

## **FREEBORN MOWER COOPERATIVE SERVICES**

### **Interconnection Process for Distributed Generation Systems**

#### **Introduction**

This document has been prepared to explain the process established in the State of Minnesota, to interconnect a Generation System with Freeborn Mower Cooperative Services (FMCS). This document covers the interconnection process for all types of Generation Systems which are rated 10MW's or less of total generation Nameplate Capacity; are planned for interconnection with the FMCS's Distribution System; are not intended for wholesale transactions and aren't anticipated to affect the transmission system. This document does not discuss the interconnection Technical Requirements, which are covered in the **FMCS Distributed Generation Interconnection Requirements** document. This interconnection requirements document also provides definitions and explanations of the terms utilized within this document. To interconnect a Generation System with the FMCS, there are several steps that must be followed. This document outlines those steps and the Parties' responsibilities. At any point in the process, if there are questions, please contact the General Manager at FMCS. Since this document has been developed to provide an interconnection process which covers a very diverse range of Generation Systems, the process appears to be very involved and cumbersome. For many Generation Systems the process is streamlined and provides an easy path for interconnection.

The promulgation of interconnection standards for Generation Systems by the Minnesota Public Utilities Commission (MPUC) must be done in the context of a reasonable interpretation of the boundary between state and federal jurisdiction. The Federal Energy Regulatory Commission (FERC) has asserted authority in the area, at least as far as interconnection at the transmission level is concerned. This, however, leaves open the question of jurisdiction over interconnection at the distribution level. The Midwest Independent System Operator's (MISO) FERC Electric Tariff, (first revised volume 1, August 23,2001) Attachment R (Generator Interconnection Procedures and Agreement) states in section 2.1 that "Any existing or new generator connecting at transmission voltages, sub-transmission voltages, or distribution voltages, planning to engage in the sale for resale of wholesale energy, capacity, or ancillary services requiring transmission service under the Midwest ISO OATT must apply to the Midwest ISO for interconnection service". Further in section 2.4 it states that "A Generator not intending to engage in the sale of wholesale energy, capacity, or ancillary services under the Midwest ISO OATT, that proposes to interconnect a new generating facility to the distribution system of a Transmission Owner or local distribution utility interconnected with the Transmission System shall apply to the Transmission Owner or local distribution utility for interconnection". It goes on further to state "Where facilities under the control of the Midwest ISO are affected by such interconnection, such interconnections may be subject to the planning and operating protocols of the Midwest ISO...."

Through discussions with MISO personnel and as a practical matter, if the Generation System Nameplate Capacity is not greater in size than the minimum expected load on the distribution substation, that is feeding the proposed Generation System, and Generation System's energy is not being sold on the wholesale market, then that installation may be considered as not "affecting" the transmission system and the interconnection may be considered as governed by this process. If the Generation System will be selling energy on the wholesale market or the Generation System's total Nameplate Capacity is greater than the expected distribution substation minimum load, then the Applicant shall contact MISO (Midwest Independent System Operator) and follow their procedures.

## GENERAL INFORMATION

### A) Definitions

- 1) "Applicant" is defined as the person or entity who is requesting the interconnection of the Generation System with FMCS and is responsible for ensuring that the Generation System is designed, operated and maintained in compliance with the Technical Requirements.
- 2) "Area EPS" is defined as an electric power system (EPS) that serves Local EPS's. Note. Typically, an Area EPS has primary access to public rights-of-way, priority crossing of property boundaries, etc. FMCS is your Area EPS.
- 3) "Area EPS Operator" is the entity who operates the Area EPS. *Also FMCS.*
- 4) "Dedicated Facilities" is the equipment that is installed due to the interconnection of the Generation System and not required to serve other FMCS customers.
- 5) "Distribution System" is the FMCS facilities which are not part of the FMCS Transmission System or any Generation System.
- 6) "Extended Parallel" means the Generation System is designed to remain connected with the Area EPS for an extended period of time.
- 7) "Generation" is defined as any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, etc.; or any other electric producing device, including energy storage technologies.
- 8) "Generation Interconnection Coordinator" is the person or persons designated by the FMCS to provide a single point of coordination with the Applicant for the generation interconnection process.

