

Electrical Service Requirements

Residential & Commercial

AEL&P
since 1893
ALASKA ELECTRIC LIGHT & POWER CO.

Proudly Serving the Community of Juneau.

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RESPONSIBLE • RELIABLE • RENEWABLE

ELECTRIC SERVICE REQUIREMENTS

RESIDENTIAL AND COMMERCIAL

Information for use by customers, architects, engineers, contractors, electricians and those engaged in the planning and construction of electric service and meter installations.

Alaska Electric Light and Power Co. September 2022

To Our Customers:

AEL&P assembled this booklet to assist its customers and their architects, engineers, or electrical contractors in planning for and obtaining electrical service. The information presented here is intended to supplement the requirements of the National Electrical Code, National Electrical Safety Code and all other applicable Federal, State or Municipal codes, regulations, laws and ordinances. If there is a conflict in requirements between this booklet and AEL&P's Electrical Utility Tariff, then the Tariff, which is approved by the Regulatory Commission of Alaska, shall take precedence.

AEL&P strives to provide safe and reliable power and to serve its customers promptly and satisfactorily in completing service connections.

Connie Hulbert
General Manager

AEL&P DIRECTORY

Consumer Affairs/Customer Service-Main Office ---------- 780-2222
(Billing Account Information and New Residential and Commercial Account Applications)
5601 Tonsgard Court
7:30 a.m. to 5 p.m., Monday through Friday

Engineering Department ---------- 463-6324
(New Construction Applications)
5601 Tonsgard Court
8 a.m. to 5 p.m., Monday through Friday

Metering Section ---------- 780-2222
8 a.m. to 5 p.m., Monday through Friday

Underground Cable ---------- 586-1333
Juneau Utility Council
8 a.m. to 5 p.m., Monday through Friday

Emergencies ---------- 586-9765

CBJ DIRECTORY

Assessors Office .....586-5220 or 586-5221
Building Permits 586-5230
City Manager 586-5240
Engineering Department 586-5230
Harbor Master 586-5255
Mapping 586-5230
Planning/Community Development 586-5230
Sewer Department 586-5261
Sewer Problems 790-2525
Sewer Sanitation 780-6888
Street Lights/New 586-5256
Street Maintenance Foreman 586-5256
Street Department 586-5256
Street Light Maintenance 586-5256
Water Department 586-5261
Water Problems 780-6808
Assessor 586-5220

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General Information

Introduction

Alaska Electric Light and Power Company (AEL&P) welcomes you as a valued customer. AEL&P is the largest investor-owned electric utility within the State of Alaska.

AEL&P Tariff

AEL&P has developed guidelines to assist its customers and its company representatives in administering a uniform set of service standards. A copy of these complete rules and regulations, known as a tariff, is on file for inspection on request by any member of the general public during regular business hours at AEL&P's office at 5601 Tonsgard Court., or it can be easily viewed on our website: www.aelp.com/tariff.htm.

Starting Service with AEL&P

Application for service at existing location, new customer

New customers should apply for new service at AEL&P's offices at 5601 Tonsgard Court by completing and signing an application form. Applications cannot be taken over the phone or by mail.

It is also important that you contact Customer Service whenever you need to make the following changes to your service account with AEL&P.

- Transferring service from one person's name to another
- Moving to a new service within AEL&P's service territory
- Disconnecting service entirely

Application for service at location not previously provided with electricity

Obtaining new service at a location not previously provided with electric service is done through the **Engineering Department,** located at 5601 Tonsgard Court. It is here that applications for new construction accounts and meter set orders are initiated. Customer requirements include:

- A completed application form
- A security deposit or other satisfactory credit arrangements

Our **Engineering Department** deals with such things as design, cost estimates, obtaining necessary permits and easements and construction. Customer requirements include:

- Site Plan
- Electrical load requirements
- Completed line extension agreement (if necessary)
- Easements (if necessary)
- Funding (if necessary per the line extension policy)
- Proof of inspection by applicable governmental agency
- Permit number

Application Checklist

The following represents a check list of basic procedures required for a complete AEL&P Service application. Please consult the list below to make certain all the applicable items have been completed.

(1) **Line Extension Applications (new or upgraded services):** Please complete an *Application for Line Extension* with the AEL&P Engineering Department. This is the first step in upgrading or installing a service which may require AEL&P construction, current transformers and meter installation.

(2) **Service Location:** Please provide a service location on a site plan. The plan should depict the building(s) outline(s), any future building(s), the property layout, site elevations and location of the electric service entrance switch and main disconnect.

(3) **Electrical Drawings:** Please provide AEL&P with a complete set of electrical shop drawings which show service entrance equipment and distribution panel information.

