

# Generator Interconnection Process

Wholesale Distribution Independent Study Process  
(ISP)



**This presentation summarizes the FERC-approved Generator Interconnection Procedures (GIP) in Attachment I of PG&E's Wholesale Distribution Tariff (WDT). The presentation does not replace the tariff. PG&E advises customers to become familiar with the tariff and use this presentation only as a supplement to it.**



**Generation Interconnection Services**

Updated: September 18, 2012



# Independent Study Process (ISP)

## Definition of ISP Process

An ISP evaluates an interconnection request for a generating facility independently of other projects. An ISP involves a System Impact Study and a Facilities Impact Study, each of which must be completed within 60 business days. To become eligible for an ISP, you must pass an Electrical Independence Test (EIT) after you apply. This two-part test involves PG&E's and CAISO's evaluation of the interconnection studies of earlier-queued generating facilities to which your facility is electrically related.

The ISP may take six to 12 months. You may apply for an ISP at any time. But if your project fails either part of the EIT, you will be required to wait until:

- The next Cluster window (see section 4.1 of the Generation Interconnection Procedures) to apply under the Cluster Study Process, or
- 12 months from the date you were informed of the failure of the EIT, to reapply under the ISP for a similar point of interconnection



# Independent Study Process

<b>Tariff section</b>	3
<b>Applicability</b>	Electric Independence Test
<b>MW limit</b>	No limit
<b>Application fee</b>	\$50K plus \$1K/MW (max \$250K)

<b>Study</b>	<b>Timing</b>	<b>Fee</b>
<b>System Impact Study</b>	60 BD	Included in app fee
<b>Facilities Study</b>	60 BD	Included in app fee

**BD – Business Day**



# Wholesale Distribution Generation Independent Study Process



- **PG&E's distribution voltage level: facilities operating below 60 kV**
  - **Governed by PG&E's Wholesale Distribution Tariff (WDT)**
  - **All applications must be submitted to PG&E**
  - **This presentation supplements WDT Attachment I**



# Complete Distribution ISP Interconnection Application



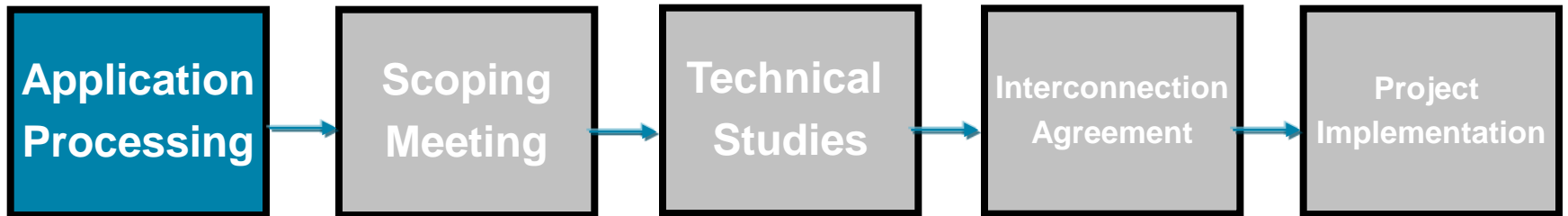
## Include:

- **Completed application (with Appendix A)**
- **Site plan diagram**
- **Single-Line Diagram**
- **Application fee\***
- **Site control document**

**\*Application fee paid after PG&E issues invoice letter**



# Distribution ISP Interconnection Application



- **Submit complete interconnection application\* online at <http://pge.com/wholesale/apply>**
- **Direct inquiries to the Application Desk at [WholesaleGen@pge.com](mailto:WholesaleGen@pge.com)**

**\*GIS will send your invoice letter with instructions on wire payment after we receive your interconnection request**



# Application Processing Timeline



Process Milestone	Duration	Responsible Party
Submit application	Clock start	Customer
Deem application complete or provide notice of outstanding items	10 BD	PG&E
Provide outstanding items	10 BD from deemed incomplete notification or 20 BD from close of cluster application window	Customer
Notify customer of whether application is complete	5 BD after additional information is provided	PG&E
Deem application complete		PG&E

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# Electrical Independence Test (EIT)

The next six slides (8-13) on the EIT refer to interconnections subject to PG&E's filed Wholesale Distribution Tariff (WDT). For more information, please refer to these sections of the WDT:

- **3.1.1 Independent Study Process Screen**
- **3.1.1.1 The ISO's Determination of Electrical Independence for the ISO Grid**
- **3.1.1.2 The Distribution Provider evaluation of Electrical Independence for the Distribution System**

