



• CUSTOMER GUIDELINES FOR •

DISTRIBUTED GENERATION INTERCONNECTION

INTRODUCTION

The primary purpose of these guidelines is to outline the process for connecting a Distributed Generation (DG) facility. This information is provided in an effort to maintain safe and reliable service to DG facilities and customers.

This guide covers most types of DG facilities within the Waterloo Utilities service areas:

- Inverter based systems – predominately solar PV
- Synchronous or induction motor systems – wind generation, standard fossil-fuel based motor generators.
- Other types will be reviewed as encountered.

These guidelines are intended to be consistent with the requirements of the current versions of:

- [PSC 119](#) – Rules for Interconnection Distributed Generation Facilities
- [Wisconsin Standard Distributed Generation Application Form](#) (up to 15 MW)
- [Appropriate Supplement Form:](#)
 - Solar – Generator
 - Wind Turbine – Energy Storage
- [PSC 6029](#) – Distributed Generation Interconnection Agreement (20 kW or less)
- [PSC 6030](#) – Distributed Generation Interconnection Agreement (greater than 20 kW to 15 MW)

- Waterloo Utilities Pgs-1, Parallel Generation (20 kW or less) – Net Energy Billing Rate Schedule
- Waterloo Utilities Pgs-2, Customer-Owned Generation Systems (greater than 20 kW) – Rate Schedule

The “20 kW” rating shall be the AC rating of the generator or inverter.

A. INTERCONNECTION CLASSIFICATIONS

1. **Parallel Generation (20 kW or less)** – Net Energy Billing (see Pgs-1 Rate Schedule). Customers that qualify for this rate schedule are metered and billed under a net energy basis. The revenue meter records all energy delivered and all energy received from the DG facility during the billing period. Some meters may provide only the net energy consumed rather than totals for energy flow in both directions.
2. **Customer-Owned Generation Systems (greater than 20 kW)** – (see Pgs-2 Rate Schedule). Customers that qualify for this rate schedule are metered and billed for all energy consumed at their retail rate and receive a credit for all energy delivered to the utility. The revenue meter records all on/off peak energy delivered and all on/off peak energy received from the facility during the billing period.



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B. APPLICATION PROCESS FOR DISTRIBUTED GENERATION FACILITIES

The applicants and the utility shall complete the following steps regarding interconnection applications:

1. Application process for interconnecting DG facilities

- a. The utility shall respond to each request for DG interconnection by furnishing the following documents within 5 working days:
 - PSC 119 DG interconnection rules
 - Customer guidelines for DG interconnection
 - Wisconsin Standard Distributed Generation Application form (up to 15 MW)
 - Technology supplement form
- b. The applicant shall complete and submit the application and supplement forms to the utility. The utility may collect the fees in the Application Review table below, unless the utility chooses to waive them.

The application shall include the following:

- Completed application and supplement forms
- Site plan that shows:
 - Street address of DG facility
 - Adjoining street name
 - Electric service entrance
 - Electric meter
 - Interface equipment
 - Location of major equipment
 - Location of interconnect disconnect switch (if required)

- One-line wiring diagram shall include:
 - Generator or inverter
 - Point where DG facility is electrically connected to the customer's electrical system
 - Point of common coupling
 - Lockable interconnection disconnect switch (outside, if required)
 - Method of grounding, including generator and transformer ground connections
 - Protection function and systems
- Proof of adequate liability insurance coverage or proof of financial responsibility by another means agreeable with utility. Coverages shown in the Liability Insurance table below.
- Within **10 working days** of receiving a new or revised application, the utility shall notify the applicant whether the application is complete.
- Within **10 working days** of determining that the application is complete, the utility shall complete its application review.
- If the utility determines, based on application review, that an engineering review is needed, it shall notify the applicant and state the cost of the review. The engineering review cost estimate shall be valid for one year. If the application review shows that an engineering review is not needed, the applicant is notified and may proceed with installation of the DG facility.