(4) **Load Estimates:** Please provide AEL&P with an estimate of the electrical demand load based on the total connected load. Commercial and industrial customers shall provide estimated load information as furnished by the customer's engineer.

Once the above items are completed, AEL&P can begin the necessary design work.

(5) **Funding:** To insure construction, it may be necessary to make a contribution or advance-in-aid of construction. This is determined by Section 7 of the Tariff.

(6) **Construction Schedule:** Contact AEL&P Engineering Department at 5601 Tonsgard Court or call 463-6324.

(7) **New Accounts:** Establish an account for each new meter at the Engineering Department. New customers must apply in person at 5601 Tonsgard Court. An account at a CBJ boat harbor can be established at AEL&P Consumer Affairs at 5601 Tonsgard Court with an Authorization for Utility Service which is required from the harbormaster's office.

(8) **Easements:** Necessary permits and easements must be acquired.

(9) **Inspections:** Contact the City and Borough of Juneau Building Inspector or State of Alaska, Department of Labor for an electrical inspection of your service entrance.

Once items five through nine have been met, AEL&P construction crews or contractors can hook-up and energize the service.

AEL&P Tariff

It is necessary that the construction of new or remodeled installations conform to current and applicable provisions of the National Electrical Safety Code, federal and state regulations, municipal ordinances and codes, municipal code amendments, the AEL&P Tariff and AEL&P service requirements. Where there is a conflict between AEL&P's Tariff and this booklet, the Tariff shall take precedence. Codes, ordinances and regulations are available at several sources.

AEL&P's Tariff, as approved by the Regulatory Commission of Alaska, is available for customer inspection at 5601 Tonsgard Court, and can also be viewed on our website at www.aelp.com/tariff.

Copies of specific pages from AEL&P's Tariff are available from AEL&P's Consumer Affairs Department.

AEL&P Tariff

AEL&P may discontinue service if the customer fails to comply with the AEL&P Tariff. Service may be discontinued by AEL&P at any time to prevent fraudulent use or for the purpose of protecting utility equipment. Diversion of electricity is both a civil and a criminal offense under the laws of the State of Alaska.

Filing a complaint

A customer may file a complaint with AEL&P concerning the adequacy of electric service provided or if the utility fails to comply with rules and regulations of the Tariff. Complaints should be submitted verbally or in writing to the Director of Consumer Affairs (see Directory).

Acceptance of service

In the absence of a signed agreement or application for service, the supply of service by AEL&P and its acceptance by the customer, shall constitute agreement and acceptance of AEL&P policies, rules and regulations.

Character of Service

Electric service is available at alternating current 60 hertz, single- or three-phase, from an overhead or underground distribution line at one of the nominal American National Standards Institute (ANSI) standard voltages (±5%) as given below. However, three-phase is not available for residential service.

The customer is responsible for providing adequate devices to protect the equipment from high and low voltage, transients, short-circuit current, overload and the effects of "single-phasing" of a three-phase service. If the service is upgraded from a single to a three-phase service, the customer will pay the cost of the upgrade. In addition, the customer may be required to receive underground service as required by a City and Borough of Juneau ordinance.

AEL&P will supply the following voltages for service:

Secondary Voltage

Single-phase, 120/240 volts, 3 wire, grounded
** Single-phase, 240/480 volts, 3 wire, grounded
Single-phase, 277/480 volts, 3 wire, grounded
Three-phase, 120/208 volts, 4 wire, grounded, Wye
** Three-phase, 277/480 volts, 4 wire, grounded, Wye
** Three-phase, 120/240 volts, 4 wire, grounded Delta
Three-phase, 240/480 volts, 4 wire, Delta

Note: *Not all voltages are available in all areas. Contact AEL&P Engineering for voltages available at your service location.*

***Prior AEL&P approval is required to provide this voltage.*

Primary Voltages

Primary voltage is the highest voltage of the AEL&P distribution line available for electric service before transformation to a secondary delivery voltage. Such nominal primary voltage will not be less than 7200 volts and not more than 12470 volts. Delivery will be made at standard available primary voltage which may be available in the service areas where applicable.

Single-phase, 7200 volts
Three-phase, 7200/12470 volts, 4 wire, Wye

Undesirable Service Characteristics

AEL&P may refuse or discontinue service to a customer if the customer's installations have load characteristics that may cause excessive voltage fluctuations, impaired service or damage to the facilities of AEL&P or other customers. Undesirable load characteristics include – but are not limited to – 10% unbalanced load between phases, a power factor below 95% or cyclical demand fluctuations produced by the customer's equipment.

AEL&P may require – as a condition of service – that a customer install, at his or her expense, equipment that will eliminate the undesirable load characteristics. A commercial customer planning to install electric welders or motors of twenty five (25) horsepower or more must consult AEL&P before making the installation.