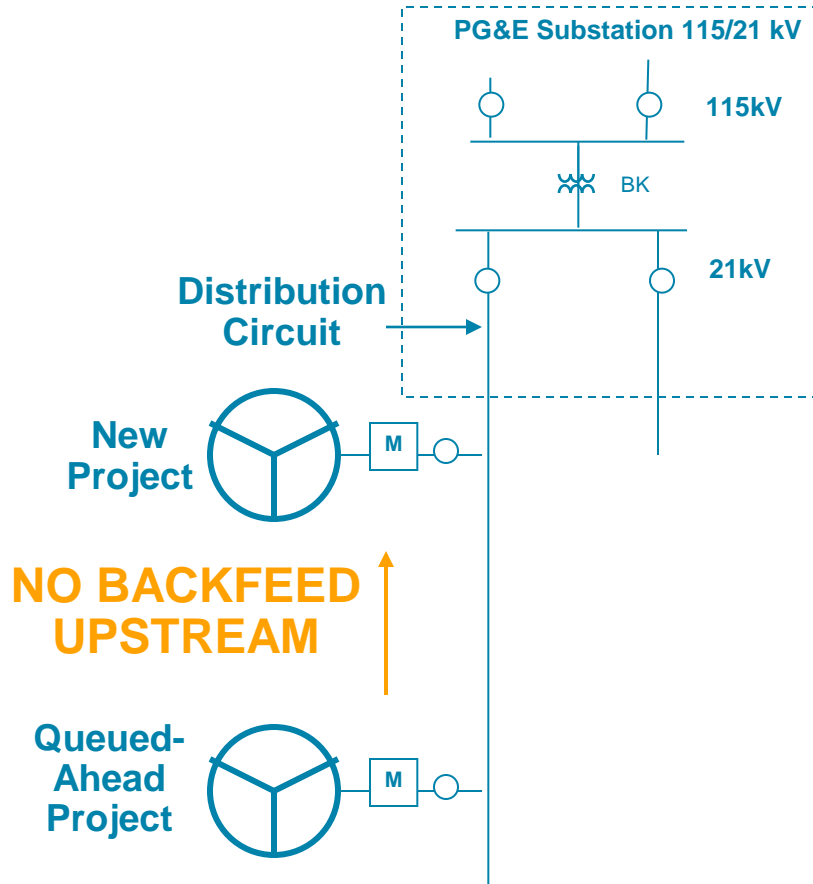


# Electrical Independence Test (EIT)

- For interconnections directly to PG&E's substation, the interconnection request must pass stage 2, scenario 2 or 3
- For interconnections to PG&E's distribution grid (feeder only), the interconnection request must pass stage 1 and one scenario of stage 2
- When conducting the EIT, PG&E will determine relationships between new interconnection requests with queued-ahead requests in the study phase
- When identifying electric output and where it is seen on the electric grid, PG&E will determine the power flow for all load conditions (minimum and maximum)

# Electrical Independence Test (EIT)

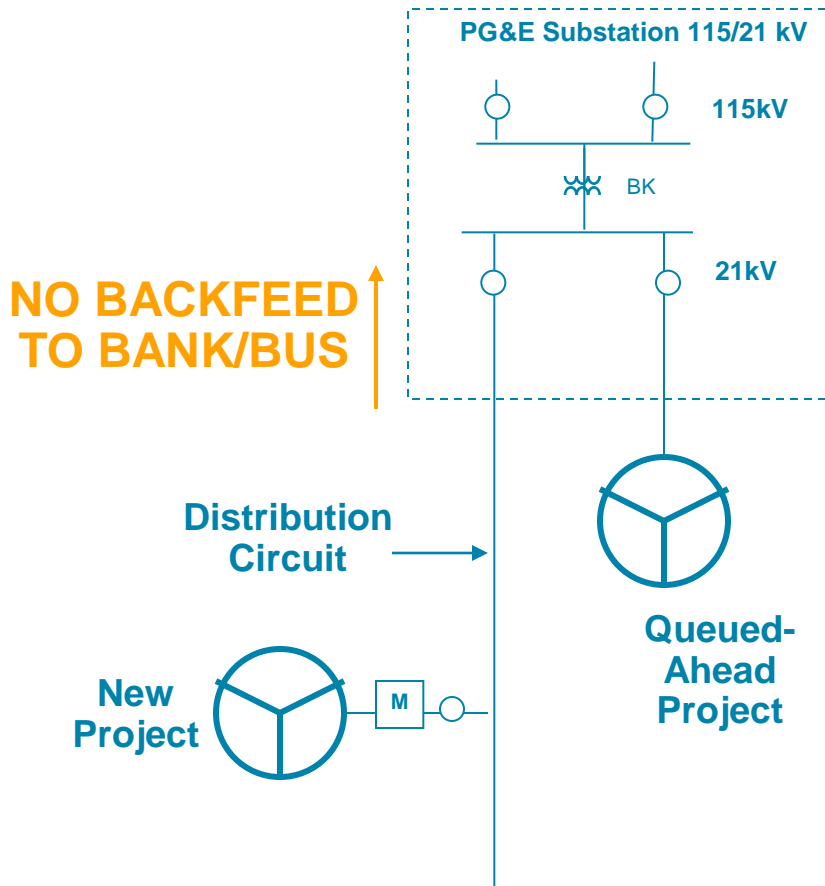
## EIT Guide – Stage 1 (feeder only)



