Part I: General

100 Application for service

It is important that the customer or their representative notify AES Indiana (the Company) well in advance of the date a new temporary or permanent electric service will be required, especially when it is evident that construction work will be necessary.

All new customers should be notified that it is necessary for them to make an application to have the service energized.

Application for service to a single-family residence or a single-family apartment may be made by telephoning the Customer Contact Department - (317) 261-8222 or by visiting the Customer Service Center at 2102 North Illinois Street.

The applicant shall give the correct street address and include detailed information as to his connected load, other service requirements and pertinent information regarding the responsible individual or corporation.

All new underground services require an underground application and agreement, except secondary network service area.

Application for a service to a commercial/industrial building should be made by calling the appropriate Engineering Division (see maps in front of book for jurisdiction). A completed copy of the Commercial/Industrial Information Sheet GB0-030 is to be submitted at initial meeting.

102 Inspection for electric service

The company will furnish electric service only after an authority having jurisdiction (normally an electrical or building inspector) has approved an installation for electrical service. An inspection or a self-certification certificate is acceptable in areas where permitted by the authority having jurisdiction. Where a self-certification certificate is permitted and used, it shall have the current date, and it is considered no longer valid after 90 days from that date.

Temporary services may or may not require an electrical inspection, check with the authority having jurisdiction. If an inspection is not required, a copy of the "Letter in-Lieu of Electrical Inspection for Temporary Electrical Service" is required to be completed and inserted in the meter fitting.

State of Indiana buildings, Federal buildings, and services on railroad property do not require an inspection; however, the engineer in charge of the customer's construction shall take responsibility for the correctness of the electrical service by filling out and signing the "Letter in Lieu of Electrical Inspection" provided by the Company.

The City of Indianapolis - Department of Business and Neighborhood Services does not include Speedway, Southport, Lawrence, Beech Grove, or any areas outside Marion County.

Inspections are needed if (see comment below about the service disconnect position):

A The service has been cut off for over 1 year (AES Indiana requires the Indianapolis self-certification tag and reconnect numbers)

B The building or structure has had a fire (Indianapolis requires a permit, sticker completed by a City of Indianapolis inspector or self-certification tag, and authorization numbers if electrical construction is performed. AES Indiana requires the Indianapolis self-certification tag and reconnect numbers if no electrical construction is performed)

C The meter fitting has been relocated (Indianapolis requires a permit, sticker completed by a City of Indianapolis inspector or self-certification tag, and authorization numbers)

D A mobile home lot has a new or replaced mobile home (Indianapolis requires a permit, sticker completed by a City of Indianapolis inspector or self-certification tag, and authorization numbers)

E A new or altered service has been installed (Indianapolis requires a permit, sticker completed by a City of Indianapolis inspector or self-certification tag, and authorization numbers)

F Any service equipment past the meter to the service panelboard have been replaced with the same size, type, and configuration of equipment (Indianapolis requires a permit, sticker completed by a City of Indianapolis inspector or self-certification tag, and authorization numbers. Other areas, contact the AHJ for their requirements)

G An inspection is not required whenever any normal maintenance work has been performed without upgrading (For the City of Indianapolis; repair/replacement of the meter fitting (meter base), riser and weather head does not require an electrical permit unless it is being upgraded or relocated. Any work performed from the meter to the building, including the panelboard requires an electrical permit. Other areas, contact the AHJ for their requirements)

H AES Indiana field personnel may require an inspection (regardless of the length of time), if in their opinion a hazardous or potentially hazardous condition exists

I Any type of distributed generation that requires a bi-directional meter such as a generator, solar voltaic panels, etc. (Before the installation of a bi-directional meter, Indianapolis requires a permit, a sticker completed by a City of Indianapolis inspector or self-certification tag, and authorization numbers. Other areas, contact the AHJ for their requirements)

Indianapolis requirement: If emergency work is done after hours, the authorization number and electrical permit if required, shall be obtained the next business day.

Service disconnect position requirement for this section only
In all cases where a service has been disconnected, the main disconnect (circuit breaker or fuses) shall be in the open (off) position or the service will not be reconnected.

103 Right to refuse or discontinue service
Since it is the Company's obligation to provide reasonably adequate service to all Customers, the Company reserves the right to refuse or discontinue service without notice if, in the opinion of the Company, the Customer's wiring, equipment or appliances are unsafe or unsuitable for receiving electric service or are harmful to the service of other Customers. The Company will make a reasonable effort to notify the Customer prior to disconnection and shall inform the Customer of the steps which must be taken to have service restored. This is reflected in the "Rules and Regulations, Section 25.1" that are approved by the Indiana Utility Regulatory Commission.

105 Types of service available

The Company furnishes 60 hertz alternating current service at designated standard voltages. All types of service are not available in every locality and the type of service to be furnished at a particular location is determined by one or more of the following conditions:

Type of service available at the customer's location.

Type and size of load to be served.

Temporary or permanent service (for temporary underground services, see Section 220E).

107 Temporary service

Temporary Service is defined as, any service in operation for less than 30 months per AES Indiana Rules and Regulations, Rules 4.1 and 12.2.

110 Rate considerations

To assure the customer obtains the most advantageous service and metering arrangement with regard to monthly charges for electric service, the Engineering Department should be consulted prior to the selection of the number and/or type of service for all loads in excess of 50 kW; and all loads involving space heating, cooking, air conditioning, water heating, process heating, snow melting and all fluctuating loads such as welders, x-ray machines, electric furnaces, etc. Industrial or commercial buildings to be electrically heated, in most cases, should be wired so the electric heating equipment along with any air conditioning and/or water heating can be separately metered from other electric uses on the premises.

112 Fault current levels for the selection of PPE

Although the exact amount of fault current cannot be known for a particular installation, the Company will furnish the data for calculation. Upon request, the Company will furnish the X & R values, size of the transformer, and the size and type of the primary source fuse. If the service conductors are owned by the Company, their size and material will also be provided. The fault current and Thevenin equivalent impedance will not be provided. The Company does not provide minimum fault current information or associated protective device clearing times.

To request this information, please submit a written request to the Customer Projects Engineering Person shown on drawing GB0-100. Also, allow ample time for the information to be gathered and returned to you.

Disclaimer

AES Indiana shall not be liable for any errors, inaccuracies, or delays in content, or for any actions taken in reliance thereon. AES Indiana expressly disclaims all warranties, expressed or implied, as to the accuracy of any of the content provided, or as to the fitness of the information for any purpose. I

Although AES Indiana makes every reasonable effort to obtain reliable information and proper calculations, AES Indiana provides no warranty, expressed or implied, as to the accuracy, reliability, or completeness of furnished data past the time of gathering data for the calculations to be made. The AES Indiana power grid is a dynamic power system that changes from moment to moment as demands are made to the system. Furthermore, permanent changes to the system are common which will change the information provided and the Company will not notify the customer when such changes occur.

113 Additional charges

Customers requesting non-emergency work to be done during a time when the Company's overtime pay is required to be paid and is for the customer's convenience will be billed at the current overtime rate per hour on a field invoice.

114 Maintaining security of locked facilities

It is unlawful to break locks for access to any Company facilities without notifying the Service Dispatch Office on telephone number (317) 261-8111. Cooperation will be extended at the request of the qualified electrician under emergency conditions. A request shall be made to the Service Dispatch Office for these cases.

There are situations where a qualified electrical contractor needs to gain access into a pad mounted transformer, a locked meter cabinet, or a locked junction cabinet for normal maintenance or construction work. Under these conditions, contact the Service Connection Department at (317) 261-8133 at least 48 hours in advance.

If this is for the installation of conduits into locked pad mounted equipment, the contractor’s conduits shall be within 5 feet of the AES Indiana equipment. Two hours will be allotted for the appointment. Regular hours for this work are 8:00 AM - 1:00 PM, Monday – Friday. Work performed after regular business hours (after 3:30 PM) will be billed at the current overtime rate per hour on a field invoice. In the event that AES Indiana arrives at a site, and no one is present, the contractor shall start this process over.

For access to sealed meter facilities, see Section 555.

115 Termination of service on building

The Service Installation team will locate all single- and two-family residential services 400 amperes and below. Services of over 400 amperes will be located by the Engineering Department.

Where more than one overhead service 400 amperes and below have risers in the same location. The service head shall be no further from the service drop than 24 inches with sufficient service entrance conductors to reach the service drop.

The point of termination for either an overhead service drop, or an underground service lateral shall be located on the side of the building at the closest point to the Company's facilities. (See Drawing GB5-010 for U.G. Residential Services.)

Exception: See section 220A2j.

Structures deemed as temporary by the Engineering Department (normally structures without a permanent foundation) shall be served as shown on Drawings GB4-060, GB5-080, and GB5-090.

The service drop or lateral shall not cross adjacent property.

116 Replacing or maintaining the residential meter fitting

Residential meter fittings for underground services that have been replaced or maintained where the service lateral is too short to reach the new location of the meter fitting connections will be spliced below the meter by the Company if the cable is direct buried. Providing the four-foot by four-foot splice pit to expose the service lateral cable is the responsibility of the customer.

The customer will always be responsible for the replacement of the meter fitting, trenching, backfill, furnishing and installing any required conduit, and repair of the landscape.

117 Converting from residential overhead to underground service

400 ampere services or less that are being converted from overhead to underground are the responsibility of Service Connections. Services of over 400 amperes are the responsibility of the Engineering Department.

The customer will be charged for converting from an overhead to an underground service. Additionally, the customer will always be responsible for the replacement of the meter fitting, trenching, backfill, furnishing and installing any required conduit, and repair of the landscape.

118 Relocating the residential service point or cable

400 ampere services or less that need to be relocated or replaced are the responsibility of Service Connections. Services of over 400 amperes are the responsibility of the Engineering Department.

For underground services, the customer will be charged for any modifications to their service laterals. Additionally, the customer will always be responsible for the replacement of the meter fitting, trenching, backfill, furnishing and installing any required conduit, and repair of the landscape.

119 Upgrading a residential underground service lateral

Where a customer is upgrading their service and the existing cable size is inadequate for the new service, there will be no charge if the 30-month revenue equals or exceeds the AES Indiana cost of the project. The customer will be responsible for the replacement of the meter fitting, trenching, backfill, furnishing and installing any required conduit and repair of all landscape.

120 Overhead service

An overhead service drop must clear trees and other obstructions and be a minimum of three feet from windows, porches, fire escapes and similar structures. Also, it shall be located so it will not be necessary to climb on roofs to make a connection or disconnection. Suitable support of sufficient strength for the attachment of the service wires shall be provided by the customer. The customer is prohibited from disconnecting their service drop from the point of termination after installation.

125 Height of service drop

The point of attachment of the service drop shall be a minimum of 13.5 feet and a maximum of 22 feet above ground, and in all cases be of such height as to provide at least the minimum clearances at any point for the service drop as required by the National Electrical Safety Code. If the 13.5' dimension cannot be met for any reason, then refer to drawings GB4-005 and GB4-007.

The clearance of the service drop shall be maintained in all cases of grade changes and/or the installation of swimming pools, decks, room additions, outbuilding, etc. Clearance requirements for swimming pools are much greater than for normal grade and in many cases the service drop must be converted to an underground service lateral (see Section 117) to meet the NESC requirements.

127 Underground service lateral within 5 feet of a pool

Where a service lateral is within 5 feet of a pool, the service lateral shall be relocated to be 5 feet or further from the pool and apron/deck. The customer will be charged for any modifications to their service laterals. Additionally, the customer will always be responsible for the replacement of the meter fitting, trenching, backfill, furnishing and installing any required conduit, and repair of the landscape.