Application for Service

– when no prior service exists

To obtain electrical service from AEL&P, a building owner, developer or their representative must complete, sign and file an *Application for Line Extension Form* and submit service equipment and location details for approval at AEL&P's office with the assistance of the Engineering Department. Application should be made as far in advance as possible before service is required. At the time of application for service, the customer may be required to pay a deposit. *(Please* see page 3 *for more details)*

NEW SERVICE OPTION

Mobile Home Parks

An applicant for service to mobile home parks should contact the AEL&P office for suitable location and approved pedestal types. Reference should be made to Drawing SS-12 in Appendix A for details of pedestals.

Temporary Service

Contact AEL&P's Engineering Department to make application for temporary service. The applicant must supply and install all temporary service equipment and conductors. Refer to appendix drawing SS-5 for further details. Temporary service is limited to one year.

Primary metered service normally will not be available unless the customer requires primary voltage from the distribution system and obtains AEL&P approval prior to facility construction.

Permanent Residential and Small Commercial

1. Power available to Lot Corner

Power presently available to lot corner: AEL&P Contribution $1,000

If power to lot corner is presently available and the applicant is not connecting to an existing line extension in which the applicant must share in the cost of the extension, AEL&P will pay the cost of an overhead secondary service constructed by it or under its control up to $1,000 per permanent connection. All estimated costs in excess of AEL&P's portion will be paid by the applicant prior to construction.

AEL&P will also pay the applicant's share of the costs of the original extension, up to $1,000 per permanent connection, less the additional cost, if any, of an extension to serve only the applicant. This AEL&P-paid amount will be refunded to the earlier applicant(s) who have already shared in the cost of the original extension. Any cost-sharing advances for the earlier extension required from the new applicant in excess of AEL&P's portion will be paid by the applicant prior to construction.

2. Power not available to Lot Corner

Power presently not available to lot corner: AEL&P Contribution $2,000

If power is presently not available to the lot corner, AEL&P will pay the cost of an overhead distribution facility extension constructed by it or under its control up to $2,000 per permanent connection. All estimated costs in excess of AEL&P's portion will be paid by the applicant prior to construction.

Underground Service

The above costs apply to overhead services. If underground service is installed, the customer is responsible for any costs in excess of the overhead cost.

3. Existing Line Extension

If the applicant is directly connecting to a line extension which is less than five years old, the applicant is required to pay a portion of the original cost of the earlier extension according to where the applicant is connecting and the number of customers already sharing the section with the applicant.

Large Commercial

AEL&P will pay the cost of an overhead distribution facility extension constructed by it or under its control up to $7,500.

The applicant will be required to pay AEL&P's portion as an advance-in-aid of construction; also, the applicant will pay as a contribution-in-aid of construction any estimated costs in excess of AEL&P's portion. In the case of underground facilities, the applicant will also be required to make a contribution-in-aid of construction equal to the difference between the cost of constructing the underground system and the cost of constructing a comparable overhead system.

When large commercial facilities are constructed by AEL&P or under its control and an applicant has paid an advance-in-aid of construction, AEL&P will refund the prepayment when the applicant has continuously registered an average monthly demand in excess of 50 kW over five (5) years, commencing with permanent connection of service.

Easements

Easement conditions

AEL&P will construct, own, operate and maintain facilities only on public or private property on which easements or rights-of-way can be obtained without cost or condemnation. As a condition of service, AEL&P may require the execution of an easement, or easements, providing suitable right-of-way for the construction and maintenance of the system. Easements are to be kept clear of trees, shrubs, retaining walls or grade changes to facilitate repair or replacement of AEL&P power lines.

Service Conductor Connections and Length Limitations

Connection and disconnection

Secondary connections on the "load side" of the customer switch gear or bus shall be done by the customer's electrical contractor on all commercial services. AEL&P will install secondary cable and transformer terminations, but the secondary side of the transformer will remain de-energized until the customer's electrical contractor has completed the connections (see Appendix A, Service Standard Drawings). All other service connections will be made and/or terminated by AEL&P and/or its representative. If electrical service must be disconnected for any reason, the customer must contact AEL&P Engineering. Written approval must be obtained from AEL&P for the location of electrical service entrances.

Retirement or Relocation of Services and Facilities

If it is necessary to retire or relocate service or distribution facilities (including AEL&P-owned transformers located on, or adjacent to, customer's premises) for the convenience of the customer, such relocations will be performed by AEL&P at the expense of the customer. The customer shall pay in advance of construction the cost (material, labor, equipment and overhead) of constructing and installing the new facilities, plus the cost of removing the replaced facilities less the salvage value of the relocated facilities as determined by AEL&P. A modification of existing facilities will not be considered "operationally feasible" if the purpose is to move the facilities, or any part thereof, to the premises of another customer, unless that customer agrees in writing to such modification.