- **New Project** undergoes EIT
- Stage 1 applies to a request for interconnection to a distribution circuit on which there is already a queued-ahead interconnection request
- Stage 1 does not apply to requests proposing interconnection to the distribution substation bus
- If the **New Project** cannot see the electrical output of the queued-ahead interconnection request, then the New Project passes Stage 1 of the EIT. The interconnection request must also pass one scenario of Stage 2.

# Electrical Independence Test (EIT)

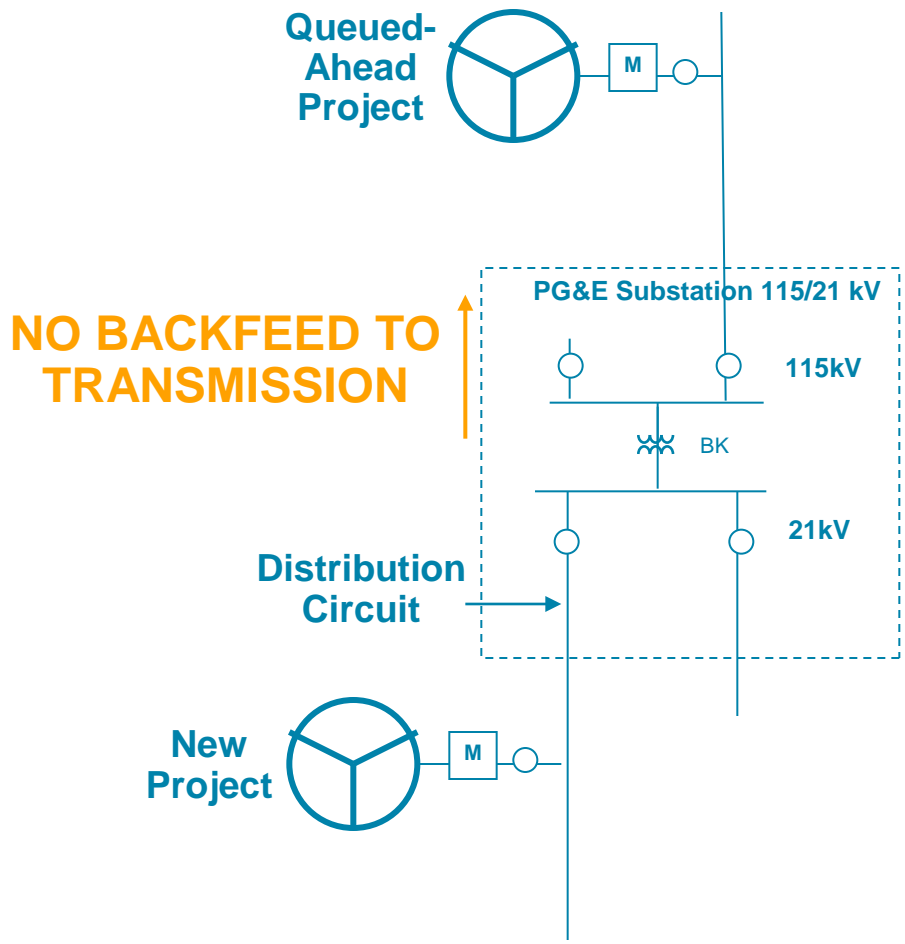
## EIT Guide – Stage 2 - Scenario 1 (feeder only)



- **New Project** undergoes EIT
- **Scenario 1** applies to a distribution substation where the electrical output of a queued-ahead interconnection request is seen on the distribution bus
- **Scenario 1** does not apply to requests proposing interconnection to the distribution substation bus
- If no back feed occurs and **New Project's** electric output is not seen on the distribution bus, then **New Project** passes EIT

