

POWER DELIVERY



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DG Interconnection Guidance Transmission Evaluation





Interconnection Guidance

What is the purpose of Interconnection Guidance (ICG)? Georgia Power's interconnection guidance is optional and intended to provide guidance to customers and Distributed Energy Resource (DER) developers in evaluating DER siting options and identifying potential interconnection constraints. Georgia Power offers three tiers of guidance, each providing additional levels of information to the customer or developer regarding the potential interconnection of a proposed Facility.

ICG is for customers and developers looking to participate in a Georgia Power renewable program; this information is intended to help customers identify, before submitting an application, whether the proposed Facility is likely to face interconnection constraints that could limit or prevent the Facility's ability to meet Georgia Power's program requirements.

Rejection of Bid for System Upgrades Beyond the Georgia Power Distribution Circuit.* In consultation with Staff and the IM, the Company reserves the right to reject any Bid if the Facility would trigger upgrades or modifications beyond the Georgia Power Distribution Circuit or would require upgrades to any substation, transmission line, or upgrades of equipment on an adjacent distribution circuit of another electric service provider. A Bid also may be rejected if (i) the Facility will be interconnected to a Georgia Power Distribution Circuit that originates from a non-Georgia Power-owned substation, and (ii) the cumulative existing and proposed new generation (including the Facility size) on the Georgia Power Distribution Circuit equals or exceeds two (2) MW AC.

**Per 2019 IRP Distributed Generation solicitation program guidelines*



Transmission Evaluation Purpose

To minimize upgrades and modifications beyond the Georgia Power Distribution Circuit, the Transmission evaluation searches for potential of the following undesirable conditions:

- **Affected Systems** – Identification of potential impact to other utilities, which could delay or increase costs of the proposed interconnection
- **Transient Overvoltage** – Slow clearing of the disconnected switches for substation banks that may damage customers' equipment
- **Unintentional Islanding (UI)** – A portion of an electric system containing load and generation is unintentionally isolated from the rest of the electric system, which compromises line worker and public safety, and which may lead to degraded service quality for customers served from within the island



Definitions used with Transmission Evaluations

- **Affected System** – Another utility (Non-GPC entity) whose electric system may be adversely impacted by the proposed interconnection to Georgia Power, requiring upgrade or modification of that utility's electric system
- **Coincident Peak** – Georgia Power's peak load on a substation bank that coincides with the annual system peak
- **Minimum Daylight Loading (MDL)** – Georgia Power's minimum load on a transmission line or distribution substation transformer during a solar facility peak output period (9am to 3pm)
- **Networked Transmission Line** – A transmission line that ties two or more transmission substations
- **Radial Transmission Line** – A transmission line that originates from one transmission substation



Transmission Evaluation Process

- Identify capacity and protection/controls capability available on a transmission line or substation, including existence or non-existence of adequate relaying to prevent Unintentional Islanding
 - Compares Minimum Daylight Loading (MDL) and Coincident Peak loads to proposed and existing generation
 - MDL must be at least two times maximum generator output to avoid anti-islanding protection
- Identify any Affected System that could delay the proposed interconnection due to:
 - Affected System study conducted by the Non-GPC entity
 - Generator paying costs of the Affected System upgrades
 - Affected System upgrade/modification construction by the Non-GPC entity