SERVICE FACILITIES ON CUSTOMER'S PREMISES

AEL&P Facilities – Protection & Access

Care of AEL&P property

All facilities furnished by AEL&P at its expense and installed on the customer's premises shall remain the property of AEL&P and may be removed by AEL&P at any time. The customer shall provide space for and exercise care to protect AEL&P's property located on the customer's premises; in addition, the customer shall not break AEL&P's seals. The customer shall be liable for loss or damage to AEL&P property arising from neglect carelessness, improper protection from ice, snow and water, or misuse by the customer or any other person on the customer's property.

Safe location of transformers and minimum clearance

On underground service installations requiring transformers (or any other above grade equipment such as switch cabinets or secondary pedestals), the customer is required to furnish an accessible and safe location for the transformer on the customer's property. All transformer site locations must be approved by AEL&P. AEL&P will not install transformers on property other than that of the customer's, in a street or alley right-of-way. There should be a minimum clearance from trees, shrubs and building walls of ten (10) feet in front of the transformer and five (5) feet on each of the other sides. Clearance above the transformer should be a minimum of fifteen (15) feet to provide crane clearance for installation and replacement. Where needed, AEL&P shall provide transformer protection (i.e., concrete filled metal posts) to prevent damage from vehicles.

AEL&P access to customer premises

Properly identified employees of AEL&P shall have access to customer premises at all reasonable times for the purpose of reading meters to test or inspect the customer's load and equipment, or to install, repair, remove or exchange equipment belonging to AEL&P. The customer shall not erect or have any device, building, fence, shrubs, trees, etc., that would impede utility access to the equipment.

Customer Facilities

Installation of wiring and equipment

The customer shall install and maintain all wiring and equipment beyond the point of delivery except for the meter. The point of delivery, unless otherwise specified, is that location on the exterior of the customer's building or structure where AEL&P's circuit and the customer's circuit are interconnected.

Customer's wiring, meter base and entrance facilities must be installed and maintained by the customer in conformity with applicable Borough or State requirements and current standards required by the National Electrical Safety Code and the National Electrical Code. Underground service entrance conduit sizing should be coordinated and approved by AEL&P prior to installation.

Inspection requirements

An affidavit or certificate of inspection is required by Alaska statute and must be furnished before service is connected. AEL&P may disconnect or refuse to connect service when a customer's wiring of facilities is found to be not in compliance with the above codes and requirements.

Applicant Construction

Any applicant may construct and install primary and secondary service under the conditions described in the AEL&P Tariff. For specific requirements, application should be made to the Engineering Department.

Bidding and Contracting

Scheduling

After completion of design and engineering, AEL&P will either schedule construction with its own employees, or solicit bids for construction of the extension from licensed electrical contractors. If bids are solicited, AEL&P will award the contract for the applicant's extension to the lowest qualified responsive bidder. An overhead charge as stipulated in the Tariff will be added to the cost of labor and materials. Before construction will begin, the applicant must:

- o Have all required advances, contributions, easements, permits, line-extension agreements, and related documents completed and received by AEL&P.
- o Ensure that the construction site is up to approximate final grade and free from any man-made obstructions.
- o Ensure that rights-of-way and other necessary access routes are clear.
- o Ensure that all required survey stakes are in place and marked.

Construction

AEL&P will make good faith efforts to ensure that construction of the applicant's extension is completed within 30 days of executing the contract. If service cannot be established within 30 days, AEL&P will contact the applicant within 15 working days of the date of application to advise the applicant of the reason for delay and will estimate a date for service completion.

The applicant shall pay the estimated cost in advance. If the actual costs incurred are less than the estimate, the applicant shall receive a refund as appropriate. The applicant shall, however, be responsible for 10% of costs above the estimate and for additional costs which are caused by the applicant's own action. In addition to labor and materials, an overhead charge as stipulated in the Tariff will be included in the cost.

Electrical Generators

No customer shall, without prior AEL&P approval, connect any electric generator to wiring which is intended to be energized at any time from AEL&P's system. Proper sectionalizing and protective equipment must be installed in conformance with applicable federal, state and municipal codes and requirements (see Appendix A, AEL&P Service Standard Drawings, SS-13).

Location of Meters

Requesting approval

Prior to wiring a building or performing any electrical construction for a new service, the customer shall request approval from AEL&P far the location of the customer service equipment, including meters.

