serves the loads of two or more customers. HECO will install, own, operate and maintain a system substation to serve the loads of two or more customers. Individual transformers may be used to serve a single customer to reduce the need for a separate dedicated substation to serve that customer.<sup>11</sup> One or more customers who request Special Facilities will be responsible for the cost of those facilities.<sup>12</sup> The substation typically consists of transformer(s), switching devices, monitoring equipment, bus structures, and other miscellaneous equipment required for safe and reliable operation. For system substations, HECO will install redundant equipment at its cost in accordance with its Planning Criteria. Such redundancy might include an additional transformer beyond the transformer(s) required to serve the current load, or another incoming feeder to the substation in addition to the required feeder(s) to serve the current load.

A new system substation will be required if there is insufficient existing system substation or subtransmission capacity to serve the ultimate system loads related to multiple customers, based on projected land use in the area.<sup>13</sup>

HECO's general practice is to acquire the system substation sites in fee. There may, however, be instances where HECO may not be able to or may not want to acquire the substation site in fee. (Example: If the site contained extensive subsurface oil

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<sup>10</sup> This provision shall not apply under circumstances in which it is necessary to replace the entire substation and HECO determined that it would be feasible and more cost-effective to serve the customer from a system substation, but the customer requests continued service from a dedicated substation. Such a situation will be treated as a new customer request for dedicated service.

<sup>11</sup> The situation would be treated as a line extension (i.e., Rule 13). The customer is responsible for the incremental costs, if any, of the transformer and the associated installation required to serve the normal initial load that exceeds the estimated sixty (60) months revenue for that customer.

<sup>12</sup> For example, a customer, such as a developer may request additional landscaping or a system substation design that HECO would not normally install. These would be considered Special Facilities and the developer would be responsible for difference in cost between the requested facility and the cost HECO would incur for the normal installation. Similarly, where a customer requests underground lines when HECO would normally install overhead lines, the customer will be responsible for the incremental costs of undergrounding.

<sup>13</sup> HECO does long-range planning to identify and estimate the ultimate load for an area based on allowable land use zoning, height restrictions, floor area ratios, existing loads, and proposed new loads. There is no specific time frame for when the loads will materialize. It could be as little as 5 years or more than 50 years to build out based on the present level of development already in place. Based on the long-range planning, HECO will design a system substation that can expand to meet the ultimate load, but will only install the equipment necessary to serve the near-term load plus redundant equipment consistent with HECO Planning Criteria.

contamination which would require State Superfund cleanup, HECO may choose some other arrangement such as a lease whereby the landowner would retain primary responsibility for cleanup of the site and provide the Company an indemnification as to cleanup liability.)

If lease arrangements are unavoidable as in the case of government-owned property, HECO will attempt to minimize the relocation rights, to the extent feasible.

### Customer Responsibilities

1. The customer shall install, own, operate, and maintain the primary distribution system beyond the metering point or other negotiated location for system substations. (The metering point is at the customer site, and not at the substation.)
2. The customer shall work cooperatively with HECO to ensure that its protection scheme coordinates with HECO's system requirements for system substations. (The metering point is at the customer site, and not at the substation.)
3. If the customer is a developer of a large subdivision or a portion of a larger subdivision that is expected to result in ultimate loads greater than 5 MVA, HECO may require the developer to provide a system substation site that HECO will purchase in fee to serve the normal and emergency loads of the overall development and adjacent system customers.<sup>14</sup>
  - a. If a landowner or developer requests a substation design that necessitates more land than HECO would normally employ at the site (e.g., for a low profile design or enlarged perimeter buffer areas), that party must bear the cost of the additional land and/or equipment.<sup>15</sup> If a party requests a partially or totally enclosed substation for aesthetic reasons or to acquire air rights over HECO's substation site, that party shall also bear the cost of the building shell and associated ancillary systems in addition to any compensation required for the air right privileges.

### HECO's Responsibilities

1. HECO will attempt to acquire the necessary substation sites in fee simple to serve the existing and future loads. Land for system substation sites should be identified and evaluated for acquisition as soon as possible after its need is justified by load density and/or area load forecasting studies. Early acquisition of the substation sites will also enable HECO to respond more positively towards serving new customer loads.
2. HECO shall install, own, operate, and maintain the substation and distribution system in accordance with HECO standards. HECO standards include, but are not limited to,

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<sup>14</sup> HECO would require a new substation site to serve new customers if there is insufficient substation capacity at HECO's other existing substation sites in that area. 5 MVA is used as a threshold number because that is the normal maximum load that HECO's 12 kV circuits are designed to carry.

<sup>15</sup> This requirement does not apply to statutory special design districts. Whether the landowner or developer must pay additional costs associated with zoning requirements or requirements of special design districts created by ordinance will be evaluated on a case-by-case basis.

HECO's Substation Engineering Standards, and/or standards specified in transformer manufacturer O&M manuals and other major equipment manufacturer O&M manuals.

- a. HECO will bear the higher costs of a substation located in a statutory special design district (i.e., Waikiki Special District) that requires a substation design that is more costly than HECO would normally install at the site as set forth in the applicable statute or rule.
  - b. HECO shall bear the extra costs if the system substation is partially or totally enclosed at HECO's discretion for reasons such as maximizing land usage or minimizing noise<sup>16</sup> and/or meeting safety requirements.<sup>17</sup>
3. HECO shall select the distribution voltage.
  4. HECO shall select the primary voltage and circuit(s) to serve the substation. HECO shall install (at its cost), own, operate and maintain the circuits serving the substation.
  5. HECO shall provide service to various customers from this substation or from another substation. System substations are not dedicated to any specific customer's load.

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<sup>16</sup> DOH regulations set noise standards depending on the "zoning district" (as defined in the regulations) where the substation is located. See 11 HAR Chapter 46 (Community Noise Control). There are various means for mitigating noise. High substation walls are one method. Other methods include replacing a transformer with a lower sound level unit or use of noise canceling technology if feasible.

<sup>17</sup> Hawaii Department of Labor and Industrial Relations Hawaii Occupational Safety and Health (HIOSH) regulations (12 HAR Subtitle 8) set safety standards. These standards are found in General, Legal and Administrative Provisions for Occupational Safety and Health (Part 1); General Industrial Safety Standards, which include electrical safety requirements (Part 2, § 12-89.1-1 and § 12-89.1-2), and; Construction Standards, which include electrical construction safety requirements (Part 3, § 12-141.1-1 and § 12-141.1-2).