Where 5 feet cannot be obtained, the customer may install Schedule 40 PVC conduit with a minimum of 18 inches of cover under the apron/deck of the pool, but AES Indiana prohibits the installation of the cable under any part of the pool itself. This conduit shall extend a minimum of 5 feet past the edge of the pool and 2 feet past the apron/deck.

130 Length of service drop

The length of the service drop from pole to point of attachment on the building or other structures shall not exceed 125 feet, in many cases it may need to be considerably shorter.

135 Extension of lines

Where there is a reasonable prospect that capital expenditure is warranted, the Company will extend its lines and service facilities in accordance with the conditions set forth in its Rules and Regulations. All applications for line extensions shall be referred to the appropriate Engineering Division. (See maps in front of the book for jurisdiction.)

137 Clearances to hazardous (classified) locations

Company lines and equipment are not suitable for installation above, below or within areas defined by the Indiana Electrical Code as classified locations. Locations shall be classified depending on the properties of the flammable gas, flammable liquid-produced vapor, combustible-liquid produced vapors, combustible dusts, or fibers/flyings that may be present, and the likelihood that a flammable or combustible concentration or quantity is present. The boundaries and classification of those areas shall be determined by a professional engineer where these conditions exist.

140 Easement - rights-of-way - tree trimming

Line extensions are contingent upon assistance by the applicant in securing the necessary easements, rights-of-way, and tree trimming permits. The Company shall be under no obligation to start construction until satisfactory easements, rights-of-way, and tree clearances have been obtained.

142 Right tree right place

Misplaced or improperly maintained trees can cause power outages during severe weather. You can help prevent power outages by using the following guidelines to plant your trees. For information about planting the right tree in the right place, please visit our website and download this brochure.

The normal clearance that must be maintained from transformers and equipment is ten feet. Lesser clearances are permitted to some parts of transformers and equipment. Plant large trees (those that will become 40 feet tall or more at full maturity) at least 50 feet away from overhead distribution lines. Plant smaller trees (those that will be less than 25 feet tall at full maturity) at least 10 feet away from the lines. These are general guidelines and will not apply in all circumstances.

Contact the Company at (317) 261-8635 before considering planting near transmission towers or easements. The Company will remove any trees or shrubs that are not compatible with transmission lines.

145 Automatic reclosing equipment

The Company has equipment installed at its substations, which provides rapid opening and automatic reclosing of its distribution circuits to clear temporary faults that occur on the circuits. It is the responsibility of the customer to provide adequate protection for all electrical apparatus of the customer that might be adversely affected by the Company's reclosing equipment.

146 Continuity of power

The Company will use due diligence in providing a regular and uninterrupted supply of energy; if the supply should be interrupted or fail for any reason, the Company shall not be held liable for damage. The Company shall have no duty to provide advance warning of interruption of supply. It is the customer's responsibility to provide for his need for continuous power. For more information, see AES Indiana Rules and Regulations for Electric Service, Rule 23 on Page 20.

147 Single phase protection

It is the customer's responsibility to provide and maintain protection for multi-phase equipment that may be adversely affected by a loss of phase condition. The Company assumes no liability for equipment damaged by a loss of phase condition.

148 Phase reversal protection

It is the customer's responsibility to provide and maintain protection for multi-phase equipment that may be adversely affected by a phase reversal condition. The Company assumes no liability for equipment damaged by a phase reversal condition.

150 Alterations - changes in size of service

The Company shall be notified well in advance of any new additions to electrical installations so it will be possible for the Company to take such measures as will enable it to continue rendering adequate service. The connection of additional equipment to existing lines may result in unsatisfactory operation until such time as the Company is able to increase capacity to take care of the added load. Additionally, the Company reserves the right to disconnect service upon fourteen (14) days written notice if this section is not in compliance.

160 Number of services

The Company will ordinarily install one service drop or lateral for each service voltage to a building or structure.

In the case of multiple occupancy buildings having no central meter location, the service to each room or tenant must be installed to the established point of service on the building, regardless of the existence of fire walls.

A weatherhead box or bus duct is required for customers from the overhead system under the following conditions:

1. More than four (4) connections per phase to the service drop or;
2. Larger than 1600 Amperes of Service.

See Drawings GB7-070 & GB7-080 for a sample weatherhead box.

162 Master metering

Master metering is generally prohibited on all new multi-unit buildings. Electricity delivered to a new building containing units which are separately rented, leased, or owned shall be sold based on individual meter measurements for each occupancy unit, except for electricity used in hotels, motels, and other similar transient lodging.

Service applicants who believe individual metering will present a hardship for their project must contact the company during the design of the project for review of their individual case. The service applicant shall establish that costs of purchasing and installing separate meters in such a building exceed the long-range benefits of individual metering of units before an exemption may be granted. See Indiana Administrative Code 170, Standards of Service for additional information.

165 Maximum size secondary overcurrent device

The maximum size service overcurrent device is determined by the service voltage, but in no case shall it exceed 3000 amperes.

170 Fire pump installations

All fire pump installations must be referred to the Engineering Department for approval, prior to installation.

175 Auxiliary power installations

A Definitions

Distributed Generation (DG) is any electric generation facility connected to a utility electric power system. The utility electric power system consists of any facilities that deliver electric power to a load including those distribution facilities serving industrial and commercial customer loads directly from a utility sub-transmission or transmission system. Distributed generation, including renewable energy resource technologies are distributed resources that are not directly connected to the utility bulk power transmission system.

Interconnected Operation refers to any connections and equipment between a utility and electric generation facility that permits synchronous or parallel operation with each other.

Non-interconnected Operation refers to any connections and equipment between a utility and electric generation facility designed to ensure that the electric generation facilities are always isolated from the utility.

B Interconnected operation

Distributed generation can be connected to the Company's system providing an interconnection review process is completed. The interconnection review process includes an application form, a signed agreement, and provisions to ensure the safety of all personnel. Application forms are designated as Level 1 for 25 kW and smaller units, Level II for 2000 kW and smaller units and Level III for all others. Application forms and instructions can be obtained from the Company's web site for residential or business. Contact information is on Drawing GB0-115. Distributed generation can be connected to the Company's system in the following operating modes.

1 Emergency/Standby – Operated when the Company's service is not available with parallel operation for short durations.

2 Peak Shaving – Operated during peak demand periods with parallel operation for extended times.

3 Base Load Power – Operated continuously at a predetermined output with continuous parallel operation.

4 Cogeneration – Operated primarily to produce thermal energy with extended or continuous parallel operation.

5 Renewable Non-Dispatched – Operated in response to the availability of a renewable energy resource such as solar, wind, etc. with parallel operation for extended times.

6 Closed Transition Transfer Switch (CTTS) Operation - Any momentary (i.e., about 100-150ms) paralleling of customer generation with AES Indiana during return to normal configuration.

7 Other – Describe the application.

C Non-interconnected operation

Distributed Generation covered under special contract or emergency generating units used mainly in the event the Company's service is not available, shall be connected through suitable switches to ensure that the emergency generation is always isolated from the Company's lines. Portable generators or temporary power sources shall not be connected to the customer's electrical system in such a way as to energize or back feed into the Company's facilities. This creates an extreme hazard to Company employees and other restoration crews working on the Company's lines and equipment. See Drawing GB7-090.

176 Duplicate facilities

Duplicate facilities requested by a customer to provide backup to the normal energy source will normally be installed on a Standard Contract Rider Number 4 in accordance with 176A below. The Standard Contract Rider Number 4 requires a monthly billing inventory charge to be collected if the duplicate facilities are in place. In some cases, duplicate facilities will be installed without initial installation charges or monthly billing inventory charge (see 176B).

Duplicate facilities are defined as facilities which provide backup, or alternate feeds into a customer's electrical service(s) and can carry the full customer's load in the event of failure of the normal service facilities. Duplicate facilities may serve the customer's electrical load on a full-time basis, but its main function is to provide redundant, backup, or emergency service.

A Standard Contract Rider Number 4 is defined in the tariffs that are on file with the Indiana Utility Regulatory Commission.

A Duplicate facilities are installed at no initial cost to the customer; however, they will require a monthly billing inventory charge:

1 Sewage pumping stations, manufacturing plants, etc. who require a totally duplicate installation of power (primary cable, wire, transformers, service drops or laterals, etc.)

2 Duplicate primary circuit construction required to provide a second feed from a different circuit.

B Duplicate installations not requiring any initial cost to the customer, or a monthly billing inventory charge will be installed provided the customer classes listed below installs double ended switchgear to take advantage of the facilities being installed. The Company will not operate the customer's double ended switchgear without compensation from the customer. The duplicate facilities include primary conductors from separate units in a substation or different substations. Due to the operation of the distribution system, this arrangement cannot be guaranteed to be permanent, but every attempt will be made to restore the feeds to different units after switching is completed.

1 Commercial radio stations

2 Commercial television stations

3 Hospitals

A hospital is defined as having an emergency room for four or more persons, a place to perform surgeries, and provide other critical care services to people on a 24-hour inpatient basis. Additionally, the load shall be 1000 kVA or greater as determined by the Company.

177 Interconnecting secondary multiple services

Where more than one secondary service is installed that is served from more than one source and can be electrically connected, the provisions in 1, 2 or 3 shall be followed.

1. An interlocking system shall be installed in such a manner that no two services can be electrically connected without the disconnection of one of them from the Company's service drop or lateral. An example of this would be the Kirk Key Interlock system.

2. A system that uses a Programmable Logic Controller (PLC) to momentarily, no more than 20 cycles, connect two secondary services together before opening one of them from the Company's service drop or lateral.

3. Closed Transition Transfer Switch Operation (CTTS). Distributed or emergency generation using a CTTS switch may be applied to the Company's system provided that the customer submits a DG Interconnection Application and signs a DG Interconnection Agreement as required by Section 175. AES Indiana will review the application for parallel operation. The customer is required to submit design details such as the closed transition time, synchronizing check relays used, backup trip mechanism if transfer lasts longer than the expected closed transition time and reverse power relays used.

In 1, 2, or 3, the customer shall provide a one-line diagram of his proposed interlock installation to the Company's Project Engineer for approval.

180 Foreign attachments

Radio or television antennas, floodlights, signs, wires, cables, or other attachments shall not be connected to or installed on the Company's pad mount transformers, metal clad switchgear, poles, crossarms, structures, or other facilities. Antennas, floodlights, signs, etc. shall not be installed so they can fall on the Company's lines or structures. Attaching advertising signs to utility poles is prohibited by City Ordinance and Company rules and regulations.

Obtaining an attachment permit in some cases may be permitted for power conductors and communications cables on some company poles. The company's engineer will calculate loading, clearances, and space requirements in accordance with the National Electrical Safety Code. The application fees and costs for engineering and upgrading the company's facilities are to be borne by the applicant.

181 Easement encroachments

As a general rule, encroachments on Company easements are prohibited. For additional information, please call the Real Estate Department shown on the "Where To Obtain Information" (page iii). Structures such as buildings, swimming pools, garages, etc. shall not be permitted inside the company easements.

Any grade changes and the installation of driveways and parking lots may be permitted with prior written approval from the Company. In the event a portion of a paved or concrete driveway or parking lot area must be removed for maintenance or new construction performed by the Company, repair of any damage to these areas inside the easement shall be made by the property owner.

