

# **Engineering Studies for Generation Interconnection Process**

**For generation greater than 40 kW connecting to 100 kV and below**

## **Southern Illinois Power Cooperative (SIPC)**

The process for evaluating new generation interconnections to the SIPC member/owner distribution systems (< 15 kV) or the SIPC transmission system (34.5 kV or 69 kV) begins with the completion of an interconnection application and application deposit. Generators larger than 5 MVA capacity are required to interconnect at transmission level voltage. The process shall then consist of performing the following studies: Feasibility Study, Impact Study, and an optional Facility Study.

### ***Feasibility Study***

A Feasibility Study is a screening process that shall be completed to determine any adverse system impacts of the new generation facility including preliminary short circuit, power flow, grounding and system protection issues. If the Feasibility Study shows the potential for adverse system impacts, the review process shall proceed to the Impact Study.

SIPC coordination with Midcontinent Independent System Operator (MISO) will be included to determine potential concerns with the Bulk Electric System (BES) and if additional MISO studies will be required. If MISO studies are required, information about their study process can be found here:  
<https://www.misoenergy.org/planning/generator-interconnection/>

### ***Impact Study***

Depending on the size and type of generation, interconnection voltage level, load of the distribution and transmission system, and location of the interconnection, a determination will be made of which engineering studies will be required for the Impact Study. The engineering studies shall include, but are not limited to, the following:

- Power Flow – Determine if the distribution/transmission system will experience voltage or line loading issues under normal and contingency conditions. This will include a review for reverse power flow impacts from the proposed generation.
- Short Circuit Analysis – The distribution/transmission system will be studied to determine that the proposed generation will not cause overstressing of any equipment and system faults will be properly cleared.
- Stability Analysis – The distribution/transmission system will be studied to determine that the proposed generation will not cause system instability issues.
- Voltage Flicker Analysis – Determine if the proposed generator will cause unacceptable voltage swings. Review the impacts of capacitor and voltage regulation device switching.
- Protection Coordination – Review impact of coordination between the proposed generation and the existing system. Evaluate fault clearing times and determine if existing protection settings will need to be modified.
- Risk of Islanding – Determine if the proposed generation could function as an unintentional island.

The Impact Study report shall provide the following information:

- Identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection.
- Identification of any thermal overload or voltage limit violations resulting from the interconnection.
- Identification of any instability or inadequately damped response to system disturbances resulting from the interconnection.

- Description and non-binding, good faith estimated cost of facilities required to interconnect the generating facility and to address the identified issues. Good faith estimated costs are valid for 60 business days.

The Interconnection Customer will be provided with a scope of work and estimated cost to have the Impact Study completed. Upon receipt of study cost estimate, Interconnection Customer shall have 15 business days to provide payment to SIPC. Upon receipt of the Impact Study, SIPC shall charge and Interconnection Customer shall pay the actual costs of the Impact Study. Any difference between the deposit and the actual cost of the study shall be paid by or refunded to Interconnection Customer, as appropriate.

### ***Facility Study (Optional)***

If requested by the Interconnection Customer, the preparation of a detailed Facility Study will determine a more accurate cost estimate and schedule for the required improvements. While the Impact Study identifies system impacts and planning level interconnection costs, the Facility Study will determine the equipment specifications and the detailed cost associated with installing the required equipment.

### ***Costs***

The cost of preparing the Feasibility Study and the Impact Study could range from \$5,000 to \$30,000 for distribution system studies and upwards of \$50,000 for transmission system studies. These costs are determined on an individual basis, and are based on generator size and type, interconnection voltage level, location, and defined scope of work and schedule. An Impact Study scope of work and cost estimate will be provided to the Interconnection Customer.

A minimum fee of \$10,000 will be required by the Interconnection Customer to initiate the detailed Facility Study, which will include distribution/transmission owner and consultant efforts. The Interconnection Customer will be responsible for actual study costs. A Facility Study scope of work and cost estimate will be provided to the Interconnection Customer.

Full payment will be required prior to the initiation of engineering studies. The application fee will be applied towards these studies and interconnection equipment. If actual costs are less than estimated, then the customer will receive a refund for the difference. Additionally, if actual costs are greater than estimated, the interconnection customer will be required to make an additional payment to cover the total costs. The cost estimates referenced include the cost of work performed by the SIPC planning staff and any other participants, including consultants and distribution system staff, involved in the coordinated study efforts.

### ***Estimated Timelines***

For each step of the SIPC generation interconnection process, estimated timelines are shown below. These timelines may vary for each interconnection application and SIPC's queue depth.

- Application Review: 10-15 business days
  - Feasibility Study: 15-30 business days
    - Impact Study: 15-60 business days
      - Facility Study (optional): 15-60 business days
        - Interconnection Agreement: 20-60 business days

### ***Queue***

The Interconnection Customer will receive an official queue position after a valid application has been submitted and the appropriate fee has been received by SIPC. Once the Impact Study is complete, the Interconnection Customer has 60 business days to sign an Interconnection Agreement and pay the estimated incurred project costs or the project is withdrawn from the queue. If the IC cannot sign an IA within the 60 business days, but wishes to maintain their queue position, a fee of \$1000/MW/month will be applied. If the interconnect request is modified by the Interconnection Customer, the project is withdrawn from the queue and has to re-apply.