APPLICATION REVIEW

DG Facility Size	Time Limit*	Fee
Category 1 ($\leq 20 \text{ kW}_{AC}$)	10 Days	None
Category 2 ($> 20 \text{ kW}_{AC}$ and $\leq 200 \text{ kW}_{AC}$)	10 Days	\$250
Category 3 ($> 200 \text{ kW}_{AC}$ and $\leq 1 \text{ MW}_{AC}$)	10 Days	\$500
Category 4 ($> 1 \text{ MW}_{AC}$ and $\leq 15 \text{ MW}_{AC}$)	10 Days	\$1000

*Time Limit is working days

LIABILITY INSURANCE

DG Facility Size	Minimum Coverage*
Category 1 ($\leq 20 \text{ kW}_{AC}$)	\$300,000
Category 2 ($> 20 \text{ kW}_{AC}$ and $\leq 200 \text{ kW}_{AC}$)	\$1,000,000
Category 3 ($> 200 \text{ kW}_{AC}$ and $\leq 1 \text{ MW}_{AC}$)	\$2,000,000
Category 4 ($> 1 \text{ MW}_{AC}$ and $\leq 15 \text{ MW}_{AC}$)	Negotiable

*Utility shall be named as an additional insured party in the liability insurance policy for Category 2 - 4.

2. Engineering review/study process

- a. Upon receiving from the applicant written notification to proceed and receipt of applicable payment from the applicant, the utility shall complete an engineering review and notify the applicant of the results within **10 – 40 working days** (see PSC 119.04, section 5). Limits shown in the Engineering Review table below.
- b. If the engineering review indicates that a distribution system study is necessary, the utility shall include, in writing, a cost estimate in its engineering review (see PSC 119.04, section 6). Upon receiving written notification to proceed and payment of the applicable fee, the utility shall conduct the distribution system study within **10 – 60 working days**. Limits shown in the Distribution System Study table below.
- c. Upon completion of the distribution study, the utility shall notify the applicant of findings along with any distribution system construction or modification costs to be paid by the applicant.
- d. If the applicant agrees, in writing, to pay for any required distribution system construction or modifications, the utility shall complete the distribution system upgrades and the applicant shall install the DG facility.

verify the system testing, as required in PSC 119.3 or 119.31. Upon receiving notification that an installation is complete, the utility has **10 working days** for Category 1 and 2 projects and **20 working days** for Category 3 and 4 projects to complete the following:

- Witness commissioning tests.
 - Perform an anti-islanding test or verify the protective equipment settings at its expense.
 - Waive its right, in writing, to witness or verify the commissioning tests.
- b. The applicant shall provide the utility with the results of any required tests.
 - c. The utility may review the results of the on-site tests and shall notify the applicant within **5 working days**, for a Category 1 or within **10 working days** for Category 2 to 4 projects, of its approval or disapproval of the interconnection.
 - d. If approved, the utility shall provide a written statement of final acceptance and cost reconciliation.
 - e. If the utility does not approve the interconnection, the applicant may take corrective action and request the public utility to reexamine its interconnection request.

2. Interconnection Agreement

- a. Upon approval of the interconnection, standard interconnection agreement, PSC 6029 or PSC 6030, shall be signed by the applicant and the utility before parallel operation commences.

C. INTERCONNECTION PROCESS FOR DISTRIBUTED GENERATION FACILITIES

1. System Testing

- a. Upon completion of the DG facility, the applicant shall give the utility the opportunity to witness or

ENGINEERING REVIEW

System Size	Time Limit*	Fee
Category 1 ($\leq 20 \text{ kW}_{AC}$)	10 Days	None
Category 2 ($> 20 \text{ kW}_{AC}$ and $\leq 200 \text{ kW}_{AC}$)	15 Days	$\leq \$500$
Category 3 ($> 200 \text{ kW}_{AC}$ and $\leq 1 \text{ MW}_{AC}$)	20 Days	Cost based**
Category 4 ($> 1 \text{ MW}_{AC}$ and $\leq 15 \text{ MW}_{AC}$)	40 Days	Cost based**