The following are the minimum requirements or standards for customer metering installations:

Minimum requirements

- Service equipment shall be on the side of the building nearest to an AEL&P overhead or underground facility suitable for providing service. Alternate service equipment locations must be approved by AEL&P. Where building occupancy requires more than one meter, the meters shall be grouped at one readily accessible location. *AEL&P approval for other arrangements may be obtained when capacity requirements make multiple services desirable and are required by the National Electrical Code.*
- Meters shall be located, level and plumb, outdoors on the customer's structure (building, post or pedestal). Meters must be firmly supported and be in locations free from vibration, mechanical injury or falling ice, and accessible for reading, testing and replacement.
- Meters may be installed indoors at commercial applications only with prior approval of AEL&P and only when conditions prohibit outdoor placement. Such meters will be located as specified by AEL&P. All residential meters shall be located outside of the building.
- AEL&P does not permit the installation of the customer's meter socket on AEL&P facilities, such as distribution transformer enclosures, wood poles or pad-mount transformers. Meters are not allowed on mobile structures such as trailers, houseboats, barges, cranes, skid-mounted electrical generators, dredges, draglines or mobile pumping equipment.
- For single and multiple meter installations, the center line of the meters shall be between 5'6" and 6'0" above the finished grade or floor immediately in front of the meter. For multiple meter installations, the bottom line of meter sockets shall not be less than 36" above finished grade (see Appendix, AEL&P Service Standard Drawings).
- Minimum unobstructed wall space for a single meter is 11' X 14". Installations requiring manual bypass will require a 15" X 25" wall space.
- A minimum of three feet must remain unobstructed in front of a meter installation as shown on drawing SS-3 in Appendix A.

Metering Standards

- The distance between the center line of the meter base shall not be less than 7" from a wall or obstruction on multiple socket installations. Additional wall space for instrument transformers will be required when the service entrance ampacity exceeds 320 amperes continuous or 400 amperes non continuous. Also, required space increases when more than one meter is used.
- Where meter cabinets are specified, minimum depth shall be 10" or both single- and three-phase.
- AEL&P is under no obligation to provide service to a location not approved by the company. A customer who installs service entrance equipment without prior AEL&P approval may be required – at the customer's expense – to relocate the service equipment to an approved location.

Switchboard Assemblies

In case of large loads where instrument transformers are employed and where the customer's establishment is open and accessible to AEL&P employees during the normal working day, the metering may – only with prior approval – be installed on the customer's switchboard. See Appendix A, AEL&P Service Standard Drawings, SS-11 for minimum space requirement and sizes.

Residential

Meters shall not be placed in any unsafe location, such as along stairways and above window wells. Carport, porch or patio areas shall be avoided due to possible future enclosure of such areas, resulting in inconvenience to the customer when it becomes necessary to move the meter location to enable AEL&P to read or test the meter.

Point of Delivery

The point of delivery – unless other wise specified – is that location on the exterior of the consumer's building or structure where AEL&P's circuit and the customer's circuit are interconnected.

Metering Standards

Meter Sealing

All cabinets and gutters containing unmetered wires must be arranged to enable sealing. This includes current transformer (CT) cabinets or CT compartments in switch gear. Where fused disconnects are ahead of multiple meter base installations, the customer or electrical contractor must provide an externally operable main switch interlocked with the fuse access compartment ensuring that the fuses will remain accessible to the customer. Sealing devices must be of the type that will accept AEL&P's standard stainless wire, bail padlock-type seal. CT circuits running between the CT enclosure and the meter base must be enclosed in conduit in all unsealed areas. Conduit elbows with access fittings and junction boxes will not be permitted in the CT circuit conduit.

Meter Identification

Incorrect markings

If more than one meter is installed at one location, all sockets and entrance equipment shall be clearly and permanently marked to designate the particular apartment or office served. An AEL&P meter department representative will meet with the customer to verify that permanent markings are correct. If meters are marked incorrectly, the customer shall be responsible for all costs incurred by AEL&P in correcting the meter identification

Please note that ink labeling will not be considered permanent.

Final Connections

AEL&P will make the service connection only after approval of the inspection authorities. Whenever possible, these authorities should be given adequate notice regarding the wiring plans to avoid any unnecessary delay. No meter will be installed until the customer has established a billing account for that location and an inspection sticker is attached to the main service.

METER EQUIPMENT

Sockets

Socket requirements

Acceptable meter sockets shall be manufactured in accordance with National Electrical Manufacturing Association (NEMA) Publication Number E1-17, labeled by Underwriter's Laboratories and equipped with terminals, meter jaws and sealing rings. The sockets shall have an ampacity rating equal to – or greater than – any conducting portion of the service entrance equipment including the entrance panel and the service conductors. This requirement applies to single- and three-phase, self-contained meter bases that are 400 amps and below. The minimum socket size for underground service is 7" X 14" for 100 ampere services and 11" X 14" for services above 100 amperes. Minimum size socket for overhead service is 7" X 14" for 100 ampere services and 8" X 14" for services above 100 amperes. The following table shows the type of socket that should be used for each specific type of service. All current transformer metering will require a test switch in the meter base. Wiring diagrams contained herein (see Appendix-A) should be consulted for the proper connections in the meter sockets or a base meter connection.