182 Customer grounds

Conductors from the customer's grounds, grounding grids, isolated equipment to be grounded, or grounding systems shall not be permitted to enter or to be attached to any Company transformer, riser pole, pedestal, or any other of the Company's facilities.

Exception 1: Where a communication company in the vicinity of or on a pole, pedestal, switchgear, transformer, or other Company facility, their grounding shall be permitted to be connected to the Company's system neutral or grounding system.

Exception 2: Where a customer is served through vault installed transformers.

183 Grounded service conductor

Where a grounded service is provided, the grounded service conductor (normally the neutral) shall be taken to each service disconnecting means grounded (neutral) terminal or bus. Reference the National Electrical Safety Code Rule 092 and Indiana Electrical Code Section 250.24(C).

184 DC Decouplers

Decouplers are sometimes needed in the vicinity of cathodic protection fields and are permitted only by coordination with AES Indiana engineers. Decouplers shall not be installed on or in any AES Indiana poles or any equipment.

185 Service demand

Demand as used in this book shall mean the kilowatt demand as determined by the Company.

190 Fire walls

If a structure is required to have a fire wall for more than one point of service, a note similar to the following shall be placed on a drawing, or a letter in the case of an existing building, by the architect or engineer and the drawing or letter shall have his/her seal affixed.

> This is a fire wall, as required by the State of Indiana, for the purpose of multiple points of electrical service.

A letter from the authority having jurisdiction i.e.: the local electrical inspector, to allow multiple services would be acceptable, in lieu of the note.

Letter in-lieu of electrical inspection
(May ONLY be used for State of Indiana buildings, Federal buildings, services on railroad property, or where the authority having jurisdiction is not under the authority of the Indiana Fire Prevention and Building Safety Commission. This is not for the use of the "log cabin" statute, Indiana Code 36-7-8-3 in the State of Indiana law.)

Customer or project name: _____

Service address: _____

City / town: _____

Important notice

It is the customer's responsibility to assure that all facilities on the customer's side of the point of delivery of electricity are maintained in safe operating condition. This responsibility includes assuring that the customer's electrical facilities comply with all local construction codes and safety standards. Customers should coordinate this responsibility with their architectural and engineering consultants, construction contractors, or subcontractors, as appropriate, before their electrical systems are energized. Failure to do so may result in injury or damage resulting from unsafe conditions. AES Indiana is not responsible for unsafe or non-compliant conditions on the customer's side of the service point.

Customer's certification of readiness

The undersigned customer or its authorized representative do hereby certify to AES Indiana and agree that:

1. he has read the foregoing notice and fully understand the customer's obligations for operating safety;
2. he has conferred with the architect, engineering consultant, general contractor, or subcontractor(s), as applicable and appropriate, responsible for the design and construction of the facilities, to verify that the electrical systems on the customer's side of the point of delivery have been constructed to the best of their knowledge in compliance with local construction and safety standards (including, for example, the Indiana Electrical Code);
3. he has determined and confirmed to the best of their knowledge that the electrical systems do in fact comply with these local construction and safety standards;
4. he understands and agrees that in reliance of these representations, AES Indiana has agreed to energize electric service to the customer's service entrance section at such facilities;
5. he assumes full responsibility for any and all damages and injuries that may occur to the customer's property, employees or members of the public or other third parties as a result of conditions on the customer's side of the point of delivery at the service address noted above; and
6. he hereby releases AES Indiana from any and all damages, or injuries that may result as a result of the electric service provided by AES Indiana provided that the service meets the applicable requirements of the National Electrical Safety Code (NESC) and the standards of the Indiana Utility Regulatory Commission.

If not the owner/customer, I certify that I have the owner/customer's permission to act in his stead.

Customer/representative signature: _____

Customer/representative name: _____

Business name: _____

Business address: _____

_____

Telephone number: _____

Date: _____

Letter in-lieu of electrical inspection for temporary electrical service
(May ONLY be used for temporary services where the Authority Having Jurisdiction does not inspect temporary electrical services.)

Customer or project name: _____

Service address: _____

City / town: _____

Important notice

It is the customer's responsibility to assure that all facilities on the customer's side of the point of delivery of electricity are maintained in safe operating condition. This responsibility includes assuring that the customer's temporary electrical facilities comply with all local construction codes and safety standards. Customers should coordinate this responsibility with their architectural and engineering consultants, construction contractors, or subcontractors, as appropriate, before their temporary electrical systems are energized. Failure to do so may result in injury or damage resulting from unsafe conditions. AES Indiana is not responsible for unsafe or non-compliant conditions on the customer's side of the service point.

Customer's certification of readiness

The undersigned customer or its authorized representative do hereby certify to AES Indiana and agree that:

7. he has read the foregoing notice and fully understand the customer's obligations for operating safety;

8. he has conferred with the architect, engineering consultant, general contractor, or subcontractor(s), as applicable and appropriate, responsible for the design and construction of the facilities, to verify that the electrical systems on the customer's side of the point of delivery have been constructed to the best of their knowledge in compliance with local construction and safety standards (including, for example, the Indiana Electrical Code);

9. he has determined and confirmed to the best of their knowledge that the electrical systems do in fact comply with these local construction and safety standards;

10. he understands and agrees that in reliance of these representations, AES Indiana has agreed to energize electric service to the customer's temporary service entrance at such facilities;

11. he assumes full responsibility for any and all damages and injuries that may occur to the customer's property, employees or members of the public or other third parties as a result of conditions on the customer's side of the point of delivery at the temporary service address noted above; and

12. he hereby releases AES Indiana from any and all damages, or injuries that may result as a result of the temporary electric service provided by AES Indiana provided that the temporary service meets the applicable requirements of the National Electrical Safety Code (NESC) and the standards of the Indiana Utility Regulatory Commission.

If not the owner/customer, I certify that I have the owner/customer's permission to act in his stead.

Customer/representative signature: _____

Customer/representative name: _____

Business name: _____

Business address: _____

_____

Telephone number: _____

Date: _____

Part II: Secondary service - other than networked service area

200 Secondary voltages available

After determination as to whether electricity will be supplied from overhead or underground in accordance with the Company's underground policy and any legal requirement, the Company will specify one of the following secondary service voltages:

(a) Single phase, 120 volt, two wire

(b) Single phase, 120/240 volt, three wire

(c) Single phase, 120/208 volt, three wire

(d) Three phase, 120/240 volt, four wire, delta

(e) Three phase, 120/208 volt, four wire, wye

(f) Three phase, 277/480 volt, four wire, wye

Service at other voltages will be supplied only in special cases at the discretion of the Company.

205 Requirements for service

Shop drawings for all free-standing switchgear shall be approved (in writing at customer request) by the Engineering and Metering Departments in advance of any firm commitments on each individual installation. This will ensure proper spacing and bracing of bus bars, and proper switch metering sequence. (See Section 550 for Meter Department Approval.)

A. *Single phase, 120 volt, two wire,* may be provided for service, not to exceed 30 amperes.

B. *Single phase, 120/240 volt, three wire,* may be provided for loads not to exceed 170 kW demand.

The largest individual service disconnecting means shall not exceed 800 amperes.

Where the service disconnecting means does not consist of a single main switch or circuit breaker, the combined rating of the individual switches or circuit breakers shall not exceed 800 amperes.

The largest individual single phase motor for this service shall be 5 HP unless investigation by the Engineering Department indicates that a larger size is permissible.

Residential services are not designed nor intended to provide service for unconventional or high demand equipment such as "on demand" water heaters or other intermittent, high demand or frequently started devices such as welders, large motors, etc. See Section 210 for more information as well as the Company Rates.

Exception: A single family dwelling unit disconnecting means shall not exceed 1600 amperes.

C. *Single phase, 120/208 volt, three wire,* may be provided for services not to exceed 125 amperes or 200 amperes for dwelling units and temporary use (See Section 107 for the definition of temporary).

Residential services are not designed nor intended to provide service for unconventional or high demand equipment such as "on demand" water heaters or other intermittent, high demand or frequently started devices such as welders, large motors, etc. See Section 210 for more information as well as the Company Rates.

All services or feeders over 125 (200 for dwelling units and temporary use) ampere capacity shall be three phase, four wire, and the load balanced as nearly equal as possible on the three phases. The difference in amperes between any two phases at the customer's peak load shall not be greater than 20%.

Exception: 400 ampere services or feeders are permitted if they are in listed single phase meter centers for multifamily dwellings.

D. *Single phase, 480 volt, three wire,* may be provided for services not to exceed 125 amperes for dwelling units in the Central Business District with prior approval of the Meter and Engineering Departments. This voltage is only available where the building is served with 480Y/277 volts and dwelling units will be installed. Single phase, 480 volt, three wire is not available for any other purpose.

All services or feeders over 125 ampere capacity shall be three phase, four wire, and the load balanced as nearly equal as possible on the three phases. The difference in amperes between any two phases at the customer's peak load shall not be greater than 20%.

E. *Three phase, 120/240 volt, four wire, delta,* may be provided for loads of 75 kW demand or less of single phase load, with appliances and/or motors requiring three phase service with ratings exceeding the limitations for single phase service or with a single motor of 5 HP or more. The phase having the higher voltage to ground shall not be used for any single phase load.

The largest individual service disconnecting means shall not exceed 3000 amperes.

Where a switchgear is used and the service disconnecting means does not consist of a single main switch or circuit breaker, the combined rating of the individual switches or circuit breakers shall be permitted to exceed 3000 amperes. However, the switchgear shall not exceed 3000 amperes.

The largest individual three phase motor for this service shall be 25 HP unless investigation by the Engineering Department indicates that a larger size is permissible.

Three phase, 120/240 volt, four wire, delta service is not normally available in underground service areas.

F. *Three phase, 120/208 volt, four wire, wye,* will be provided on a cost to serve basis.

The largest individual service disconnecting means shall not exceed 3000 amperes.

Where a switchgear is used and the service disconnecting means does not consist of a single main switch or circuit breaker, the combined rating of the individual switches or circuit breakers shall be permitted to exceed 3000 amperes. However, the switchgear shall not exceed 3000 amperes.

The largest individual three phase motor for this service shall be 20 HP unless investigation by the Engineering Department indicates that a larger size is permissible.

The load shall be balanced as nearly equal as possible on all 3 phases. The difference in amperes between any two phases at the customer's peak load shall not be greater than 20%.

G. *Three phase, 277/480 volt, four wire, wye,* will be provided on a cost to serve basis.

The largest individual service disconnecting means shall not exceed 3000 amperes.

Where a switchgear is used and the service disconnecting means does not consist of a single main switch or circuit breaker, the combined rating of the individual switches or circuit breakers shall be permitted to exceed 3000 amperes. However, the switchgear shall not exceed 3000 amperes.

The load shall be balanced as nearly equal as possible on all 3 phases. The difference in amperes between any two phases at the customer's peak load shall not be greater than 20%.

The largest individual three phase motor for this service shall be 40 HP unless investigation by the Engineering Department indicates that a larger size is permissible.

The minimum size individual service disconnecting means shall be 100 ampere, three phase, four wire.

210 Rapidly fluctuating or pulsating loads

The limitations given for single phase motors in Section 205 B, for three phase motors in Section 205 C, D, E, and F are for manually and automatically controlled motors with moderate starting frequencies up to approximately ten times per hour. Motors with high starting frequency duty or with severe pulsating characteristics, or other fluctuating loads of high magnitude and/or frequency, such as welders, shall be referred to the Engineering Department to determine how such loads will be served.