TRANSMISSION EVALUATION EXAMPLE SCENARIOS

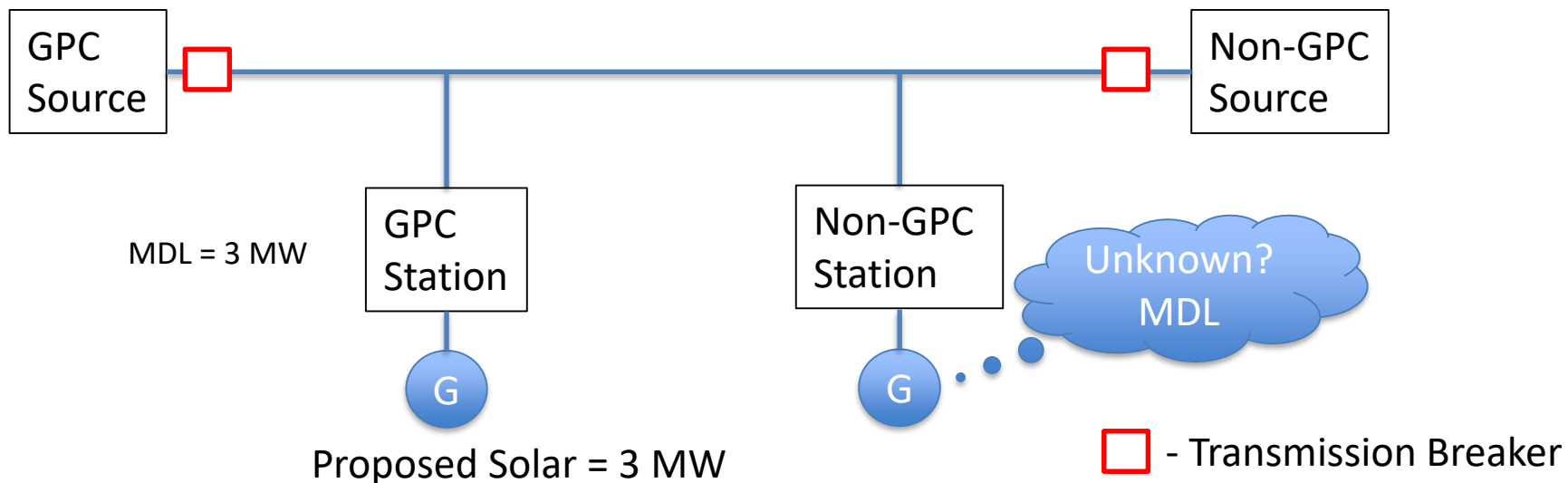
Disclaimer: Georgia Power offers the following Transmission Evaluation examples for informational purposes only. Georgia Power does not warrant or guarantee any particular outcome with respect to its Interconnection Guidance and such Interconnection Guidance is intended to inform, but not replace, the full Interconnection Study of a proposed generation Facility. Interconnection Guidance will provide general information related to the proposed interconnection of certain solar electric generating equipment to Georgia Power's electric distribution system. Such information is based solely on the knowledge and events occurring at the point in time the evaluation was completed by Georgia Power. Interconnecting utility facilities is technically complex and involves numerous considerations including, without limitation, evaluation of the proposed location and equipment, system impact analysis, circuit evaluation, circuit viability verification, and feasibility studies.



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Example Scenario #1 – Networked Transmission Line/non-GPC Source

50% GPC MDL on Transmission Line Rule
(e.g. 50% X 3 MW = 1.5 MW Available = **Resize to 1.5 MW**)