# Electrical Independence Test (EIT)

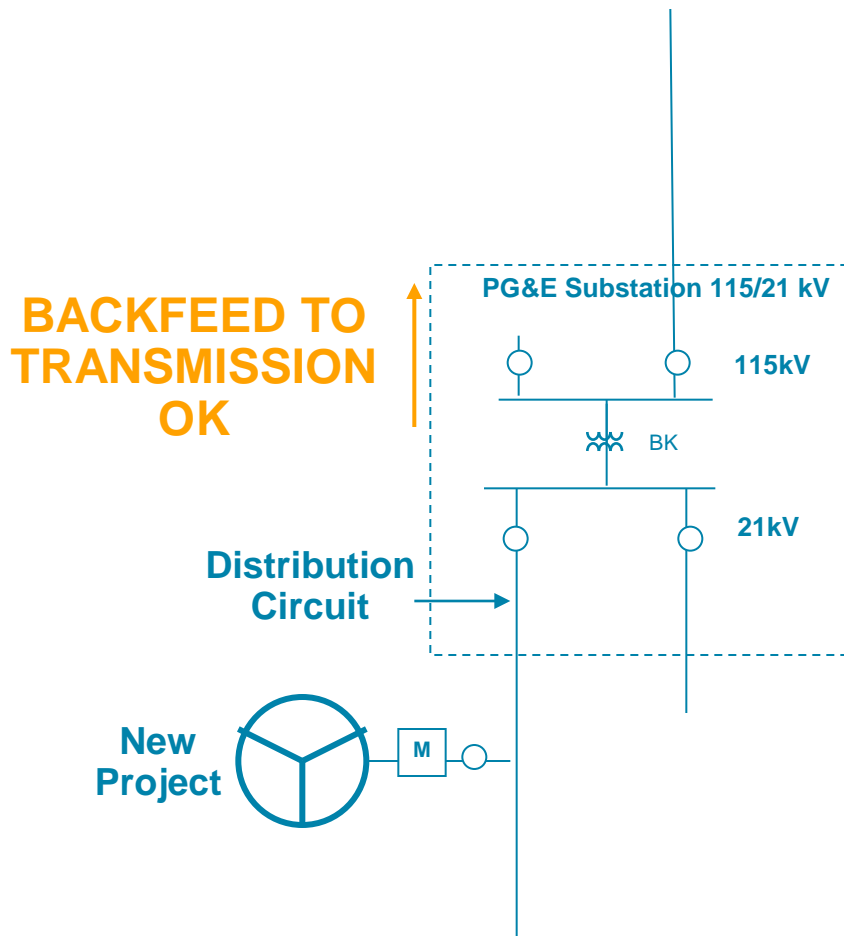
## EIT Guide – Stage 2 - Scenario 2



- **New Project** undergoes EIT for interconnecting directly to either the distribution circuit or the distribution bus
- Scenario 2 applies to a distribution substation where the electrical output of a queued-ahead interconnection request is not seen on the distribution bus, but where the electrical output of a queued-ahead request is seen on the transmission bus or circuit
- If no back feed occurs and the **New Project's** electric output is not seen on the transmission bus and beyond, then the **New Project** passes the EIT