Meter Socket Information*

	Socket	100-200 Amperes		Above 200 Amperes	
Type of Service	Type	Terminals	Figure	Terminals	Figure
120/240V, 1P, 3W*	S-BASE	4	1	6	4
240/480V, 1P, 3W*	S-BASE	4	1	6	4
120/208V, 1P, 3W**	S-BASE	5	2	5	2
277/480V, 1P, 3W**	S-BASE	5	2	5	2
120/208V, 3P, 4W**	S-BASE	7	3	13	6
277/480V, 3P, 4W**	S-BASE	7	3	13	6
120/240V DELTA, 3P, 4W***	S-BASE	7	3	13	6
480V DELTA, 3P,3W***	S-BASE	5	2	8	5

** See Appendix A AEL&P Service Standard Drawings, SS-1 and SS-2, for Meter Wiring Details.*

*** Safety Socket - All Commercial and Industrial loads require meter bypass provisions. Loads at 480 volts require a* ***lever operated by-pass socket****.*

**** Must have Engineering approval for non-standard voltages.*

Metering Standards

Socket Installation

Color and side locations

Meter sockets must be plumb and securely fastened to the structure. Unused threaded socket openings, or any other type of opening not used, must be closed with approved plugs that are locked in place from the inside of the socket. All conductors must be securely fastened to their respective terminals and arranged in a manner which will not interfere with the installation of the meter. Where the service contains a grounding neutral conductor, the customer will provide the ground connection between the neutral and the socket.

Service Conductor Identification and Connections

When a three-phase, four-wire service is supplied from a delta-connected secondary, the midpoint of one phase is grounded to supply lighting and similar loads. The phase conductor in the service entrance having the higher voltage to ground (power leg) must be identified by the color red, and located on the right hand lug of the meter base. ***No exceptions.*** If the neutral wire is insulated, it must be identified with a white or gray color. Wiring diagrams contained in Appendix A should be consulted for the proper connections in the meter sockets.

METERING LESS THAN 600 VOLTS

Self-Contained Metering

The customer will provide a self-contained meter socket installation on each new or remodeled service entrance that has an ampacity of 320 amperes continuous or 400 amperes non-continuous.

Meter Bases

Types of meter bases

A standard S-type (socket) meter base may be used for loads under 100 amperes and three-phase motor loads up to 30 horsepower at 240 volts and up to 75 horsepower at 480 volts. A continuous duty S-type meter base is required for loads from 100 to 200 amperes or for three-phase motor loads from 30 to 75 horsepower at 240 volts or from 75 to 150 horsepower at 480 volts. ***All commercial bases will require meter bypass and all 277/480V self-contained bases will require lever operated by-pass safety sockets.***
Sockets used on 480-volt service must provide a minimum of 1" X 4" space on the front for distinctly marking “480 volts”. All self-contained meter sockets must have an outside main disconnect on the load side of the meter.

Meter Bypass Provision

Socket requirements

The meter sockets are to be complete with terminal lugs, meter jaws, manual circuit closing devices (commercial only) and sealing means which will be provided by the customer. Automatic circuit closures will not be approved for new installations or for modifications of existing services where the meter socket is replaced. Self-contained meter sockets must be equipped with a manual circuit closing device except when used on residences with service of 200 amperes or below. A manual circuit closing device must allow circuit bypass to occur before the meter is removed and must be in a sealable enclosure for sole access by AEL&P. The Closing device must be visual to permit inspection for “open” or “closed”. The type of meter socket with manual circuit closing device must be approved by AEL&P prior to installation.

Location of Service Overcurrent Protection

Socket type metering must be installed on the line side of the overcurrent protective devices in the service entrance, except where code requirements indicate otherwise.

CURRENT TRANSFORMER METERING

Ampacity

Current transformers are required for three-phase service where the ampacity of the service conductors is greater than 225 amperes, and for single-phase service where the ampacity of the service conductors is greater than 400 amperes. Current transformers are also required where a three-phase service or a single phase service will require in excess of 320 amperes continuous or 400 amperes non-continuous. Where these conditions exist, the AEL&P engineering department must be consulted to determine a mutually satisfactory space for instrument transformers.