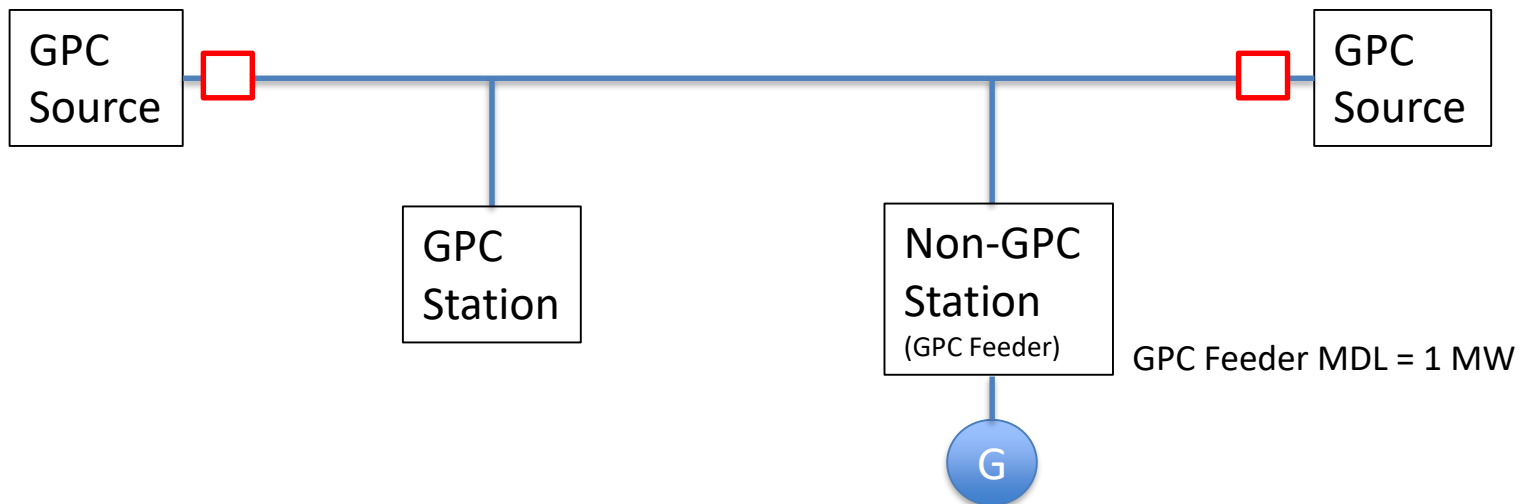




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Example Scenario #2 – Non-GPC Substation

50% GPC MDL on GPC Feeder Rule
(e.g. 50% X 1 MW = 500 kW Available = **Resize to 500 kW**)



 - Transmission Breaker

Proposed Solar = 3 MW



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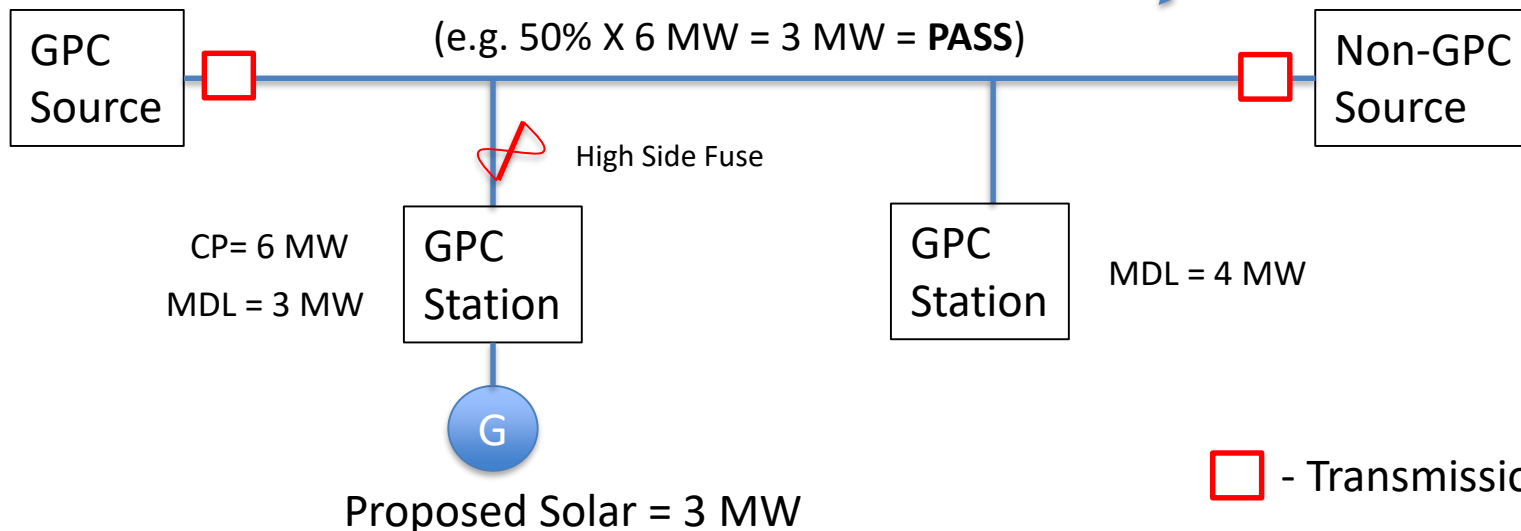
Example Scenario #3 – GPC Substation