The Customer shall pay the cost of any special installation necessary to meet his requirements for service for the supply of closer voltage regulation than is required by standard practice. Additional, larger, or specially designed transformers or equipment will be billed to the Customer where harmonics or other loads described in the previous paragraph are encountered and the customer does not correct the problem.

220 Underground service

Normally new underground lines and equipment will be installed by the Company at no cost to the customer, providing the total estimated cost of the installation does not exceed the estimated revenue for the first 2½ years. If the estimated cost of the installation exceeds the estimated revenue, the Customer shall pay the difference of such costs in advance of construction. The Company is not required to make any underground installation, if in the judgment of the Company it is not technically or economically justified as specified by the City Ordinance and/or the Indiana Utility Regulatory Commission. Call the Distribution Engineering Division (see map GB0-100 in front of this book for jurisdiction) for new projects.

A. *Installation of underground services:* Underground services will be installed in accordance with the following division of responsibilities:

1. Company responsibilities

a. The Company will furnish and install primary cable and conduit. In new projects, trenching and backfill is provided, if standard trenching equipment can be used.

b. The Company will furnish and install all riser pole conduits for cables installed by the Company.

c. The Company will locate, furnish, and install the transformer pad and transformer. The concrete pad and transformer shall be set before any conductors are installed by the customer.

d. The Company will furnish and install all secondary cable between the pad mount transformer and line side of metering equipment or junction cabinet, located on the outside of the building.

e. The Company will make all connections in the pad mount transformer. The Company will make all connections in the service junction cabinet or junction box in accordance with 560K.

2. Customer Responsibilities

a. The developer or customer shall clear all trench routes of all surface and subsurface obstructions to a depth of 42 inches and 8 feet wide, plus grade all trench routes to within 4 inches of final grade. In the case of wooded areas or steep grades, the contractor shall consult the Engineering Department to determine the most feasible trench route.

b. The developer or customer is to have curbs installed in residential projects prior to the installation of the Company facilities.

c. Overhead to underground conversions of commercial/industrial customers when they continue to use a wall mounted bushead or weatherhead; the customer shall furnish, install, maintain, and own all secondary cable and conduit between the bushead and the pad mounted transformer.

d. All PVC buried conduit shall be gray. Services shall be installed in accordance with the Company's specific instruction.

Rigid conduit is defined as conduit that is not flexible. Most conduit is PVC but some is Rigid Metallic (RMC), Intermediate Metal (IMC), or Reinforced Thermosetting Resin Conduit (RTRC). Electrical Metallic Tubing (EMT) is not conduit, it is tubing.

Except for the next paragraph, the customer shall furnish and install 4" rigid conduits with a pull string in a 36" deep trench as directed by the Company for the installation of the Company's secondary cables.

For single family homes, doubles, apartments, condominiums, townhouses, row houses, and the like, the customer shall furnish and install 4" rigid conduits with a pull string in a 36" deep trench as directed by the Company for the installation of the Company's secondary cables if two runs or more of cable are required to the same location. Conduit will also be required in areas under patios, decks, sidewalks, landscaping, or any other area that will be inaccessible after the installation of the Company’s service cable.

e. The developer or customer shall install the company's conduits with a customer provided pull string in the conduit in a 36" deep trench, as directed by the Company, for the installation of the Company's primary cables; if site preparation has proceeded to the point of requiring conduit installation before it is feasible for the company to do the installation. The ends of the conduit shall be clearly marked for future location.

f. The developer or customer is responsible for non-standard trenching as follows (this is not an all-inclusive list):

- Ground frozen deeper than 6 inches
- Adverse terrain or ground conditions which may require the use of additional equipment to pull the trencher
- Ground conditions, which may require the use of a backhoe to open and/or maintain the trench
- Buried debris which requires the use of a backhoe
- Digging under buried facilities
- Boring under streets, driveways, trees, alleys, etc.

g. The customer shall furnish secondary conduit and wire or cable between the riser pole or pad mount transformer and any customer owned equipment whether inside or outside.

Exception: The Company will install secondary cable to an outdoor customer owned meter center, meter fitting, or an outdoor customer owned switch if the switch is an integral part of a meter center or meter fitting. The Company will make the actual terminations to the customer owned equipment in this case. The customer shall furnish and install a pull string for AES Indiana use.

Metallic conduit shall not enter a transformer.

h. Customer shall furnish and install posts to protect transformers and other facilities as specified by the Company when exposed to vehicular traffic. Each post shall be a minimum of 7'-0" long and 6 inch diameter steel pipe. The posts shall be concrete filled, set in concrete and extend 4'-0" above grade. Contact the Company for approval of post arrangement.

i. The customer, in some cases, may elect to install the service lines from the Company's secondary distribution system to the meter fitting or junction box. Before installations of this type, the contractor shall submit plans of the proposed installation to the Engineering Department for approval and enter into an agreement with the Company prior to installation.

j. For town houses, condos, apartments and similar structures, the following may be permitted for "wrap around" single phase services:

- The company's Engineer will look at each individual service to determine if a "wrap around" service will be permitted. This shall be done before the installation of the customer's conduit since a "wrap around" service may not be permitted.

- If a "wrap around" service is permitted, the customer shall provide and install four inch, gray, schedule 40 PVC (schedule 80 PVC where above grade) continuous from his meter location to the Company's transformer exactly as laid out by the Company's engineer. This conduit(s) with a pull string installed shall be turned up into the transformer pad and all bends shall be 36 inch or larger radius sweeps.

- The Company's service cable will be provided, installed, and maintained by the Company.

- The customer shall supply and install a warning ribbon 12 inches above the duct line that meets the requirements of section 300.5(D)(3) in the Indiana Electrical Code.

- The point required to pull the cable shall be truck accessible with a set up area. See Section 220A3e for the definition of "truck accessible".

3. Special notes

a. Under no circumstances is an equipment box pad or a service pedestal permitted to be drilled, cut, or otherwise modified. All cable or conduit is to enter under the edge of the pad or pedestal at the proper depth, see Section 220A2d.

b. Maximum cable size to a riser pole is 600 kcmil and maximum cable size to a pad mounted transformer is 750 kcmil.

c. The maximum number of secondary conduits (if nonmetallic, they shall be gray) to be run are shown in the following table:

to riser pole	(with truck access)	4 conduits
	(without truck access)	2 conduits
to 1Ø transformer (concrete pad)		4 conduits
to 1Ø transformer (box pad)		4 conduits
to rectangular polyethylene service pedestal		4 conduits
to 3Ø transformer		8 conduits

All cases are limited to one circuit per conduit.

Exception: Isolated phase installations may be permitted if approved by the Engineering Department.

d. All nonmetallic conduit installed above grade shall be gray schedule 80 or heavier. All metallic conduit installed above grade shall be IMC or rigid.

e. All 400A and larger meter and junction cabinet locations, other than residential, shall be truck accessible.

Exception: If fifty feet, or less, straight line distance and no more than 180 degrees of bends in the total run, then the location does not have to be truck accessible.

"Truck Accessible" is defined throughout this manual as terrain modified to have no more than a 4% grade, capable of supporting the weight of a fifteen-ton truck when the surrounding soil is saturated, and the access route is at least ten feet in width. The access route shall be clearly and permanently evident. An example would be a stone drive with plantings outlining the route with a very light cover of soil and seeded.

Additionally, where truck accessibility is required for pad mounted equipment, the set-up location shall be large enough to allow outriggers to be used. This will require an area that is 15 feet wide by 25 feet long for this purpose. These are minimum requirements and special circumstances may require wider drive access and larger truck setup areas as defined by AES Indiana engineering.

f. Where the Company's service cable passes through communications company equipment to a meter fitting, the portion of the run that is inside the communication equipment shall be rigid metal conduit or intermediate metal conduit. In addition, the conduit run shall be continuous from the meter fitting to a point that is clear of the equipment pad by at least two feet.

B. *Underground installation to single family dwelling units:* In areas where the Company's underground distribution system exists, Customer Service shall be contacted for all residential underground service at (317) 261-8222. Where underground distribution does not exist at presently, call the Distribution Engineering Division (See map GB0-100 in front of this book for jurisdiction).

C. *Underground Service to Mobile Home Park:* Due to the unique nature of the mobile home park, the customer shall contact the Distribution Engineering Division (see map GBO-100) before any preliminary work begins.

D. *New Underground Temporary Services:* New underground temporary services that are CT metered and those that need PTs shall be built the same as permanent services. Underground temporary services will be billed by using Full Cost Customer Billing procedures.

223 Covering and painting of poles

Poles shall not be painted or covered with any material unless permission is specifically given in writing by the AES Indiana Standards, Code Compliance & Quality Control Department.

225 Covering, enclosing and painting of pad mounted equipment

Pad mounted equipment (transformers, switchgear, metering, etc.) shall not be covered or enclosed with any material unless permission is specifically given in writing by the AES Indiana Standards, Code Compliance & Quality Control Department.

Fencing may be installed if sufficient clearance is provided around the equipment for switching with the use of "hot sticks". This requires 10 feet of clearance on the sides where switching is performed. Additionally, 3 feet of clearance is required on the remaining sides and back for ventilation and personnel access (for clearance to building walls, see drawings GB7-020, GB7-030, and GB7-040). The top of the enclosure shall remain open for adequate ventilation. These requirements prohibit the installation of hollow decorative "rocks" or other enclosures that prohibit the free flow of air around the equipment. Any enclosure or fencing shall not have a locked gate nor be over 6 feet in height.

Painting of the equipment is permitted if a solid color is used and the decals are not painted over; however, black or essentially black paint is not permitted due to excessive equipment heating. Any other deviation such as a design shall be approved in writing by AES Indiana Standards, Code Compliance & Quality Control Department before proceeding. The customer will be responsible for maintaining the paint condition after custom paint is applied including mitigating rust and graffiti. Additionally, if the equipment is replaced for any reason, the Company will not be responsible for repainting the equipment.

Service pedestals and all other ground mounted equipment is permitted to be painted in the same manner as pad mounted equipment above. However, the glass or plastic of meters and viewing windows shall not be painted or covered in any manner.

230 Metering enclosure grounding behind service disconnecting means

Metering enclosures and fittings shall be grounded in accordance with Article 250 of the Indiana Electrical Code.

Where Indiana Electrical Code Section 250.142(B) Exception 2 is not permitted or used, a grounding conductor shall be run from the service grounding electrode conductor and grounded service conductor at the service equipment to the meter fitting or meter cabinet. This grounding conductor shall be copper and sized and installed in accordance with the Indiana Electrical Code requirements for grounding electrode conductors.

235 480 V cold sequence meter

An individual lockable main service disconnecting means with overcurrent protection shall be installed ahead of and within five feet of each 480 volt meter. No tap shall be permitted on the line side of the main service. This applies to all 480 volt services, 225 ampere and smaller, and metered feeders. See Section 555 for accessing locked and/or sealed equipment.

Part III: Secondary service downtown underground networked service areas

300 Secondary voltages available

In the areas served from the underground networked secondary distribution system, all services shall be installed underground, and the Company will specify one of the following secondary voltages:

(a) Single phase, 120 volt, two wire

(b) Three phase, 120/208 volt, four wire, wye

(c) Three phase, 277/480 volt, four wire, wye

(d) Single phase, 277/480 volt, three wire

(e) Single phase, 120/208 volt, three wire

305 Requirements for service

A *Single phase, 120 volt, two wire,* may be provided only for service to traffic signals and other public safety equipment, not to exceed 30 amperes. At the Company's discretion, this may be made available for other uses.