# Electrical Independence Test (EIT)

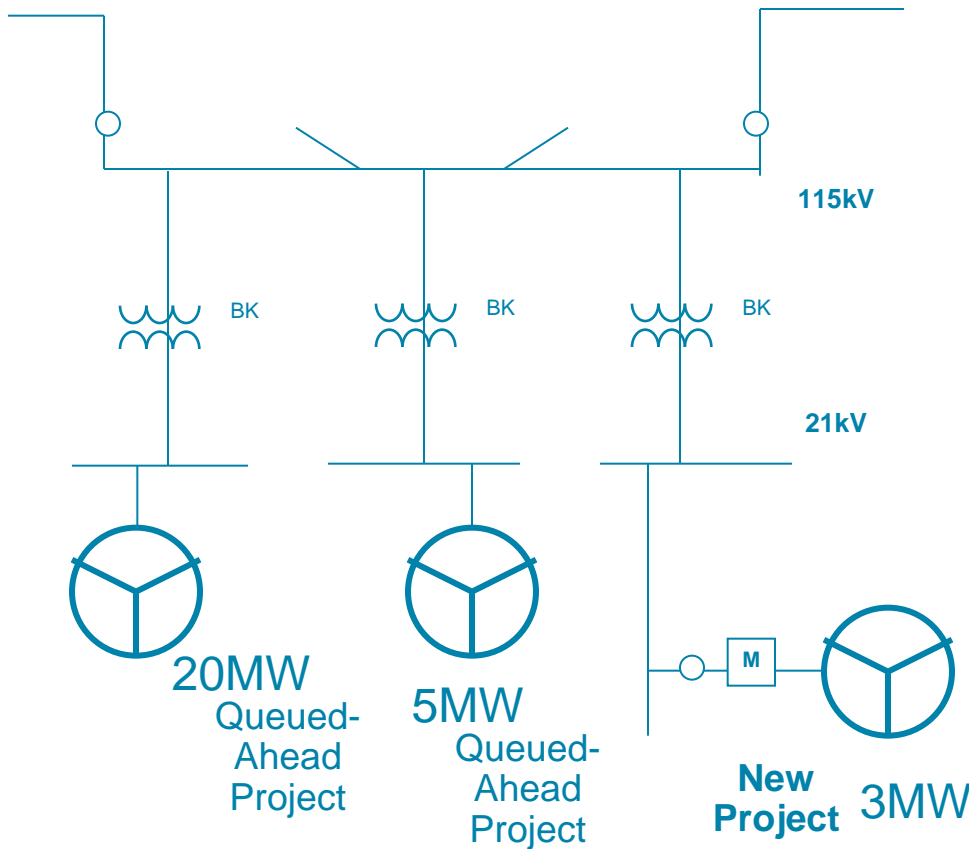
## EIT Guide – Stage 2 – Scenario 3



- **New Project** undergoes EIT for interconnecting directly to either the distribution circuit or the distribution bus
- Scenario 3 applies to a distribution substation where the electrical output of a queued-ahead interconnection request is not seen on either the distribution bus or the transmission bus or circuit
- If back feed occurs but there are no queued-ahead interconnection requests at the distribution substation, then **New Project** passes the EIT

# Electrical Independence Test (EIT)

## Example of passed EIT



- **New Project** undergoes EIT for interconnecting to the distribution circuit
- In this example:
  - The request for interconnecting the queued-ahead 20MW project's electrical output is seen on the transmission bus, but there are no other queued-ahead interconnection requests on the transmission bus or circuit
  - The request for interconnecting the queued-ahead 5MW project's electrical output is seen on the distribution bus but not on the transmission bus
- **New Project's** electrical output is seen on the distribution bus but not on the transmission bus. This project passes Stage 1 and Stage 2 Scenario 2.

All three projects in this case qualify for the Independent Study Process.

# Scoping Meeting Purpose



## Scoping meeting:

- Ensures common understanding of project
- Ensures customer understanding of generator interconnection process
- Secures agreement on point of interconnection and generator size
  - PG&E provides technical system details, limitations and queued-ahead projects
- Advises which process (Independent, Fast Track or Cluster study) customer qualifies for and studies to be conducted
- Determines next steps

Five business days after scoping meeting, customer must confirm point of interconnection and generator size.



# Scoping Meeting



Process Milestone	Duration	Responsible Party
Deem application complete	Clock start	PG&E
Schedule scoping meeting	10 BD	PG&E
Scoping meeting	Scheduled or 60 CD from application window close	Both parties
Designate and confirm point of interconnection	5 BD	Customer
Tender Generator Interconnection Study Process Agreement (GISPA)	10 BD or 60 CD from application window close	PG&E

BD – Business Day    CD – Calendar Day

# Scope of Studies



## Technical studies:

- Show impact of generation on PG&E's electric system
- Show capital improvements to PG&E's electric system required to ensure safety, reliability and integrity of the grid:
  - Generator-specific facilities required for interconnection
  - Distribution upgrades to be triggered by generator
  - Network upgrades to CAISO-controlled grid to be triggered by generator
- Provide schedule and cost estimate for scope of capital improvements



# ISP Qualification Path 1 – Not Qualified



Process Milestone	Duration	Responsible Party
Deem application complete	Clock start	PG&E
Schedule scoping meeting	10 BD from deemed complete or ISP qualification notification	PG&E
ISP “not qualified” notification, scoping meeting	20 BD or at scoping meeting	PG&E
Withdraw interconnection request	10 BD from notification	PG&E
Put interconnection request on hold until next cluster study window	10 BD from notification	Customer

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# ISP Qualification Path 2 – Qualified



Process Milestone	Duration	Responsible Party
Deem application complete	Clock start	PG&E
Schedule scoping meeting	10 BD from deemed complete or ISP qualification notification	PG&E
ISP qualified notification	20 BD or at scoping meeting	PG&E
Hold scoping meeting	10 BD from ISP qualification notification	PG&E
Designate and confirm point of interconnection	5 BD	Customer
Tender System Impact Study (SIS) agreement	15 BD from scoping meeting	PG&E