50% GPC MDL on Transmission Line
(e.g. 50% X (3 MW + 4 MW) = 3.5 MW Available = **PASS**)

OR

50% GPC Peak Coincident at Station Bank Rule
(e.g. 50% X 6 MW = 3 MW = **PASS**)

Use most restrictive

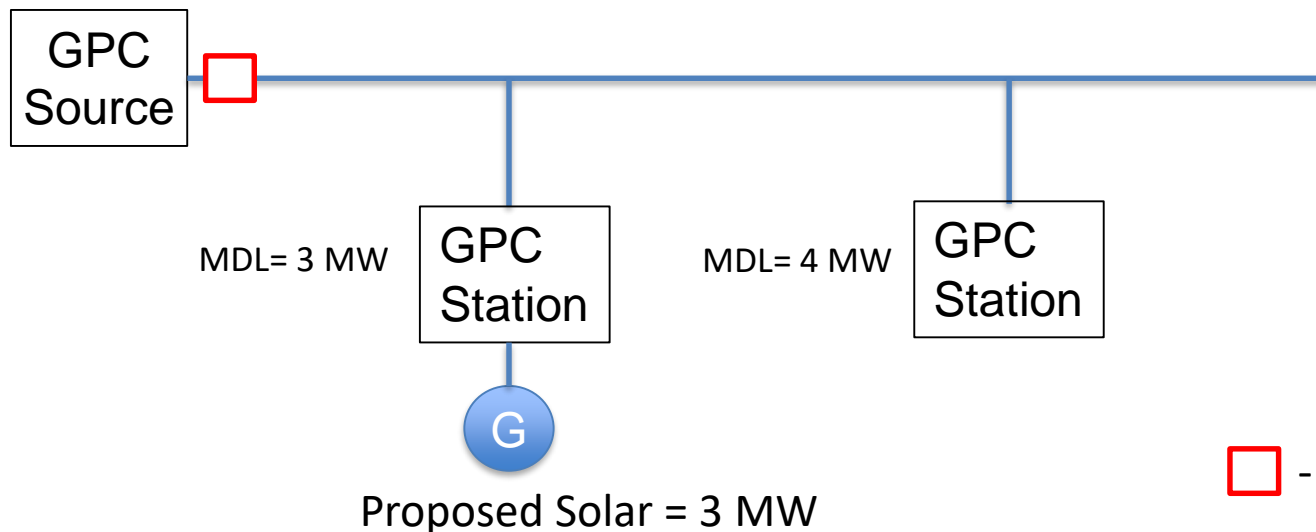




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Example Scenario #4 – Radial Transmission Line

100% MDL on Transmission Line Rule (Radial)
(e.g. (3 MW + 4 MW) = 7 MW Available = **PASS**)