B *Single phase, 120/208 volt, three wire,* may be provided for services not to exceed 125 amperes or 200 amperes for dwelling units and temporary use (See Section 107 for the definition of temporary).

Residential services are not designed nor intended to provide service for unconventional or high demand equipment such as "on demand" water heaters or other intermittent, high demand or frequently started devices such as welders, large motors, etc. See Section 210 for more information as well as the Company Rates.

All services or feeders over 125 (200 for dwelling units and temporary use) ampere capacity shall be three phase, four wire, and the load balanced as nearly equal as possible on the three phases. The difference in amperes between any two phases at the customer's peak load shall not be greater than 20%.

C *Single phase, 277/480 volt, three wire* service is available at the option of the Company where three phase, 277/480 volt, four wire, wye is existing. The maximum size individual service, which may be installed, is 125 amperes. Where multiple services of this type are installed, all services or feeders shall have the load balanced as equal as possible on all three phases. An individual disconnecting means shall be installed on the line side of the meter fitting and within sight from the meter fitting (the definition of "within sight" is in the Indiana Electrical Code). The difference in amperes between any two phases at the customer's peak load shall not be greater than 20%.

D *Three phase, 120/208 volt, four wire, wye* service is available in practically the entire networked service area. The largest individual service disconnecting means shall not exceed 3000 amperes.

All services or feeders over 125 (200 for dwelling units and temporary use {See Section 107 for the definition of temporary}) ampere capacity shall be three phase, four wire, and the load balanced as equal as possible on the three phases. The difference in amperes between any two phases at the customer's peak load shall not be greater than 20%.

Where a switchgear is used and the service disconnecting means does not consist of a single main switch or circuit breaker, the combined rating of the individual switches or circuit breakers shall be permitted to exceed 3000 amperes. However, the switchgear shall not exceed 3000 amperes.

The maximum size individual motor, which may be installed without Engineering Department approval, is 75 HP.

E *Three phase, 277/480 volt, four wire, wye* service is available for loads of 2000 kW demand or larger at the option of the Company. The maximum size individual motor, which may be installed without Engineering Department approval, is 125 HP.

The largest individual service disconnecting means shall not exceed 3000 amperes.

Where a switchgear is used and the service disconnecting means does not consist of a single main switch or circuit breaker, the combined rating of the individual switches or circuit breakers shall be permitted to exceed 3000 amperes. However, the switchgear shall not exceed 3000 amperes.

The load shall be balanced as nearly equal as possible on all 3 phases. The difference in amperes between any two phases at the customer's peak load shall not be greater than 20%.

The minimum size individual service disconnecting means shall be 100 ampere, three phase, four wire.

310 Special requirements

A. An individual main switch shall be installed ahead of each meter. No tap shall be allowed on the line side of the main switch. This applies to all services and metered feeders. Individual services larger than 1600 ampere shall be free standing switchgear with the cold sequence metering compartment an integral part of the switchgear.

B. All service entrance conductors shall be copper and no smaller than #4 AWG. For 200 ampere and larger services, the only acceptable wire sizes are 3/0, 350 kcmil and 500 kcmil. Switchgear bus shall be copper.

C. Specific requirements for the short circuit capacity at each location shall be obtained from the Engineering Department.

D. Shop drawings for all free-standing switchgear shall be approved in writing by the Major Underground Distribution Projects Engineering Division in advance of any firm commitments on each individual installation. This will ensure proper spacing and bracing of the bus, that the bus is copper, adequate auxiliary enclosure for cable limiters when required, and proper switch metering sequence. (See Section 550 for Meter Department Approval.)

E. Space for a transformer vault on public or private property adjoining the main service entrance equipment generally will be required when the demand is 500 kVA and larger.

F. At the cable entrance to a customer's premises the contractor shall install a metal junction box (sized and located by the Major Underground Distribution Projects Engineering Division) to enclose the service cables and splices. The Major Underground Distribution Projects Engineering Division will designate the location at which the service conductors shall be installed. (See GB6-070)

G. Customer-owned underground secondary service cables, 3/0, 350 kcmil, and 500 kcmil entering Company manholes or transformer vaults, shall be protected with cable limiters. These cable limiters shall be provided and installed by the Company at the point of connection to Company lines.

H. In the event more than two cables per phase are required, cable limiters shall be installed at both ends of the service cables. The customer shall provide and install cable limiters on all ungrounded conductors at the line side of the service switch.

I. Normally, the Company will own the cable to the property line and the customer will own the cable from the property line to the service.

J. All temporary construction services shall be approved and located by the Major Underground Distribution Projects Engineering Division prior to installation by the electrical contractor.

K. Meter enclosures and fittings shall be grounded in accordance with Article 250 of the Indiana Electrical Code.

Metering enclosure grounding: Where Indiana Electrical Code Section 250.142(B) Exception 2 is not permitted or used, a grounding conductor shall be run from the service grounding electrode conductor and grounded service conductor at the service equipment to the meter fitting or meter cabinet. This grounding conductor shall be copper and sized and installed in accordance with the Indiana Electrical Code requirements for grounding electrode conductors.

L. The customer shall install conduit seals that will limit the flow of hazardous gases and vapors from outside and inside the service lateral conduits in accordance with the Indiana Electrical Code Sections 230.8 and 300.5(G).

Part IV: Primary service - other than networked service area

400 General requirements

A. Primary voltage service is available for qualifying loads and requires approval by the Company in the design stages of the project. Engineering shall be consulted early in the planning stage to make certain all requirements are met.

Although voltage is held to within five percent of nominal for lower voltage service, primary voltage service may vary eight percent or more from nominal. See Indiana Administrative Code 170, Standards of Service for additional information.

B. Service may be available at the Company's option at voltage levels of 4.16 kV, 13.2 kV, 34.5 kV, 138 kV or 345 kV depending upon the load to be served and the location on the system.

Where 4.16kV is to be supplied: All switchgear, cable, potheads, and the like shall be rated for 15kV class grounded wye insulation. Utilization equipment, such as transformers, shall be dual primary voltage 13.2kV x 4.16kV. Any surge protection shall be for the supplied voltage and replaced when the service is upgraded to 13.2kV.

C. Primary voltage services at 4.16 kV and 13.2 kV shall have a grade accessible, customer controlled, disconnecting device and overcurrent protection near the service point (see 400G below), unless all facilities to the buildings are under the exclusive control and ownership of the Company. Primary voltage services at 34.5 kV, 138 kV or 345 kV shall require special consideration.

D. The service overcurrent protection shall be sized to coordinate with the Company system and the system neutral shall be taken to the customer's service equipment.

E. Interconnecting multiple services at primary voltages. Where more than one primary voltage service is installed that is served from more than one source and can be electrically connected, the provisions in 1, 2, or 3 shall be followed.

1. *Interlocking System.* An interlocking system shall be installed in such a manner that no two primary voltage services can be electrically connected together without the disconnection of one of them from the Company's service drop or lateral. An example of this would be the Kirk Key Interlock system. The customer shall provide a one-line diagram of his proposed interlock installation to the Company's project engineer for approval.

2. *Programmable Logic Controller (PLC).* A system that uses a Programmable Logic Controller (PLC) to momentarily, no more than 20 cycles, connect two primary voltage services together before opening one of them from the Company's service drop or lateral. Where an installation of this type is made, the Company's systems protection engineer shall be consulted by the Companies project engineer to verify the safety of interconnecting these services. He shall review the distance from each sub-station, the impedance of the primary voltage feeders, the over-current devices in the sub-station, sub-station, and circuit loading, etc. to verify the feasibility of the installation. The customer shall provide a one-line diagram of his proposed interlock installation to the Company's project engineer for approval.

3. *Closed Transition Transfer Switch Operation (CTTS).* Distributed or emergency generation using a CTTS switch may be applied to the Company's system provided that the customer submits a DG Interconnection Application and signs a DG Interconnection Agreement as required by Section 175. AES Indiana will review the application for parallel operation. The customer is required to submit design details such as the closed transition time, synchronizing check relays used, and backup trip mechanism if transfer lasts longer than the expected closed transition time and reverse power relays used.

F. The metering facilities shall be located on the line side of the service disconnecting and overcurrent protective devices.

G. For overhead services, the Company will own the facilities up to and including the line side primary dead-end, the cutouts, and the metering facilities. The customer shall own all other facilities, from the service point (interface) with AES Indiana. In addition to this point of contact, the customer shall also own the metering pole. The customer shall maintain his own facilities.

For underground service, the Company will own the facilities up to the line terminals of the service/metering switchgear and the customer will own everything beyond this service point. The service/metering switchgear will be furnished and installed by the Company and sold to the customer or the customer may purchase and install the service/metering switchgear to the Company's specifications. The company will maintain ownership of the metering equipment inside the switchgear.

Exception: Under certain conditions, a customer may lease the Company owned facilities past the service point up to each building with a Standard Contract Rider Number 4.

A Standard Contract Rider Number 4 is defined in the tariffs that are on file with the Indiana Utility Regulatory Commission.

H. Where a Standard Contract Rider Number 4 is utilized (the customer is renting the facilities from the Company and the Company maintains the facilities on the load side of the primary meter) all the rules for secondary service shall apply except for requiring the installation of secondary metering facilities.

I. Electrical inspections and acceptance by the Company are required for all services before they are connected to the Company's system. Feeders to buildings, structures, or poles on the customer's premises from the Company's system and installed by the Company are included in this requirement.

J. In the case of an altered service, existing facilities shall be made to conform to current standards.

K. Underground services where the Company is supplying the cable shall not be permitted to enter a building or structure. The Indiana Electrical Code, Section 230.6, shall not be used for this requirement.

Part V: Metering

500 General information

Information on metering problems, available equipment, and general requirements can be obtained at the Meter Department Office, 3600 North Arlington Avenue, (317) 261-5262 or (317) 261-5227.

100, 200, and 320 ampere single phase self-contained meter fittings shall be furnished and installed by the customer. The company will continue to furnish 2, 3, and 4 gang meter fittings for multi-family homes. The customer is responsible for maintaining his wire and cable connections, see Section 555A.

Meter cabinets and three phase meter fittings will be furnished by the Company for installation by the customer. The Company retains ownership of these meter fittings and the cabinets. However, the customer is responsible for maintaining his wire and cable connections, see Section 555A.

If a meter cabinet and/or instrument transformers have deteriorated to a condition that the installation is no longer safe or metering correctly, it is the responsibility of the customer to have the metering equipment replaced by a qualified electrician. Meter cabinets and three phase meter fittings will be furnished by the Company for installation by the customer. 100, 200, and 320 ampere single phase self-contained meter fittings shall be furnished and installed by the customer. However, all Company meters will always be installed and maintained by the Company. Any failed condition will be determined by a representative from the Company's Meter Department and if the cabinet has failed inspection due to damage, charges may apply for the replacement parts.

The two categories of metering installations are residential and general service. The term general service includes both commercial and industrial applications of electric service. The following is a brief outline of the principal Company requirements relative to the metering installation for each of these categories. At the end of Part VII are drawings depicting typical installations covered in this manual.

505 Equipment for residential installation

A. 100 - 200 ampere overhead or underground

The Company will provide a 200 ampere meter fitting available in 2, 3, and 4 gang. See section 500 for single gang 200 ampere meter fittings.

B. 400 ampere overhead or underground

See section 500 for 320 ampere meter fittings.

C. 600-1600 ampere underground

The Company will furnish a single enclosure containing current transformers and a meter fitting.