BD – Business Day



# System Impact Study



Process Milestone	Duration	Responsible Party
Tender SIS agreement	Clock start	PG&E
Execute SIS agreement	30 BD	Customer
Execute SIS agreement	ASAP	PG&E
Provide SIS results	60 BD	PG&E
Post initial posting	30 CD	Customer

BD – Business Day CD – Calendar Day

# Facilities Study



Process Milestone	Duration	Responsible Party
Provide SIS results	Clock start	PG&E
SIS results meeting (optional)	Within 20 BD of SIS results	Customer
Tender facilities study agreement	15 BD or SIS results meeting	PG&E
Execute facilities agreement	30 BD	Customer
Execute facilities agreement	ASAP	PG&E
Provide facilities study results	60 BD	PG&E
Post second posting	120 CD	Customer

BD – Business Day CD – Calendar Day

# Interconnection Agreement



**Small Generator Interconnection Agreement (SGIA) – 20 MW or less**  
**Large Generator Interconnection Agreement (LGIA) – greater than 20 MW**

Process Milestone	Duration	Responsible Party
Provide final study results	Clock start	PG&E
Tender Interconnection Agreement (IA)	30 CD	PG&E
Respond to draft	30 CD	Both
IA negotiated and agreed on	90 CD from clock start	Both
PG&E issues executable IA	15 BD	PG&E
Execute IA	ASAP	Both
Post final posting	On or before start of construction	Customer

BD – Business Day CD – Calendar Day

# Project Implementation



- **Post-Interconnection Agreement, PG&E and customer engineer, design, procure and construct (EPC) electrical interconnection**
  - **PG&E engineers capital improvements per Interconnection Agreement**
  - **Customer engineers electrical system on customer side of meter and any upgrades to be customer-built and deeded**
- **Post-EPC, PG&E and customer coordinate pre-parallel inspection and commissioning to achieve commercial operation**





# Distribution Deliverability Assessment

Customers who apply for interconnection under the Independent Study Process or Cluster Study Process can request that CAISO perform a Deliverability Assessment by selecting “Full Capacity” on the Interconnection Request form submitted to **PG&E**



# Financial Security Postings

Posting Number	Posting Type	Posting Amount	Timing	Phase
Initial	Interconnection facilities and distribution upgrades	Lesser of 20% or \$20K/MW	30 CD	After System Impact Study
	Network upgrades	15% or \$20K/MW or \$7.5M (>20MW)	90 CD	
Second	Interconnection facilities and distribution upgrades	30%	120 CD	After Facilities Study
	Network upgrades	30% or \$1M (<20MW) or \$15M (>20MW)	180 CD	
Third	Interconnection facilities and distribution upgrades	100%	On or before start of construction	After Interconnection Agreement (acquisition of permits)
	Network upgrades	100%		

CD – Calendar Day



# Financial Security Posting Instructions

Links to the following forms can be found on the Additional Resources page of <http://pge.com/wholesale> under: “Wholesale Distribution Financial Postings Resources” including:

- Letters of Credit
- Escrow Agreements
- Surety Bonds
- Guaranty Agreements

**For Certificate of Deposit or Payment Bond Certificates, please contact PG&E to determine acceptable forms**



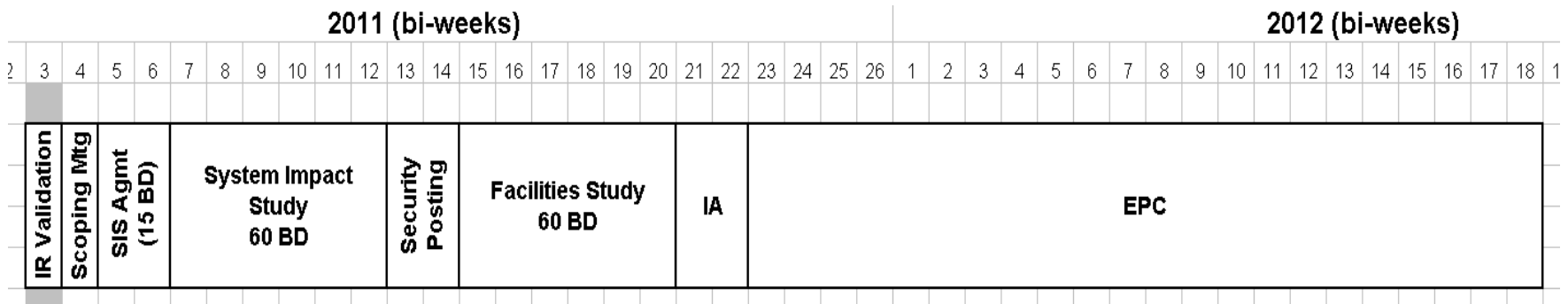
# Interconnection Resources

- **PG&E Wholesale Generation Interconnections website:**  
<http://pge.com/wholesale>
  - **PG&E's Public Distribution (WDT) Queue**
  - **Getting Started Guides**
  - **Application Checklists**
  - **Online Application at <http://pge.com/wholesale/apply>**
- **Questions? Contact [wholesalegen@pge.com](mailto:wholesalegen@pge.com)**