Cabinets – Dimensions & Installations

Minimum sizes

The dimensions of a current transformer cabinet, separate from the switchgear assembly, will depend on the size and number of current transformers, service entrance conductors and the location of entrance or exit conduits from the cabinet. The minimum size for service entrance conductors with 400 to 1200 amperes must be: 24" X 36" X 11” (see Appendix A, AEL&P Service Standard Drawings, SS-10) and 48" X 36" X 12” minimum for 1200 amperes, and above single- and three-phase involving three or more service cables per phase (see Appendix A, AEL&P Service Standard Drawings, SS-11).

Provisions for inspection

Current Transformer cabinets must be provided with means for inspection and accommodation of AEL&P seals (padlock type, not wire lead). They must not contain facilities other than the service conductors and AEL&P's equipment and must not be used for the addition of branch circuits.

Current Transformers – Installation and Wiring

AEL&P will supply the current transformers, test switches and wiring and will install and wire the secondaries before the current transformers are covered and sealed. Mounting bolts must be avoided where both ends of each bolt are not accessible for future removal. For 200-1200 amperes a CT mounting base with integral mechanical lugs and ½" mounting studs, washers and nuts shall be provided for bar type CT's as shown in detail SS-10. For 1200 amperes and greater removable bus links, potential screws or lugs and CT supports shall be provided for window type CT's as shown in detail SS-11. Provisions must be made so that the current transformer and meter sections are readily accessible and can be sealed by AEL&P. Where current transformers are to be factory installed in the switchboard, AEL&P will supply technical data for accuracy, classification, size, thermal current rating factor and burden. However, AEL&P must be provided with the switchboard manufacturer's name and address.

The current transformer cabinet mounting rack meter socket or cabinet, conduit and conduit fittings between the current transformer location and the meter will be located on the customer's structure and will be furnished and installed by the customer. For runs less than 50 feet in length, the metering conduit is to be not less than one (1) inch in diameter and must include a pulling line. With prior AEL&P approval, the conduit length may be extended to not more than 100 feet. For conduit runs over 50 feet and any conduit run with two 90-degree elbows, the conduit size will not be less than 1.25 inches. All conduits must be electrical metallic tubing or rigid steel.

Conduit

The conduit connecting the meter socket and current transformer enclosure must be a direct run without access points such as junction boxes or elbows with access covers. At no time should branch circuits – or conduit not related to metering – be allowed in the enclosure, nor should other compartments in the switch gear be used to carry metering wire without being in a conduit. Metering wire will not be allowed in service entrance conduit. Separate conduits must be used.

Current Transformer Bypass Provisions

Socket requirements

Bypass provisions for this type of installation will be accomplished by a test switch furnished by AEL&P. The meter socket enclosure for instrument transformer metering must have a space (minimum width of eleven (11) inches) that is approximately ten (10) inches below the socket for a test switch. ***Note: All sockets are to be approved by the AEL&P Metering Section prior to installation (see Directory).***

Switchboard Assembly Installations

Socket requirements

Current transformers may be installed in the customer's switchboard assembly. In general, the minimum compartment size should be 48" X 36" X 14". Current transformers must be mounted behind a ***hinged*** meter panel. Mounting bolts must be avoided where both ends of each bolt are not accessible for future removal. Provisions will be made so that the current transformer and meter sections are readily accessible and can be sealed by AEL&P.

Metering Greater than 480 Volts

High voltage instrument transformers and transformer-type meters may be required for customers taking service at primary voltage under provisions of AEL&P's Tariff. AEL&P must be consulted before construction begins to establish a mutually satisfactory location for the point of delivery and to clarify metering details.

Load Control and Pulse Metering

Load leveling control equipment

AEL&P has no objection to the use of load leveling control equipment by the customer since it can relieve distribution and transmission facilities of unnecessary peak loadings. Additionally, as power costs increase, controlled loads may become desirable in the long term, both for the customer and AEL&P.

Pulse metering and meter accuracy

AEL&P has an obligation to provide and maintain highly accurate customer metering to satisfy the customer, the Regulatory Commission of Alaska and itself that the correct billing is rendered for energy used. To accomplish this, AEL&P must have complete assurance that the integrity of the current and potential secondaries and/or the metering pulse circuitry is safeguarded from any external change. The connection of equipment or modification of the secondary circuit by the customer to accommodate demand control equipment would introduce the possibility of metering errors.