D. Location

Metering facilities are to be in hot sequence and located on the outside of the structure in an accessible location agreeable to the Company. See drawing GB5-010 for acceptable meter locations and Section 550A7 for the definition of cold sequence. In general, exceptions for cold sequence are for 480 volt installations and installations in the networked areas covered in Part III.

A clear working space of at least 4 feet shall be maintained in front of the metering facilities. Safe and ready access to this area shall be provided.

510 Multi-family dwellings

Metering shall be installed on the outside of all multi-family dwellings. Information relative to the location of metering facilities and the type of metering equipment to be installed should be obtained before any work is started on multiple meter installations. Only locations that are readily accessible and agreeable to the Company will be acceptable.

When ganged meter fittings are required, the customer shall notify the Meter Department in sufficient time to order and receive these fittings prior to installation time.

515 Meter centers outside of the downtown underground networked service area

Any deviations from this section will require meter department approval prior to purchasing the meter center. For the installation of meter centers in the Downtown Underground Networked Service Area, see Section 517.

A. With prior approval of the Meter Department, meter centers may be provided, installed, and maintained by the customer. Both single and three phase meter centers shall be in a vertical stack of no more than four (4) positions. However, if due to space constraints, the contractor may request a waiver for a vertical stack of five (5) positions. This request shall be submitted to the Company Meter Layout group for prior approval before ordering the equipment. All customer provided meter centers shall be UL listed or listed by another Nationally Recognized Testing Laboratory (NRTL).

B. Residential meter centers fed from single phase, 120/240 volt shall have a maximum rating of 800 amps per meter center and limited to a maximum rating of 225 amps per position. Each position shall have a ringless cover, horn bypass, and have a disconnecting means on the load side.

C. Residential meter centers fed from commercial three phase 120/208 volt, four wire, wye source shall have ringless covers with a horn bypass. A 5th jaw shall be installed at the 9:00 position and connected to the neutral by the customer. Individual meters shall be balanced across the three phases and neutral with a maximum of 200 amps per position. 120/240 volt single phase meter centers shall not be permitted to connect to 120/208 volt three phase services.

Three phase meter positions at 120/208 volt shall have ring-less covers and bypass levers with a maximum rating of 225 amps per position.

D. Single phase and three phase services of the same voltage from the same meter center are permitted. With approval by the Meter Department the largest disconnecting means shall not be greater than 300 amperes for a three-phase service. (For instance, a house panel.)

E. The attachment of external metering cabinets and/or cabling to the Meter Center shall not be permitted.

F. Single phase and/or three phase meter centers and service equipment (commonly known as a meter/main) are permitted if provided, installed, and maintained by the customer. Unmetered service cable shall be separated from the customer's service equipment or overcurrent devices by a factory installed barrier.

G. Meter centers for three phase 120/208 or 120/240 volt are limited to 225A maximum per position.

H. All meter centers shall be located on the outside ground floor of the structure in an accessible location if the building is equal to or less than eight stories. If the building is nine or more stories, the meters may be installed on every 3rd floor in a designated room. The door into the room shall have warning signs "Danger High Voltage" and "Authorized Personnel Only". Inside, the door shall have listed panic hardware and open in the direction of egress plus an exit sign installed above the egress door. This room shall be at least 7 feet wide. Provisions shall be made for the use of a company key for access, keyless entry is not acceptable. Additionally, a 3/4" conduit sleeve shall be provided to the outside of the building for the installation of an outside antenna for remote metering. This conduit sleeve shall be sealed against the weather by the customer. See Section 520 and 560R for more information. If a vertical stack of four meters is used (five if permitted), the bottom of the meter center shall be located 24 inches above final grade. All other meter centers metering shall be installed at the height of not more than 6 feet nor less than 5 feet above final grade, measured to the top of the meter center metering equipment. Where the presence of metering equipment on the structure is objectionable, meter centers may be located on a customer-owned and installed meter support, approved by the Meter Department.

Single phase or three phase meter centers located outside of the downtown underground networked service area shall have a disconnecting means located on the load side of each meter position. Meter centers with seven or more disconnecting means are required to have a main disconnecting means for the entire meter center. Metal stamped or hard plastic engraved tag identifying building address shall be added above or below each disconnect.

A clear and level working space of at least 4 feet shall be maintained in front of the face of the meters. Safe and ready access to this area or room shall be provided.

I. All initial connections in a meter center shall be made by the customer.

J. Each individual meter fitting in all multiple meter installations shall be correctly identified by a metal stamped or hard plastic engraved tag which indicates the building address and type of service to be served by each meter. Markings with pencil, crayon, paper tags, etc. will not be acceptable. Insofar as practical, it is preferable in multi-family dwellings that the numbering arrangement be in an orderly sequence in each group. Multi-meter installations not identified will not be connected. The Company will install and bill meters in multiple installations according to markings supplied by the electrical contractor and under no circumstances will assume responsibility for errors which are the result of incorrectly identified meter fittings. It is imperative that if any changes are made to the positions of meters that the meter bases be reidentified. Any deviations from this section will require meter department approval prior to marking.

Example of correct tags

517 Meter centers in the downtown underground networked service area

A. All meter centers shall be located on the outside ground floor of the structure in an accessible location if the building is equal to or less than eight stories. If the building is nine or more stories, the meters may be installed on every 3rd floor in an area agreeable to the Meter Department. Provisions shall be made for the use of a company key for access, keyless entry is not acceptable. Additionally, a 3/4" conduit sleeve shall be provided to the outside of the building for the installation of an outside antenna for remote metering. This conduit sleeve shall be sealed against the weather by the customer. See Section 520 and 560R for more information.

B. Residential meter centers, 120/208, 3-wire, single phase fed from commercial three phase 120/208 volt, four wire, wye source shall have ring-less covers with a bypass lever. A 5th jaw shall be installed at the 9:00 position and connected to the neutral by the customer. Individual meters shall be balanced across the three phases and neutral with a maximum of 200 amps per position. 120/240 volt single phase meter centers shall not be permitted to connect to 120/208 volt three phase services.

C. Three phase meter positions at 120/208 or 120/240 volt shall have ring-less covers and bypass levers with a maximum rating of 225 amps per position.

D. Single phase or three phase meter centers shall have a disconnecting means for the entire meter center and additionally a disconnecting means shall be located on the line side of each meter position.

A clear and level working space of at least 4 feet shall be maintained in front of the face of the meters. Safe and ready access to this area shall be provided.

E. All initial connections in a meter center shall be made by the customer.

F. Single phase and/or three phase meter centers and service equipment (commonly known as a meter/main) are permitted if provided, installed, and maintained by the customer. Unmetered service cable shall be separated from the customer's service equipment or overcurrent devices by a factory installed barrier.

G. Each individual meter fitting in all multiple meter installations shall be correctly identified by a metal stamped or hard plastic engraved tag which indicates the building address and type of service to be served by each meter. Markings with pencils, crayons, paper tags, etc. will not be acceptable. Insofar as practical, it is preferable in multi-family dwellings that the numbering arrangement be in an orderly sequence in each group. Multi-meter installations not identified will not be connected. The Company will install and bill meters in multiple installations according to markings supplied by the electrical contractor and under no circumstances will assume responsibility for errors which are the result of incorrectly identified meter fittings. It is imperative that if any changes are made to the positions of meters that the meter bases be reidentified. Any deviations from this section will require meter department approval prior to marking.

520 Commercial and industrial metering under 600 volts

In all cases, the meter location and the type of facilities to be installed are subject to approval by the Meter Department prior to starting construction.

The metering equipment shall be located in a safe area and at heights indicated on the typical installation drawings. Section 110.26 of the Indiana Electrical Code shall be followed and a clear level working space of at least 4 feet shall be maintained in front of the meter. Safe and ready access to this area shall be provided.

If the metering facilities are located inside, a 3/4" conduit sleeve shall be provided from the meter location to the outside of the building for the installation of an outside antenna for remote metering. This conduit sleeve shall be sealed against the weather by the customer.

The location:

- If inside must be clean, dry, illuminated, and readily accessible.
- If outside must be readily accessible, level, away from obstructions such as dumpsters and grease pits, etc.

A. 100 - 225 ampere services

Self-contained meters may be utilized for installations either underground or overhead in this range of capacities, where demand metering will not be required. Self-contained meters shall be installed ahead of the service disconnecting means in all cases.

Exception 1: Where a group of more than six disconnect switches are to be connected to a single set of service entrance conductors.

Exception 2: Installations in the networked areas where a main disconnect ahead of each meter is always required.

Exception 3: 480 volt installations.

A two gang 120/240 or 120/208 volt, three phase, four wire meter fitting is permitted to be provided by the customer upon approval by the Company for 200 ampere or smaller services.

B. 250 - 1600 ampere

Installations for metering a customer's load greater than 225 ampere capacity are referred to as transformer rated installations which require the use of metering transformers in addition to the actual meter or meters.

Normally the device for mounting the necessary metering transformers, as well as the meter, is furnished by the Company. The exception would be an installation where a customer purchases a free-standing switchgear in which case the metering transformers would be installed in a separate, sealable compartment in the switchgear. (See Section 550)

525 Outdoor installations - overhead only

For outdoor mounting of metering transformers, the Company will supply transformers open mounted on an assembly. This assembly is to be installed on the structure by the customer's electrical contractor at the designated location. The overhead service drop will extend through the current transformers and then will be connected by the Company to the customer's service entrance conductors. The meter enclosure shall be securely mounted at the height of 6 feet above final grade measured to the top of the enclosure. The installation is to be done by the customer's electrical contractor. The contractor will furnish and install a UL listed 1¼ inch rigid conduit with weatherhead between the meter enclosure and the metering transformer assembly. The use of conduit bodies (condulets) with removable covers is prohibited. The Company will provide the necessary control cable to the contractor for installation in this conduit to interconnect the meter and metering transformers. All connections between the meter and metering transformers will be made by the Meter Department. (See GB3-030).

526 Transformer mounted CT metering - three phase underground installations only, 450 ampere minimum size service

For customers served by a pad mounted transformer where that customer is the sole customer served and has only one service served from this transformer, the company will offer metering installations at the transformer. Exceptions may be permitted in certain cases where approved by the Company's Line, Metering, and Engineering departments.

The customer shall install the following in accordance with Drawing GB5-110: (1) a company meter fitting, (2) conduit under the transformer pad to the meter fitting with a #4 Cu. PE grounding wire and metering cable installed, (3) PT's, if 480 volt, in the meter fitting. The company will furnish the metering cable and grounding wire plus furnish and install the CT's and make up all metering connections.

If this option is selected, all service cable and conduit shall be supplied, installed, and maintained by the customer.

Under no circumstances shall the metering be permitted to be attached to the transformer, the pad, or any company facilities.

535 Metering totalization

The Company will permit totalization of any two or more services, which when any two are combined will exceed the limit of the largest allowable individual service size. The above services must be in the same structure, but not necessarily in the same location.

Exception: Two meters will be totalized when the combined services do not exceed the limit of the largest allowable individual service size, provided the two services supply normal and emergency power to a critical load and a Standard Contract Rider Number 4 is collected monthly on the duplicate facilities which supply the emergency service. The duplicate meter facilities shall also be included in the Standard Contract Rider Number 4.

A Standard Contract Rider Number 4 is defined in the tariffs that are on file with the Indiana Utility Regulatory Commission.

540 Underground service - non-networked area

When underground service is to be provided, the Company will provide a steel outdoor enclosure for a single underground service (100 to 1600 ampere inclusive except for 100 to 320 ampere, 1Ø).