# Appendix 1: Distribution Independent Study Schedule Summary

This diagram is for estimating purposes and assumes immediate customer response.





# Appendix 2: Definitions

**Distribution Upgrades** – Additions, modifications and upgrades to the distribution provider's distribution system at or beyond the point of interconnection that facilitate interconnection of the GF and render the service necessary to effect the Interconnection Customer's wholesale sale of electricity in interstate commerce. Distribution upgrades do not include interconnection facilities.

**Distribution System** – Those non-ISO transmission and distribution facilities owned, controlled and operated by the Distribution Provider that are used to provide distribution service under the Tariff, which facilities and equipment are used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which Distribution Systems operate differ among areas.

**Interconnection Facilities** – The distribution provider's and interconnection customer's interconnection facilities. Interconnection facilities include all facilities and equipment between the generation facility (GF) and the point of interconnection, including any modifications, additions or upgrades necessary to physically and electrically interconnect the GF to the distribution provider's distribution system. Interconnection facilities are sole-use facilities and do not include distribution upgrades or network upgrades.



# Appendix 2: Definitions

**Network Upgrades** – Additions, modifications, and upgrades to the distribution provider's transmission system required at or beyond the point at which the distribution system connects to the distribution provider's transmission system to accommodate the interconnection of the GF to the distribution provider's transmission system. Network upgrades do not include distribution upgrades.

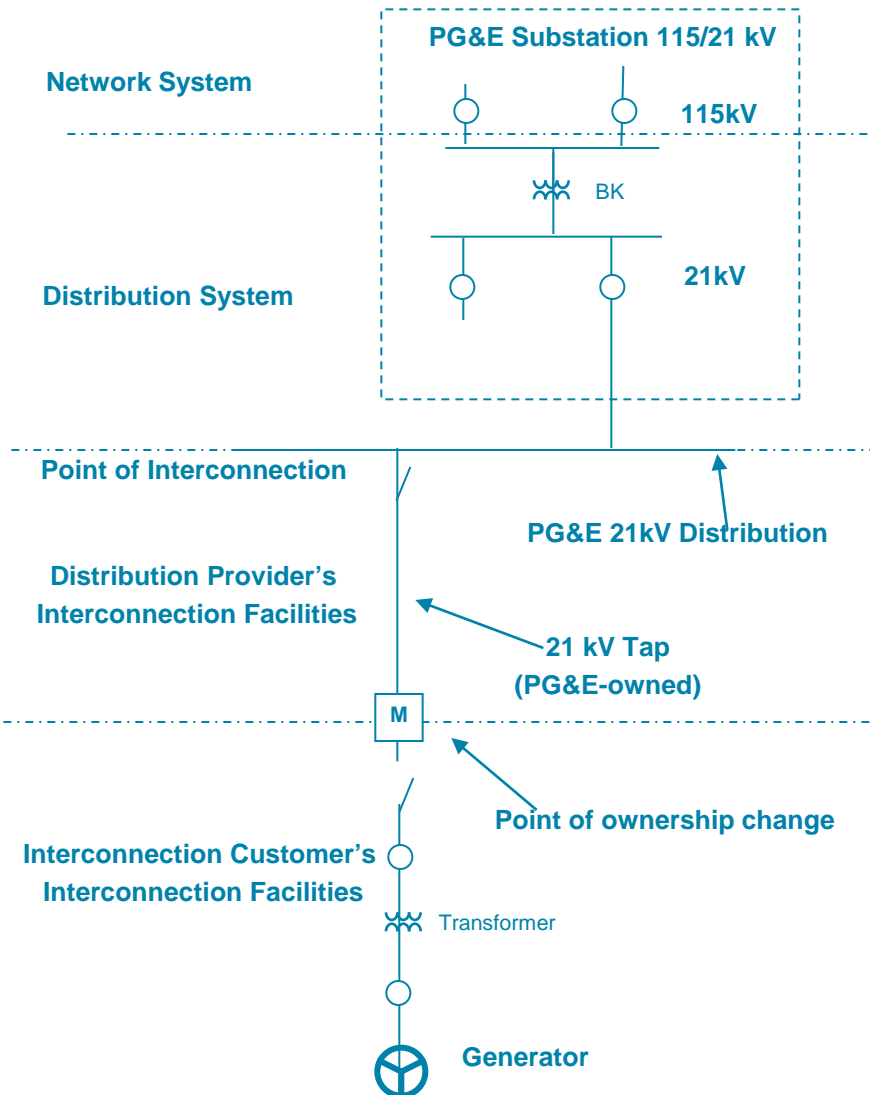
**Point of Interconnection** – The point where the interconnection facilities connect with the distribution provider's distribution system.