- 9) “Generation System” is the interconnected generator(s), controls, relays, switches, breakers, transformers, inverters and associated wiring and cables, up to the Point of Common Coupling.
- 10) “Interconnection Customer” is the party or parties who will own/operate the Generation System and are responsible for meeting the requirements of the agreements and Technical Requirements. This could be the Generation System applicant, installer, owner, designer, or operator.
- 11) “Local EPS” is an electric power system (EPS) contained entirely within a single premises or group of premises
- 12) “Nameplate Capacity” is the total nameplate capacity rating of all the Generation included in the Generation System. For this definition the “standby” and/or maximum rated kW capacity on the nameplate shall be used.
- 13) “Open Transfer” is a method of transferring the local loads from FMCS to the generator such that the generator and FMCS are never connected together.
- 14) “Point of Common Coupling” is the point where the Local EPS is connected to a FMCS facility.
- 15) “Quick Closed” is a method of generation transfer which does not parallel or parallels for less than 100msec with FMCS and has utility grade timers which limit the parallel duration to less than 100 msec with FMCS.
- 16) “Technical Requirements” “is the Freeborn Mower Cooperative Services (FMCS) Distributed Generation Interconnection Requirements”.
- 17) “Transmission System” means those facilities as defined by using the guidelines established by the Minnesota State Public Utilities Commission; “In the Matter of Developing Statewide Jurisdictional Boundary Guidelines for Functionally Separating Interstate Transmission from Generation and Local Distribution Functions” Docket No. E-015/M-99-1002.

## **B) Dispute Resolution**

The following is the dispute resolution process to be followed for problems that occur with the implementation of this process.

- 1) Each Party agrees to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner.
- 2) In the event a dispute arises under this process, each party shall enter into the Dispute Resolution Process as described in the FMCS Cogeneration Rules, adopted in accordance with MN Statute 216B.164.

**C) FMCS Generation Interconnection Coordinator**

FMCS shall designate a Generation Interconnection Coordinator(s) and this person or persons shall provide a single point of contact for an Applicant's questions on this Generation Interconnection process. This Generation Interconnection Coordinator will typically not be able to directly answer or resolve all of the issues involved in the review and implementation of the interconnection process and standards, but shall be available to provide coordination assistance with the Applicant.

***FMCS Distributed Generation Coordinator***

***Attn: Director of Energy Services***

***PO Box 611, Albert Lea, MN 56007***

***507-373-6421 ext. 8880***

**D) Engineering Studies**

During the process of design of a Generation System interconnection between a Generation System and FMCS, there are several studies which many need to be undertaken. On the Local EPS (Customers side of the interconnection) the addition of a Generation System may increase the fault current levels, even if the generation is never interconnected with the FMCS's grid. The Interconnection Customer may need to conduct a fault current analysis of the Local EPS in conjunction with adding the Generation System. The addition of the Generation System may also affect FMCS's grid and special engineering studies may need to be undertaken looking at FMCS's facilities with the Generation System included. Appendix D, lists some of the issues that may need to receive further analysis for the Generation System interconnection.

While, it is not a straightforward process to identify which engineering studies are required, we can at least develop screening criteria to identify which Generation Systems may require further analysis. The following is the basic screening criteria to be used for this interconnection process.

- 1) Generation System total Nameplate Capacity does not exceed 5% of the radial circuit expected peak load. The peak load is the total expected load on the radial circuit when the other generators on that same radial circuit are not in operation.
- 2) The aggregate generation's total Nameplate Capacity, including all existing and proposed generation, does not exceed 25% of the radial circuit peak load and that total is also less than the radial circuit minimum load.
- 3) Generation System does not exceed 15% of the Annual Peak Load for the Line Section, which it will interconnect with. A Line Section is defined as that section of the distribution system between two sectionalizing devices in FMCS's Distribution System.