550 Switchgear installations

Shop drawings for all free-standing switchgear shall be approved in writing for network service area and in writing at customer request for non-network service area by the Meter and Engineering Departments in advance of any firm commitments on each individual installation. This will ensure proper location and arrangement of metering transformers in the switchgear. In such installations, the Company will deliver the metering transformers directly to the job site for installation by the customer's electrical contractor. Also, the meter cabinet and coded cable will be furnished by the Company for the installation by the customer's electrical contractor. The use of conduit bodies (condulets) with removable covers is prohibited. The meter cabinet shall be connected to the metering compartment in the switchgear with a 1¼ inch rigid conduit provided and installed by the customer's electrical contractor. The meter fitting shall be installed at a location agreeable to both the customer and the Company. (See Section 310D for Secondary Network Service Area and Section 205 for Secondary Non-Network Service Area).

A. Metering instrument transformer standards for low voltage (less than 600 volts) switchgear

The following standards shall be observed in the planned installation of metering compartments in switchgear rated at 600 volts or less. Plans covering essential specifications for the metering transformer compartment of the switchgear shall be submitted to the Metering Department for approval before the fabrication of the switchgear. The principal points, which shall be considered, are as follows:

(1) A separate compartment shall be provided exclusively for metering transformers with access to the compartment through a sealable hinged door or doors. Bolted panels cannot be accepted for access to space in which current and potential transformers are installed.

(2) The metering transformer compartment shall be suitable in size 36"W x 36"H x 30"D for the installation of the three (3) current transformers of the specified type and three (3) potential transformers (if required) of the specified type. These transformers will be supplied by the Company and delivered to the electrical contractor for installation in the metering compartment. Meter compartment dimensions may be changed only upon written approval from the Company's Meter Department. Delivery will not be made until the contractor informs the Metering Department that the switchgear has been delivered to the job site. All metering transformers shall be installed in the compartment, so they are readily accessible for inspecting, checking, changing or removing. See Drawing GB3-120 for details.

(3) The current transformer compartment shall be covered by a hinged door or doors. These may be either single or double doors provided they are sized to allow them to be completely opened (120°) for access to the compartment. The doors shall be provided with a handle equipped with padlocking facilities.

(4) Window type current transformers will be supplied for any project.

(5) A 12" removable copper bus link shall be provided to facilitate the removal of current transformers.

(6) The switchgear bus shall be arranged and supported in such a way as to allow for the removal of the bus link and the current transformer without disturbing any of the remaining bus work, current transformers and/or without removing any cable or cable terminations.

(7) All metering transformers shall be installed in "Hot Sequence" only, except on the AES Indiana Downtown Network, which shall be installed in "Cold Sequence" only.

"Hot Sequence" indicates no customer switches or overcurrent devices are permitted in front of metering transformers. "Cold Sequence" indicates customer switches and overcurrent devices are required to be installed in front of metering transformers.

(8) The metering compartment shall be electrically and physically isolated from the remainder of the switchgear by a barrier made of Arboron or a similar material approved by the Company.

(9) Where potential transformers are required, they shall be mounted within the metering compartments to allow adequate electrical clearance from all other energized and/or grounded surfaces and to provide for easy removal, repair, and inspection. An isolating switch shall be installed to allow for protection and isolation of the potential transformers. The supporting shelf for the potential transformers must be capable of supporting 60 pounds and be 12 to 20 inches from the bus.

(10) The switchboard manufacturer shall drill and tap a ¼" x 20 hole in each bus on the line side of the current transformers. A brass screw shall be provided in each hole. The connection of the potential and current transformers shall be made by Meter Department Personnel.

(11) The Company meters will be installed either on the outside of the switchgear or at a point remote from the switchgear in a location agreeable to the electrical contractor and the Company. The distance between the switchgear and metering shall not exceed 50 feet. A meter cabinet furnished by the Company shall be installed by the electrical contractor. The electrical contractor shall furnish and install a 1¼ inch conduit between the metering transformer compartment in the switchgear and the meter cabinet. The use of conduit bodies (condulets) with removable covers is prohibited. The coded control cable will be furnished by the Company and installed by the contractor in the conduit for interconnecting the metering transformers and the metering equipment.

B. Metering instrument transformer standards for high voltage (over 600 volts) metal-clad switchgear

Where the instrument transformers are to be mounted in 4kV or 13kV customer owned switchgear, the following standards and conditions shall be followed. Before fabrication is started, the manufacturer shall provide the Company with complete shop drawings and one-line electrical diagrams of the switchgear system and components for approval by the Installations and Metering Department and Engineering Department.

(1) A separate Company Metering Compartment 42 inches in width and a nominal height of 96 inches shall provide adequate space for the mounting of three bar type current transformers and three potential transformers for the location of the metering equipment. Access to this compartment shall be through padlockable hinged doors only, removable panels are not acceptable. There shall be no alarms or trip circuits that would cause the unit to go offline if doors are opened.

(2) Current transformers shall be installed in a vertical position in the compartment such that they may readily be replaced or removed. Potential transformers shall be mounted on a lockable, draw out carriage. Grounding devices with a visible grounding connection shall be provided to assure that all parts are properly grounded when the potential transformers are exposed. Connections to the primary side of the potential transformers shall be made on the line side of the current transformers. Carriage shall be able to support the weight of three 100 pound transformers.

A name plate and/or stencil shall be provided on the front and rear doors to identify the metering compartment.

(3) Wiring from the current transformers shall be routed to a suitable short-circuiting terminal block with removable bars/screws. Wiring from the potential transformers shall be routed to a suitable fused terminal block. Both blocks shall have conductors correctly identified. Both blocks shall be located in the same cubical as the potential transformers and approximately 5 feet above the floor for easy access.

(4) All metering transformers shall be installed in "Hot Sequence" only, except where the installation will be on the AES Indiana downtown network, which shall be installed in "Cold Sequence" only. See Section 550A7 for Definition of Hot & Cold Sequence.

(5) All meter cabinets and auxiliary metering equipment shall be located remote from the switchgear and be mounted on an exterior building wall or on free standing structure in a location agreeable to the contractor and the Company, see drawing GB5-100. The distance between the switchgear and metering shall not exceed 50 ft. A meter cabinet furnished by the Company shall be installed by the electrical contractor. The contractor shall furnish and install an 2 inch schedule 80 PVC conduit where the installation will be underground or where the installation will be overhead, the contractor shall furnish and install a 1¼ inch rigid conduit. The use of conduit bodies (condulets) with removable covers is prohibited. Either method will connect the meter cabinet to the metering cubical. The coded control cable will be furnished by the Company and shall be installed by the contractor.

Note, all meter cabinets shall be located outside only for easy Company access.

555 Maintaining meter security

A. It is unlawful to break seals and/or locks on Company meters or to remove meters without notifying the Service Connection Division on telephone number (317) 261-8133.

Cooperation will be extended at the request of the customer for normal maintenance or under emergency conditions. Request shall be made to the Service Connection Division for these cases.

B. The Company reserves the right to seal all meters, metering equipment and fused or unfused switches, together with any enclosures, gutters or raceways containing unmetered circuits, whether any of such equipment has been furnished by the Customer or the Company. This is reflected in the "Rules and Regulations, Section 17.2" that are approved by the Indiana Utility Regulatory Commission.

C. Electricity used on construction services shall be metered. Services that have been disconnected by the company are to be restored only by AES Indiana personnel. Unmetered circuits and bypassed meter fittings will be disconnected, an energy diversion charge, and pro-rated billing will be assessed.

557 Installation of surge protective device and other devices at meter sockets

The installation of any meter adapter surge suppressor or any similar interface devices between the meter and meter socket is not acceptable and prohibited. If any surge suppressor or other similar interface device such as a generator connection, is found installed between the meter and meter fitting, Company field personnel will remove the device.

560 General requirements

A. A signed sketch shall be provided for all current transformer rated metering installations by the customer's electrical contractor. The sketch shall include location of the metering and all distances from windows, doors, gas meters, stairways, corners of buildings and posts if required.

B. All meter fittings and cabinets are to be surface mounted on the exterior of the building or free standing; flush mounted meter fittings and cabinets are not permitted.

C. To provide adequate clearance for testing and maintenance, a conduit nipple (a minimum of 4 inches long) shall be provided between the meter fitting and any other electrical equipment.

D. Facilities to accommodate socket type meters installed at any location served by two phases and a neutral of the three phase, four wire 120/208 volt, wye system, shall be equipped with a neutral terminal block. The neutral terminal block (fifth terminal) shall be furnished by the Company and installed on the left side of fitting by the electrical contractor. (See Drawing GB1-060.)

E. A maximum of 4 conductors may be connected to the line or load side of the current transformer.

F. Customer shall furnish and install posts to protect meter cabinets, junction boxes, conduits, and other facilities as specified by the Company when exposed to vehicular traffic. Each post shall be a minimum of 7'-0" long and 6 inch diameter steel pipe. The posts shall be concrete filled, set in concrete and extend 4'-0" above grade. Contact the Company for approval of post arrangement.

G. For the installation of Company cables:

1. All nonmetallic conduit installed above grade shall be gray schedule 80 or heavier.
2. Where conduit is installed from a meter fitting or enclosure into the earth, the conduit shall extend a minimum of 18" below grade and have a box adapter at the point of termination of the conduit in order to provide a smooth edge. This requirement does not apply to continuous conduit turned up for riser poles or into pad mounted transformers.
3. All metallic conduit shall be rigid steel or IMC.
4. All conduit elbows for the installation of the Company's cable shall be 4" X 36" radius minimum.
5. All conduit runs shall be installed with a pull string.

H. The electrician shall take precautions when adding any circuits to an existing installation to insure that it is connected on the load side of the meter. Only one conductor may be connected to each terminal of an individual meter position in any self-contained meter fitting. Terminals for more than one conductor and terminals used to connect aluminum shall be so identified.

I. On a three phase, four wire, delta service, the phase conductor having the higher voltage to ground shall be permanently marked at each point of connection, in accordance with the Indiana Electrical Code. If red or orange is used to mark the phase having the higher voltage to ground, red or orange shall not be used to mark any other phases.

J. The contractor shall install the meter fittings and meter cabinets provided by the Company. If service junction boxes are required, they shall be provided by the Company and installed by the contractor as specified by the Engineering Department.

K. The Company will make all connections in the service junction box. The contractor shall identify all cables by meter position. If no junction box is required, the Company will make connections on the line side of the meter or current transformers.

L. Metered and unmetered conductors shall not be installed in the same conduit, raceway, junction box, or switch. (See exception on pole meters Section 570.)

M. Metering equipment is only available at the Arlington Service Center, 3600 North Arlington Avenue.

N. All 400A and larger meter, and junction cabinet locations, other than residential, shall be truck accessible. See Section 220A3e for the definition of truck accessible.

O. Devices, fittings, clamps, or equipment shall not be permitted to be installed or attached to any metering cabinet or meter fitting without written permission from the Meter Department unless it is for the installation of the metering cabinet or meter fitting in accordance with the Company's standards.

Exception: Where a clamp or device is for intersystem bonding, is in compliance with the Indiana Electrical Code Section 250.94 and does not interfere with either the operation of the cover of a meter fitting or intrude into the interior of a meter fitting.