**Upgrades** – The required additions and modifications to the distribution provider's transmission system and distribution system at or beyond the point of interconnection. Upgrades may be network upgrades or distribution upgrades. Upgrades do not include interconnection facilities.

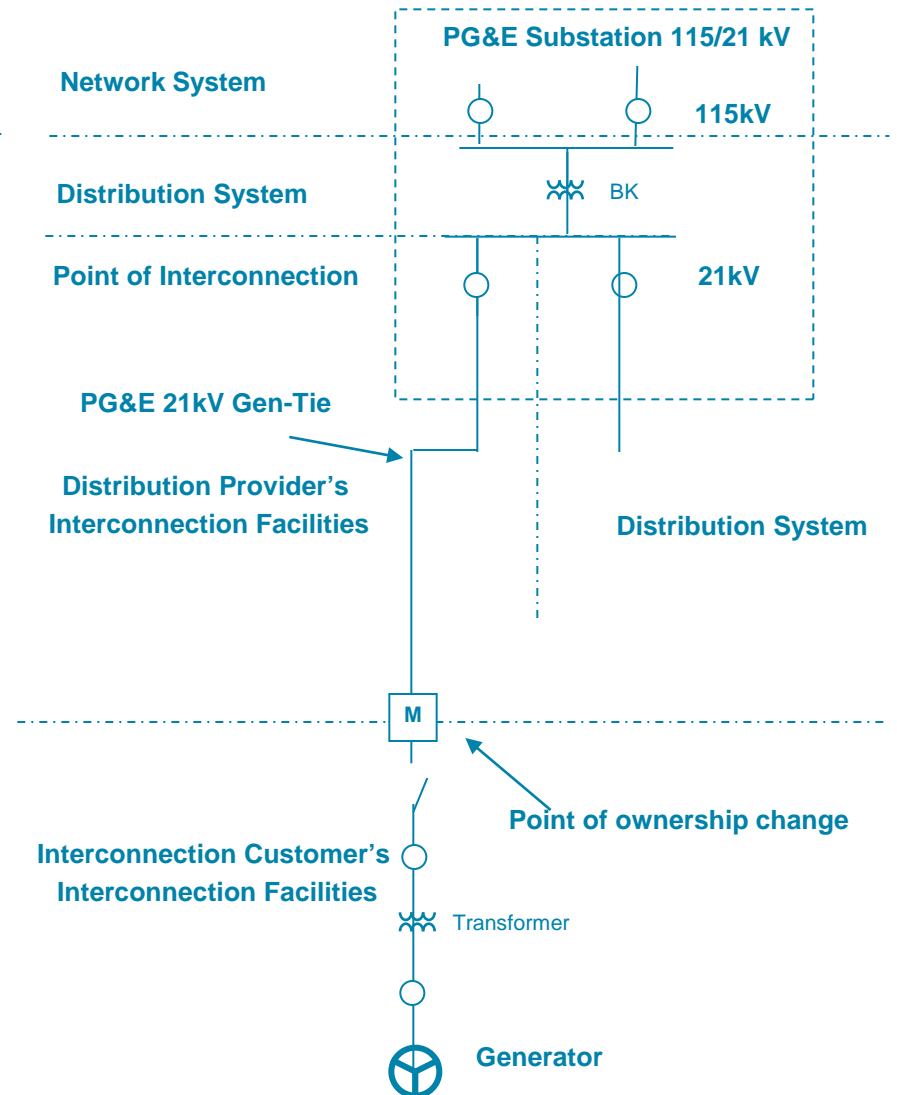


# Appendix 3: Point of Interconnection Illustration

### Simplified Single Line for Tap Interconnection



### Simplified Single Line for Gen-Tie Interconnection





# Thank You

**For more information please contact  
Generation Interconnection Services at  
[wholesalegen@pge.com](mailto:wholesalegen@pge.com)**