- 4) Generation System does not contribute more than 10% to the distribution circuit's maximum fault current at the point at the nearest interconnection with FMCS's primary distribution voltage.
- 5) The proposed Generation System total Nameplate Capacity, in aggregate with other generation on the distribution circuit, will not cause any distribution protective devices and equipment to exceed 85 percent of the short circuit interrupting capability.
- 6) If the proposed Generation System is to be interconnected on a single-phase shared secondary, the aggregate generation Nameplate Capacity on the shared secondary, including the proposed generation, does not exceed 20kW.
- 7) Generation System will not be interconnected with a "networked" system

#### E) **Scoping Meeting**

During Step 2 of this process, the Applicant or FMCS has the option to request a scoping meeting. The purpose of the scoping meeting shall be to discuss the Applicant's interconnection request and review the application filed. This scoping meeting is to be held so that each Party can gain a better understanding of the issues involved with the requested interconnection. FMCS and Applicant shall bring to the meeting personnel, including system engineers, and other resources as may be reasonably required, to accomplish the purpose of the meeting. The Applicant shall not expect FMCS to complete the preliminary review of the proposed Generation System at the scoping meeting. If a scoping meeting is requested, FMCS shall schedule the scoping meeting within the 15 business day review period allowed for in Step 2. FMCS shall then have an additional 5 days, after the completion of the scoping meeting, to complete the formal response required in Step 2. The Application fee shall cover FMCS's costs for this scoping meeting. There shall be no additional charges imposed by FMCS for this initial scoping meeting

#### F) **Insurance**

- 1) At a minimum, in connection with the Interconnection Customer's performance of its duties and obligations under this Agreement, the Interconnection Customer shall maintain, during the term of the Agreement, general liability insurance, from a *qualified insurance agency with a B+ or better rating by "Best" and with a combined single limit of not less than:*
  - a) *Two million dollars (\$2,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is greater than 250kW.*

- b) *One million dollars (\$1,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is between 40kW and 250kW.*
  - c) *Three hundred thousand (\$300,000) for each occurrence if the Gross Nameplate Rating of the Generation System is less than 40kW.*
  - d) *Such general liability insurance shall include coverage against claims for damages resulting from (i) bodily injury, including wrongful death; and (ii) property damage arising out of the Interconnection Customer's ownership and/or operating of the Generation System under this agreement.*
- 2) The general liability insurance required shall, by endorsement to the policy or policies, (a) include FMCS as an additional insured; (b) contain a sever ability of interest clause or cross-liability clause; (c) provide that FMCS shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to FMCS prior to cancellation, termination, alteration, or material change of such insurance.
  - 3) If the Generation System is connected to an account receiving residential service from FMCS and its total generating capacity is smaller than 40kW, then the endorsements required in Section F.2 shall not apply.
  - 4) The Interconnection Customer shall furnish the required insurance certificates and endorsements to FMCS prior to the initial operation of the Generation System. Thereafter, FMCS shall have the right to periodically inspect or obtain a copy of the original policy or policies of insurance
  - 5) Evidence of the insurance required in Section F.1. shall state that coverage provided is primary and is not excess to or contributing with any insurance or self-insurance maintained by FMCS.
  - 6) If the Interconnection Customer is self-insured with an established record of self-insurance, the Interconnection Customer may comply with the following in lieu of Section F.1 – 5:
  - 7) Interconnection Customer shall provide to FMCS, at least thirty (30) days prior to the date of initial operation, evidence of an acceptable plan to self-insure to a level of coverage equivalent to that required under section F.1
  - 8) If Interconnection Customer ceases to self-insure to the level required hereunder, or if the Interconnection Customer is unable to provide continuing evidence of its ability to self-insure, the Interconnection Customer agrees to immediately obtain the coverage required under section F.1.

- 9) Failure of the Interconnection Customer or FMCS to enforce the minimum levels of insurance does not relieve the Interconnection Customer from maintaining such levels of insurance or relieve the Interconnection Customer of any liability.

**G) Pre-Certification**

The most important part of the process to interconnect generation with Local and FMCS is safety. One of the key components of ensuring the safety of the public and employees is to ensure that the design and implementation of the elements connected to the electrical power system operate as required. To meet this goal, all of the electrical wiring in a business or residence, is required by the State of Minnesota to be listed by a recognized testing and certification laboratory, for its intended purpose. Typically, seen is as “UL” listed. Since Generation Systems have tended to be uniquely designed for each installation they have been designed and approved by Professional Engineers. This process has been set up to be able to deal with these uniquely designed systems. As the number of Generation Systems installed increase, vendors are working towards creating equipment packages which can be tested in the factory and then will only require limited field testing. This will allow us to move towards “plug and play” installations. For this reason, this interconnection process recognizes the efficiency of “pre-certification” of Generation System equipment packages that will help streamline the design and installation process.