P. Metered and unmetered power conductors shall not cross inside CT meter cabinets.

Q. Conductors shall not enter or leave through the back of a CT cabinet.

R. In all cases where meters and/or metering equipment will be in a locked room, fenced area, or enclosure, a means for the authorized Company personnel shall be provided for access with a Company key. This may be by means of either a separate door or gate with a Company lock or a chain with a Company lock and a customer lock. Keyless entry is not acceptable.

565 Unacceptable meter locations - this is not meant to be an all-inclusive list

A. Above an opening or obstruction

B. On mobile (manufactured) homes located in mobile home parks, mobile homes not approved for the installation of a meter on the side, recreational vehicles, or construction trailers.

C. Under a porch or carport, whether open or closed.

D. Within a locked enclosure. See Section 560R for more information.

E. Behind shrubbery planted close to the building.

F. Within six (6) inches of any right-angle obstruction.

G. On the side of a building adjacent to a driveway or an alley.

H. Within three feet of a door, or two feet of any window or outside corner.

I. Section 110.26 of the Indiana Electrical Code shall be followed for minimum working clearances. A clear working space of at least 4 feet shall be maintained in front of the metering facilities. Safe and ready access to this area shall be provided.

J. Within three (3) feet of all gas metering, regulating equipment, and any other source of combustible quantities of gas.

570 Metering on poles and underground facilities

Meter installations on Company poles or underground facilities such as pad mount transformers, service junction boxes, etc., will not be permitted. Customer-owned poles will be permitted for metering installations if approved by the Company. The customer must provide either two conduits (one for line wires and one for load wires) or a single conduit may be used in conjunction with color-coded wire to distinguish metered and unmetered conductors. Line and load wires shall not be installed in the same conduit if the load wires have been provided overcurrent protection. Wires with painted ends shall not be used. If two conduits are used, they must be installed on the same quarter of the pole surface with the line service cap 12 inches above the load service cap.

Where the installation of more than one meter on customer-owned facilities is contemplated, such as in mobile home parks, the Engineering and Meter personnel shall be consulted for installation specifications on an individual job basis.

Only conductors in rigid conduit will be permitted for pole metering installations. See Section 220A2d for the definition of rigid conduit.

575 Grounding services

All grounding and bonding of service raceways, meter enclosures, junction cabinets, junction boxes, etc. shall be done by the customer in accordance with the Indiana Electrical Code, Article 250. Bonding shall be done in such a manner as to avoid a parallel path with the grounded (neutral) conductor.

The grounding electrode conductor (GEC) shall not pass through any meter fitting, meter cabinet or junction cabinet. The GEC may terminate inside the Company meter fitting, meter cabinet or junction cabinet.

Exception: Where the service equipment is located before the metering equipment, the GEC shall be permitted to pass through and bonded to the meter fitting, meter cabinet or junction cabinet.

The GEC is the conductor used to connect the grounding electrode to the grounded conductor of the service at the service equipment. The bonding jumper used to bond the conduits entering the meter fitting or enclosure is required by the Indiana Electrical Code and is permitted by AES Indiana.

600 Service reliability

Reliability of service is of prime importance to both the Company and the Customer. The Company's record of excellent service reliability is the result of sound engineering, system design and carefully implemented maintenance programs.

Despite these efforts, power system disturbances do occur. Generally, most of the Customer equipment can tolerate short-term voltage variations. But in today's electronic world, the inability of microprocessors and electronic controls to tolerate power system disturbances can result in equipment problems and downtime.

The Company encourages care in the design of the electrical system, and in the installation of power conditioning equipment. This will promote satisfactory operation of customer equipment and prevent electrical problems to the Company's and other Customers' equipment. The Customer should consider the following items as a guide for electrical system design where power quality is an important factor:

(a.) Wiring and grounding practices that comply with the current edition of the Indiana Electrical Code.

(b.) Dedicated circuits for electronic systems.

(c.) Multistage surge protective device (SPD).

(d.) Single phasing protection for motors.

(e.) Derated or "K" rated transformers for load with high harmonic content.

(f.) Line reactors for protection of adjustable speed-drive motors.

(g.) Uninterruptible power supply (battery or rotary).

(h.) Back-up or emergency generation for some applications.

Should there be any questions about the application of these concepts, please call the Company's Power Quality Consultant on (317) 261-8382. The consultant will be most happy to assist you in obtaining the electric service to meet your needs.

610 Power quality issues

Further explanation of issues that affect both the Company and the Customer are denoted below.

A. Harmonic distortion

IEEE Standard 519 - 2014, contains the goals for the design of electrical systems that include both linear and nonlinear loads. The use of this standard for system design will assure compatible performance and safety of customer systems and minimize problems for neighboring Customers. Examples of nonlinear loads include adjustable speed drives, inverters, computers, lighting, high efficiency HVAC, etc.

Previous experience by the Company has shown that the design requirements of IEEE Std. 519 - 2014 should be specified by the Customer at the Point of Common Coupling with other loads such as a Customer's main switchgear bus. Please contact the Company for assistance at specific locations.

B. Transformer Derating

The capacity of transformers provided by the Company may be inadequate due to a change in Customer load from a linear type to a nonlinear type. This action may result in premature failure and/or loss of life expectancy of the transformer that directly serves Customer load. Therefore, the rating of the step-down transformer provided by the Company will be reviewed using ANSI/IEEE C57.110 - 2008. This review is based upon the Customers' specified system design results per IEEE Std. 519 - 2014 and/or actual testing. The excess facility charges of a Standard Contract Rider Number 4 may apply to the Customer, if a larger than normal transformer is required to serve a load because of nonlinear characteristics. The excess facilities of a Standard Contract Rider Number 4 do not apply to the Customer with a design that meets the harmonic distortion goals described above.

C. Low Frequency Oscillatory Transient

Transients caused by capacitor-bank switching may occur at Customer locations. This transient can be caused by switching either the Company or Customer capacitor banks. The transient oscillates on the normal 60 Hz. sine wave and decays in a very short period of time. Typical magnitudes of the transient, including the normal 60 Hz. sine wave, are 1.1-2.0 per unit of nominal system voltage. The time duration of the transient alone is about 0.5 - 2 cycles. Specifications for the design of Customer systems should include appropriate protection for these transients.

D. Impulsive transient

Lightning is a prime example of an impulsive transient and can cause damaging over voltages to appear on both Company and Customer electrical facilities. Multistage surge protective device (SPD) protection is necessary to avoid catastrophic equipment failure. IEEE/ANSI C62.41.1 - 2002 and C62.41.2-2002 provide information to properly coordinate equipment withstand capability and environmental characteristics to ensure proper protection. Customer specifications for the design and operation of electrical systems should include multistage SPD protection.

E. Voltage Unbalance and/or Single Phasing

Voltage unbalance results from a load that is not balanced between phases. Voltage unbalance can occur by various means, including a phase loaded significantly heavier than another and loss of one or two phases of a three phase power system. Loss of one or two phases of a three phase power system that serves motor load at Customer locations is often called "single phasing". Voltage unbalance may result in motor damage due to heating. Appropriate protection for these conditions cannot be economically provided by the Company. Therefore, it is the Customers' responsibility to provide and maintain protection for multi-phase equipment that may be adversely affected by these conditions. The Company assumes no liability for equipment damaged by a loss of phase condition.

F. Voltage Sag

A voltage sag is a short duration voltage decrease. Voltage sags are usually associated with power system faults but can also be caused by switching heavy loads, starting of motors, etc.

Voltage sags caused by power system faults often have a different voltage on each phase, generally have durations of a second or less, and are more likely to occur during adverse weather conditions. Smaller voltage changes occur more often than large voltage changes. Thus, equipment with greater sensitivity is more likely to experience problems. Customer equipment that cannot tolerate a voltage sag due to power system faults should be specified with the capability to ride through this condition.

Voltage sags caused by switching heavy loads, starting motors are best controlled by the Customer. Customer systems should include electrical and/or mechanical devices to limit the sag at the point of delivery to 2% below the impressed voltage at the point of delivery. Please contact the Company for assistance at specific locations.

G. Voltage Fluctuations

Loads that exhibit continuous rapid variation in their current magnitude can result in voltage fluctuations. These voltage fluctuations can cause corresponding fluctuations in lighting equipment output. The magnitude and frequency of the fluctuating light output can become very irritating to people.

Examples of loads that can cause voltage fluctuation and may result in flicker are welding machines, arc furnaces, X-ray machines, etc. Customers installing equipment that may exhibit these characteristics should specify, install, and operate equipment that will limit the fluctuations to the limits specified by the Company. Typically, these limits will range in magnitude from 0.3% of the impressed RMS voltage, at the metering point for modulation frequencies in the 5-10 Hz. range to a maximum of 2% for other modulation frequencies. Please contact the Company for the limits at specific Customer locations.

700 Secondary voltages available

After determination as to whether electricity will be supplied from overhead or underground in accordance with the Company's underground policy and any legal requirements, the Company will supply (all voltages may not be available in some areas) one of the following service voltages:

(a) Single phase, 120 volt, two wire

(b) Single phase, 120/240 volt, three wire

(c) Single phase, 120/208 volt, three wire

(d) Single phase, 277/480 volt, three wire

(e) Single phase, 240/480 volt, three wire

705 Requirement for service

A. *Single phase, 120 volt, two wire,* may be provided for services not to exceed 30 amperes.

B. *Single phase, 120/240 volt, three wire,* may be provided for services not to exceed 200 amperes.

C. *Single phase, 120/208 volt, three wire,* may be provided for services not to exceed 125 amperes.

D. *Single phase, 277/480 volt, three wire,* may be provided for services not to exceed 125 amperes. A metered service in this voltage is only available for outdoor/roadway lighting applications. The Company will supply a cold sequence meter fitting with a molded case switch to the customer. A flat rate service is available to qualifying customers under the terms and conditions of Rate MU-1 as filed with the IURC.

See Section 550A7 for the Definition of Hot & Cold Sequence.

E. *Single phase, 240/480 volt, three wire,* may be provided for services not to exceed 200 amperes. A metered service in this voltage is only available for outdoor/roadway lighting applications. The Company will supply a cold sequence meter fitting with a molded case switch to the customer. A flat rate service is available to qualifying customers under the terms and conditions of Rate MU-1 as filed with the IURC.

See Section 550A7 for the Definition of Hot & Cold Sequence.

All voltages will be provided on a cost to serve basis.

710 Applicability of part I and part V

Except as modified in this Part VII, all the rules in Part I and V generally apply.

715 Application for traffic signal service

Application for a metered traffic signal service shall be made on the "Meter Installation Request" form provided by the Company. The engineer in charge of the customer's construction shall take responsibility for the correctness of the electrical service by filling out and signing the "Letter in Lieu of Electrical Inspection" provided by the Company unless the service equipment has been inspected and tagged.

720 Special requirement

Service equipment, sized for the maximum load, shall be installed by the customer at the point of service for all lighting equipment to be billed under Rate MU-1 (a flat rate service with no metering equipment).

725 Special underground requirements

For the installation of Company owned street lighting and/or protective lighting, the customer may be required to install gray 4" rigid PVC conduit with a pull string in a 24" deep trench at locations specified by the Company. These locations may include roads, sidewalks, landscaping, or any area that may prove to be inaccessible.

730 Customer supplied concrete column bases

Depending on the installation and application, the customer may be required to install poured concrete bases for the installation of Company street light columns. Contact the lighting representative shown on GB0-170 for verification. The detailed drawings for the construction of concrete bases are shown on GB8-100 and GB8-110 if the customer is responsible for their construction and installation.

735 Protective posts

For the protection of various Company facilities, protective posts may be required in accordance with Section 220A2h.