*Time Limit is working days

** Fee is utility staff time and/or professional services

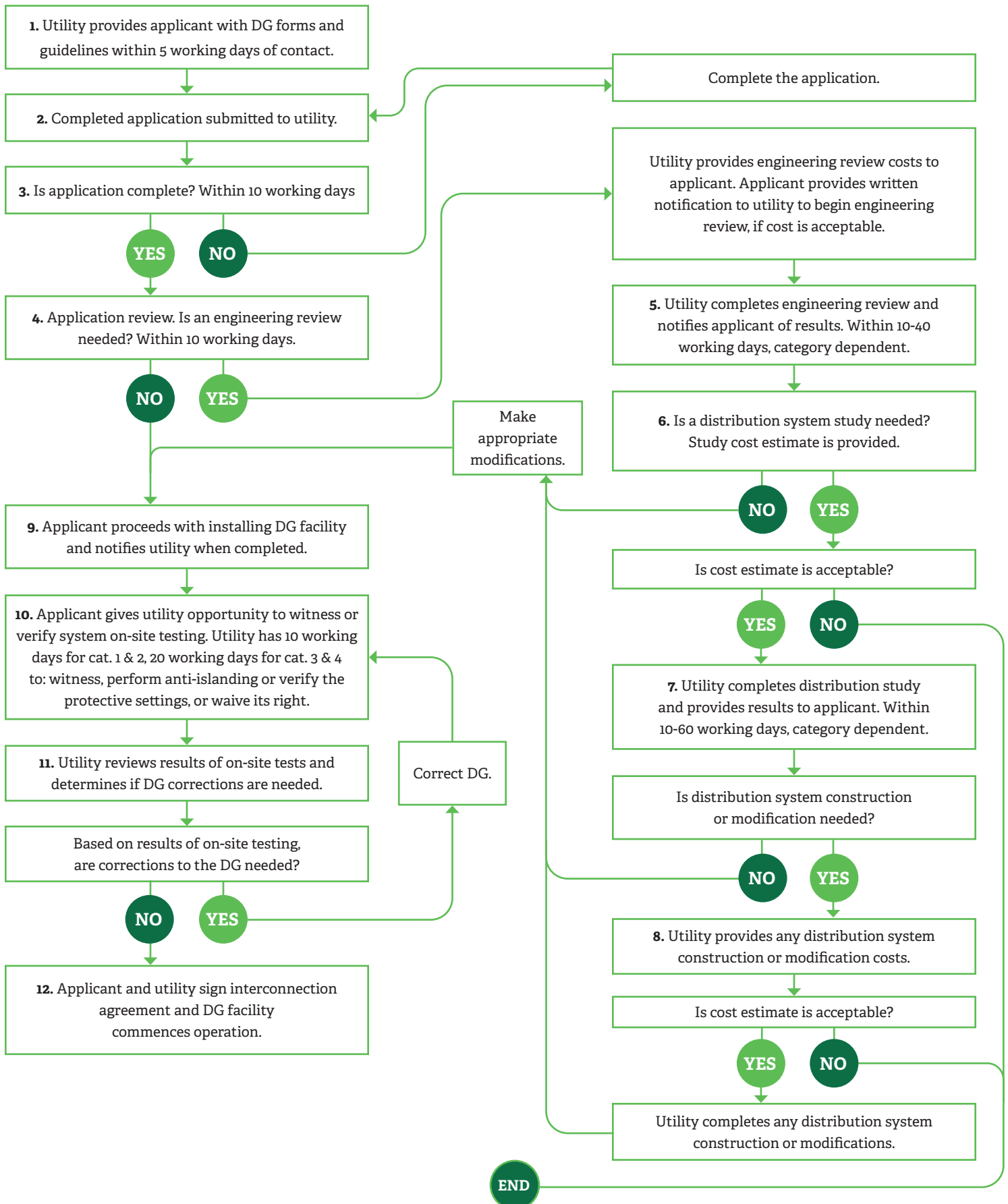
DISTRIBUTION SYSTEM STUDY

System Size	Time Limit*	Fee
Category 1 ($\leq 20 \text{ kW}_{AC}$)	10 Days	None
Category 2 ($> 20 \text{ kW}_{AC}$ and $\leq 200 \text{ kW}_{AC}$)	15 Days	$\leq \$500$
Category 3 ($> 200 \text{ kW}_{AC}$ and $\leq 1 \text{ MW}_{AC}$)	20 Days	Cost based**
Category 4 ($> 1 \text{ MW}_{AC}$ and $\leq 15 \text{ MW}_{AC}$)	60 Days	Cost based**

*Time Limit is working days

** Fee is utility staff time and/or professional services

PROCESS FLOW CHART FOR INTERCONNECTING DG FACILITIES



END