An equipment package shall be considered certified for interconnected operation if it has been submitted by a manufacturer, tested and listed by a nationally recognized testing and certification laboratory (NRTL) for continuous utility interactive operation in compliance with the applicable codes and standards. Presently generation paralleling equipment that is listed by a nationally recognized testing laboratory as having met the applicable type-testing requirements of UL 1741 and IEEE 929 shall be acceptable for interconnection without additional protection system requirements. An “equipment package” shall include all interface components including switchgear, inverters, or other interface devices and may include an integrated generator or electric source. If the equipment package has been tested and listed as an integrated package which includes a generator or other electric source, it shall not require further design review, testing or additional equipment to meet the certification requirements for interconnection. If the equipment package includes only the interface components (switchgear, inverters, or other interface devices), then the Interconnection Customer shall show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and consistent with the testing and listing specified for the package. Provided the generator or electric source combined with the equipment package is consistent with the testing and listing performed by the nationally recognized testing and certification laboratory, no further design review, testing or additional equipment shall be required to meet the certification requirements of this interconnection procedure. A certified equipment package does not include equipment provided by FMCS.

The use of Pre-Certified equipment does not automatically qualify the Interconnection Customer to be interconnected to FMCS. An application will still need to be submitted and an interconnection review may still need to be performed, to determine the compatibility of the Generation System with FMCS.

**H) Confidential Information**

Except as otherwise agreed, each Party shall hold in confidence and shall not disclose confidential information, to any person (except employees, officers, representatives and agents, who agree to be bound by this section). Confidential information shall be clearly marked as such on each page or otherwise affirmatively identified. If a court, government agency or entity with the right, power, and authority to do so, requests or requires either Party, by subpoena, oral disposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirements(s) so that the other Party may seek an appropriate protective order or waive compliance with the terms of this Agreement. In the absence of a protective order or waiver the Party shall disclose such confidential information which, in the opinion of its counsel, the party is legally compelled to disclose. Each Party will use reasonable efforts to obtain reliable assurance that confidential treatment will be accorded any confidential information so furnished.

**I) Non-Warranty.**

Neither by inspection, if any, or non-rejection, nor in any other way, does FMCS give any warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any structures, equipment, wires, appliances or devices owned, installed or maintained by the Applicant or leased by the Applicant from third parties, including without limitation the Generation System and any structures, equipment, wires, appliances or devices pertinent thereto.

**Required Documents**

The chart below lists the documents required for each type and size of Generation System proposed for interconnection.

Find your type of Generation System interconnection, across the top, then follow the chart straight down, to determine what documents are required as part of the interconnection process.

GENERATION INTERCONNECTION DOCUMENT SUMMARY					
Open Transfer	Quick Closed Transfer	Soft Loading Transfer	Extended Parallel Operation		
			QF facility <40kW	Without Sales	With Sales
FMCS Interconnection Process (This document)					
FMCS Distributed Generation Interconnection Requirements					
FMCS Generation Interconnection Application					
		FMCS Engineering Data Submittal FMCS Engineering Studies Information			
		FMCS Interconnection Agreement			
					MISO / FERC
					PPA

There are several documents which may be required for the interconnection process. The required documents may be obtained from the FMCS website at: <http://www.fmcs.coop> and selecting the “Renewable Energy” link. These may include the following:

- FMCS Interconnection Process for Distributed Generation Systems (This document)
- FMCS Distributed Generation Interconnection Requirements
- FMCS Generation Interconnection Application
- FMCS Engineering Data Submittal
- FMCS Cogeneration Rules Implementing 216B.164
- FMCS Cooperative Agreement for Cogeneration and Small Power Production Facilities

For Generation Systems over 40 kW, involvement of other entities or agreements may be required:

- MISO = Midwest Independent System Operator, [www.misoenergy.org](http://www.misoenergy.org)
- FERC = Federal Energy Regulatory Commission, [www.ferc.gov](http://www.ferc.gov)
- PPA = Power Purchase Agreement

## Process for Interconnection

### Step 1 Application (By Applicant)

Once a decision has been made by the Applicant, that they would like to interconnect a Generation System with FMCS, the Applicant shall supply FMCS with the following information:

- 1) Completed Generation Interconnection Application (Appendix C), including;
  - a) One-line diagram showing;
    - i) Protective relaying.
    - ii) Point of Common Coupling.
  - b) Site plan of the proposed installation.
  - c) Proposed schedule of the installation.
- 2) Payment of the application fee, according to the following sliding scale.