Metering Standards

To eliminate the exposure to metering errors and ensure AEL&P's metering obligations are accomplished, AEL&P's policy is as follows:

- AEL&P will install a meter with both a pulse initiator and an isolation relay in order to provide pulses for customer use. The cost of this installation in excess of the cost of a standard meter installation will be paid by the customer.
- The customer must bring control wiring to the isolation relay where AEL&P personnel will make the final connections. The customer must not tamper with AEL&P's metering installation and will be liable for disconnection of service pursuant to cases of tampering. The Customer must notify AEL&P whenever a malfunction in the metering installation appears to exist and will bear the cost of maintenance or repairs to the pulse initiator or isolation relay.
- The customer will indemnify and hold harmless AEL&P in case of failure or malfunction of the equipment provided herein. AEL&P will proceed with installation of the metering equipment subject to parts availability. The Customer will be notified should the installation be delayed. When parts are unavailable – either for new installation or repair – AEL&P will provide a standard metering installation until the necessary equipment is available.

AEL&P hold harmless

Please note that no variance from this policy is permitted.

Meter Tampering

Tampering with an electric meter could cause serious or fatal injury, and not just to the person who tampers with it. The meter might be left in an unsafe condition that is dangerous to family members, neighbors, or AEL&P employees.

The obvious purpose of meter tampering is to defraud. Meter tampering cheats customers who pay for their electric service and adds to the cost of all electric bills.

Report meter tampering

In fact, many of the meter tampering cases we investigate are brought to our attention by good-paying customers. If you know of such a case or suspect someone of meter tampering, please call our office. We'll keep your call in strict confidence.

Tampering with meters is a civil offense under Alaska Law (AS 42.20.030 and AS 42.20.040). Tampering is also a criminal offense.

Unusual Conditions

The preceding standards are a statement of minimum requirements for most customer metering installations. Standards are necessarily subject to additions and changes as new developments and progress may dictate. In doubtful or unusual instances, special consideration will be necessary. AEL&P must be consulted as to any conditions which are not detailed in this publication.

Appendix A
Service Standard Drawings

Click on each link for a high-resolution drawing, suitable for printing.

SS-1 Self-Contained Meter Sockets (100-320 Amperes)

SS-2 Current Transformer Meter Sockets (320 Amperes +)

SS-3 Overhead Permanent Service (320 Amperes or Less)

SS-4 Overhead Service Load Center

SS-5 Temporary Underground Service

SS-6 Underground Service (320 Amperes or Less)

SS-7 Underground Service Load Center

SS-8 Underground Service (6 Units or less)

SS-9 Underground Service (More than 6 Units)

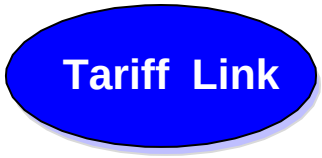
SS-10 Underground Service (320-1200 Amperes)

SS-11 Underground Service (1200-4000 Amperes)

SS-12 Underground Service to Mobile Home Parks

SS-13 Typical Arrangement for Standby Generator

Appendix B
AEL&P's Tariff



Here is a link to our website tariff. This is a large .pdf file, so please be patient, as downloading will take a few moments.

You can view an official hard-copy version of the Tariff by visiting our Lemon Creek Office at 5601 Tonsgard Court in Juneau, AK.

Appendix C
Customer Service Checklist
Residential Buildings

Single Family Home

3 Final Site Plan

- Water and sewer, if applicable
- Well and septic plans, if applicable
- Location of meter base
- Size of service entrance
- Overhead or underground service
- Wetlands permit, if applicable
- CBJ permit number

3 Grading and Elevation

3 Deposit and any required contributions or advances-in-aid of construction

Subdivision, Mobile Home Courts, Multiplexes

3 Final Site Plan

- Water and sewer plans, including key boxes and hydrants
- Streetlight load center location
- Well and septic plans, if applicable
- Location of meter bases, if applicable
- Size of service entrance, if applicable
- Pavement layout
- Grade plans
- Landscape plans
- Wetlands permit, if applicable
- Flood hazard permit, or copy of application, if applicable

3 How far along is construction?

3 Copy of recorded plat

3 Deposit and any required contributions or advances-in-aid of construction

3 For detached zero-lot-line, foundation “footprints”

3 Shop drawings for service entrance, switches, meter sockets and panels

Appendix C
Customer Service Checklist
Commercial Buildings

Commercial Buildings

3 Final Site Plan

- Location of building on property – Plot plan
- Parking area
- Driveway
- Service entrance location
- Overhead or underground service
- Total square footage of building
- Type of building (i.e., medical, office, etc.)
- Water, sewer, and gas plans
- Other underground items
- Curb and sidewalk details
- Grade plans
- Landscape plans
- Wetlands permit, if applicable
- CBJ permit number

3 Electrical Plans

- Panel schedule
- Voltage requirements
- Amperage
- Breakdown of equipment, single-phase or three-phase, if applicable
- Total connected load
- Location of main disconnect and connects
- One-phase or three-phase
- Shop drawings of service entrance switch
- One-line drawing

3 Copy of recorded plat

3 Deposit and any required contributions or advances-in-aid of construction