**Generation Interconnection Application Fees**

<b>Interconnection Type</b>	<b>≤ 20kW</b>	<b>&gt;20kW &amp; ≤250kW</b>	<b>&gt;250kW &amp; ≤500kW</b>	<b>&gt; 500 kW &amp; ≤1000kW</b>	<b>&gt;1000 kW</b>
<b>Open Transfer</b>	\$0	\$0	\$0	\$100	\$100
<b>Quick Closed</b>	\$0	\$100	\$100	\$250	\$500
<b>Soft Loading</b>	\$100	\$250	\$500	\$500	\$1000
<b>Inverter</b>	\$0	\$250	\$1000	\$1000	\$1500
<b>Other Extended Parallel Systems</b>	\$100	\$500	\$1500	\$1500	\$1500

This application fee is to contribute to the FMCS's labor costs for administration, review of the design concept and preliminary engineering screening for the proposed Generation System interconnection.

For the Application Fees chart, above;

The size (kW) of the Generation System is the total maximum Nameplate Capacity of the Generation System.

**Step 2 Preliminary Review (By FMCS)**

Within 15 business days of receipt of all the information listed in Step 1, the FMCS Generation Interconnection Coordinator shall respond to the Applicant with the information listed below. (If the information required in Step 1 is not complete, the Applicant will be notified, within 10 business days of what is missing and no further review will be completed until the missing information is submitted. The 15-day clock will restart with the new submittal)

As part of Step 2 the proposed Generation System will be screened to see if additional Engineering Studies are required. The base screening criteria is listed in the general information section of this document.

- 1) A single point of contact with FMCS for this project. (Generation Interconnection Coordinator)
- 2) Approval or rejection of the generation interconnection request.
  - a) Rejection – FMCS shall supply the technical reasons, with supporting information, for rejection of the interconnection Application.
  - b) Approval - An approved Application is valid for 1 year from the date of the approval.
- 3) If additional specialized engineering studies are required for the proposed interconnection, the following information will be provided to the Applicant. Typical Engineering Studies are outlined in Appendix D. The costs to the Applicant, for these studies shall be not exceed the values shown in the following table for pre-certified equipment.

<b>Generation System Size</b>	<b>Engineering Study Maximum Costs</b>
<20kW	\$0
20kW – 100kW	\$500
100kW – 250kW	\$1000
>250kW or not pre-certified equipment	Actual costs

- a) General scope of the engineering studies required.
  - b) Estimated cost of the engineering studies.
  - c) Estimated duration of the engineering studies.
  - d) Additional information required to allow the completion of the engineering studies.
  - e) Study authorization agreement.
- 4) Comments on the schedule provided.

- 5) If the rules of MISO (Midwest Independent System Operator) require that this interconnection request be processed through the MISO process, the Generation Interconnection Coordinator will notify the Applicant that the generation system is not eligible for review through the FMCS process.

**Step 3 Go-No Go Decision for Engineering Studies (By Applicant)**

In this step, the Applicant will decide whether or not to proceed with the required engineering studies for the proposed generation interconnection. If no specialized engineering studies are required by FMCS, FMCS and the Applicant will automatically skip this step.

If the Applicant decides NOT to proceed with the engineering studies, the Applicant shall notify FMCS’s Generation Interconnection Coordinator, so other generation interconnection requests in the queue are not adversely impacted. Should the Applicant decide to proceed, the Applicant shall provide the following to FMCS’s Generation Interconnection Coordinator:

- 1) Payment required by FMCS for the specialized engineering studies.
- 2) Additional information requested by FMCS to allow completion of the engineering studies.

**Step 4 Engineering Studies (By FMCS)**

In this step, FMCS will be completing the specialized engineering studies for the proposed generation interconnection, as outlined in Step 2. These studies should be completed in the time frame provided in step 2, by FMCS. It is expected that FMCS shall make all reasonable efforts to complete the Engineering Studies within the time frames shown below. If additional time is required to complete the engineering studies the FMCS Generation Interconnection Coordinator shall notify the Applicant and provide the reasons for the time extension. Upon receipt of written notice to proceed, payment of applicable fee, and receipt of all engineering study information requested by FMCS in step 2, FMCS shall initiate the engineering studies.

<b>Generation System Size</b>	<b>Engineering Study Completion</b>
<20kW	20 working days
20kW – 250kW	30 working days
250kW – 1MW	40 working days
> 1MW	90 working days

Once it is known by FMCS that the actual costs for the engineering studies will exceed the estimated amount by more than 25%, then the Applicant shall be notified. FMCS shall then provide the reason(s) for the studies needing to exceed the original estimated amount and provide an updated estimate of the total cost for the engineering studies. The Applicant shall be given the option of either withdrawing the application, or paying the additional estimated amount to continue with the engineering studies.

**Step 5 Study Results and Construction Estimates (By FMCS)**

Upon completion of the specialized engineering studies, or if none was necessary, the following information will be provided to the Applicant.

- 1) Results of the engineering studies, if needed.
- 2) Monitoring & control requirements for the proposed generation.
- 3) Special protection requirements for the Generation System interconnection.
- 4) Comments on the schedule proposed by the Applicant.
- 5) Distributed Generation distribution constrained credits available
- 6) Interconnection Agreement (if applicable).
- 7) Cost estimate and payment schedule for required FMCS work, including, but not limited to;
  - a) Labor costs related to the final design review.
  - b) Labor & expense costs for attending meetings
  - c) Required Dedicated Facilities and other FMCS modification(s).
  - d) Final acceptance testing costs.

**Step 6 Final Go-No Go Decision (By Applicant)**

In this step, the Applicant shall again have the opportunity to indicate whether or not they want to proceed with the proposed generation interconnection. If the decision is NOT to proceed, the Applicant will notify FMCS's Generation Interconnection Coordinator, so that other generation interconnections in the queue are not adversely impacted. Should the Applicant decide to proceed, a more detailed design, if not already completed by the Applicant, must be done, and the following information is to be supplied to FMCS's Generation Interconnection Coordinator:

- 1) Applicable up-front payment required by FMCS, per Payment Schedule, provided in Step 5. (if applicable)
- 2) Signed Interconnection Agreement (if applicable).

- 3) Final proposed schedule, incorporating FMCS comments. The schedule of the project should include such milestones as foundations poured, equipment delivery dates, all conduit installed, cutover (energizing of the new switchgear/transfer switch), FMCS work, relays set and tested, preliminary vendor testing, final FMCS acceptance testing, and any other major milestones.
- 4) Detailed one-line diagram of the Generation System, including the generator, transfer switch/switchgear, service entrance, lockable and visible disconnect, metering, protection and metering CT's / VT's, protective relaying and generator control system.
- 5) Detailed information on the proposed equipment, including wiring diagrams, models and types.
- 6) Proposed relay settings for all interconnection required relays.
- 7) Detailed site plan of the Generation System.
- 8) Drawing(s) showing the monitoring system (as required per table 5A and section 5 of the "FMCS Distributed Generation Interconnection Requirements". Including a drawing which shows the interface terminal block with FMCS monitoring system.
- 9) Proposed testing schedule and initial procedure, including:
  - a) Time of day (after-hours testing required?).
  - b) Days required.
  - c) Testing steps proposed.

### **Step 7 Final Design Review (By FMCS)**

Within 15 business days of receipt of the information required in Step 6, FMCS's Generation Interconnection Coordinator will provide the Applicant with an estimated time table for final review. If the information required in Step 6 is not complete, the Applicant will be notified, within 10 business days of what information is missing. No further review may be completed until the missing information is submitted. The 15-business day clock will restart with the new submittal. This final design review shall not take longer than 15 additional business days to complete, for a total of 30 business days.

During this step, FMCS shall complete the review of the final Generation System design. If the final design has significant changes from the Generation System proposed on the original Application which invalidate the engineering studies or the preliminary engineering screening, the Generation System Interconnection Application request may be rejected by FMCS and the Applicant may be requested to reapply with the revised design.

Upon completion of this step the Generation Interconnection Coordinator shall supply the following information to the Applicant.

- 1) Requested modifications or corrections of the detailed drawings provided by the Applicant.
- 2) Approval of and agreement with the Project Schedule. (This may need to be interactively discussed between the Parties, during this Step)
- 3) Final review of Distributed Generation Credit amount(s) (where applicable).
- 4) Initial testing procedure review comments. (Additional work on the testing process will occur during Step 8, once the actual equipment is identified)

**Step 8 Order Equipment and Construction (By Both Parties)**

The following activities shall be completed during this step. For larger installations this step will involve much interaction between the Parties. It is typical for approval drawings to be supplied by the Applicant to FMCS for review and comments. It is also typical for FMCS to require review and approval of the drawings that cover the interconnection equipment and interconnection protection system. If FMCS also requires remote control and/or monitoring, those drawings are also exchanged for review and comment.

By the Applicant's personnel:

- 1) Ordering of Generation System equipment.
- 2) Installing Generation System.
- 3) Submit approval drawings for interconnection equipment and protection systems, as required by FMCS.
- 4) Provide final relay settings provided to FMCS.
- 5) Submit Completed and signed Engineering Data Submittal form.
- 6) Submit proof of insurance, as required by FMCS tariff(s) or interconnection agreements.
- 7) Submit required State of Minnesota electrical inspection forms ("blue Copy) filed with FMCS.
- 8) Inspecting and functional testing Generation System components.
- 9) Work with FMCS personnel and equipment vendor(s) to finalize the installation testing procedure.

By FMCS personnel:

- 1) Ordering any necessary FMCS equipment.
- 2) Installing and testing any required equipment.
  - a) Monitoring facilities.
  - b) Dedicated Equipment.
- 3) Assisting Applicant's personnel with interconnection installation coordination issues
- 4) Providing review and input for testing procedures.

### **Step 9 Final Tests (By FMCS / Applicant)**

(Due to equipment lead times and construction, a significant amount of time may take place between the execution of Step 8 and Step 9.) During this time the final test steps are developed and the construction of the facilities are completed.

Final acceptance testing will commence when all equipment has been installed, all contractor preliminary testing has been accomplished and all Area EPS preliminary testing of the monitoring and dedicated equipment is completed. One to three weeks prior to the start of the acceptance testing of the generation interconnection the Applicant shall provide, a report stating;

- that the Generation System meets all interconnection requirements.
- all contractor preliminary testing has been completed.
- the protective systems are functionally tested and ready.
- and provides a proposed date that the Generation System will be is ready to be energized and acceptance tested.

For non-type certified systems a Professional Electrical Engineer registered in the State of Minnesota is required to provide this formal report.

For smaller systems scheduling of this testing may be more flexible, as less testing time is required than for larger systems.

In many cases, this testing is done after hours to ensure no typical business-hour load is disturbed. If acceptance testing occurs after hours, FMCS's labor will be billed at overtime wages. During this testing, FMCS will typically run three different tests. These tests can differ depending on which type of communication / monitoring system(s) FMCS decides to install at the site.

For, problems created by FMCS or any FMCS equipment that arise during testing, FMCS will fix the problem as soon as reasonably possible. If problems arise during testing which are caused by the Applicant or Applicant's vendor or any vendor supplied or installed equipment, the FMCS will leave the project until the problem is resolved. Having the testing resume will then be subject to FMCS personnel time and availability.

### **Step 10 (By FMCS)**

After all FMCS's acceptance testing has been accomplished and all requirements are met, the FMCS shall provide written approval for normal operation of the Generation System interconnection, within 3 business days of successful completion of the acceptance tests.

### **Related Documents:**

There are several documents which may be required for the interconnection process. The required documents may be obtained from the FMCS website at: <http://www.fmcs.coop> and selecting the “Renewable Energy” link.

They are as follows;

- Distributed Generation Interconnection Requirements
- FMCS Generation Interconnection Application Form.
- Engineering Data Submittal Form. This will be sent to you later in the process if necessary.
- Engineering Studies: Brief description of the types of possible Engineering Studies that may be required for the review of the Generation System interconnection. This will be sent to you later in the process if necessary.
- Cooperative Agreement for Cogeneration and Small Power Production Facilities— this will be completed with you toward the end of the process.