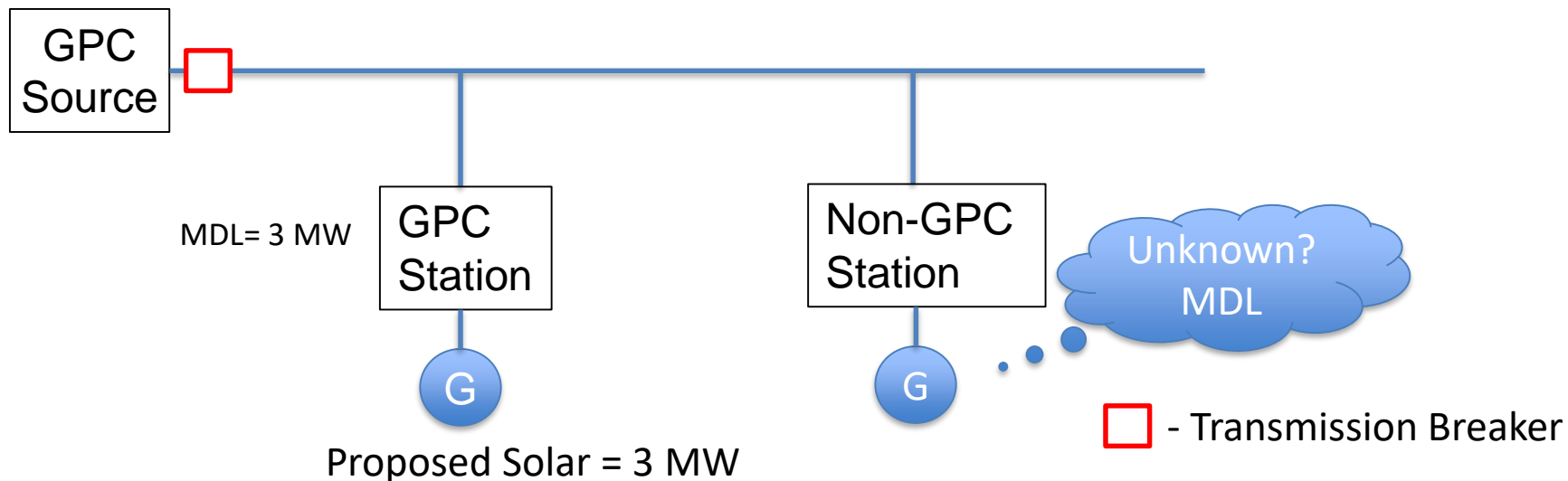




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Example Scenario #5 – Radial Transmission Line

100% MDL on Transmission Line Rule (Radial)
(e.g. 3 MW*100% = 3 MW Available = **PASS**)

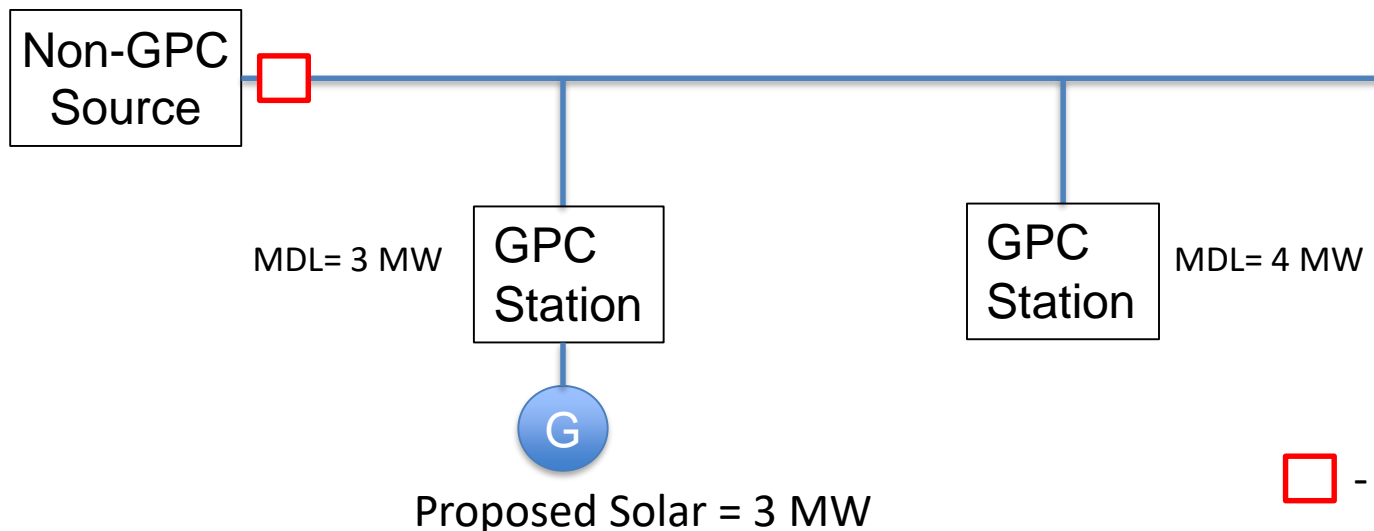




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Example Scenario #6 – Radial Transmission Line

50% MDL on Transmission Line Rule (Radial)
(e.g. 7 MW*50% = 3.5 MW Available = **PASS**)

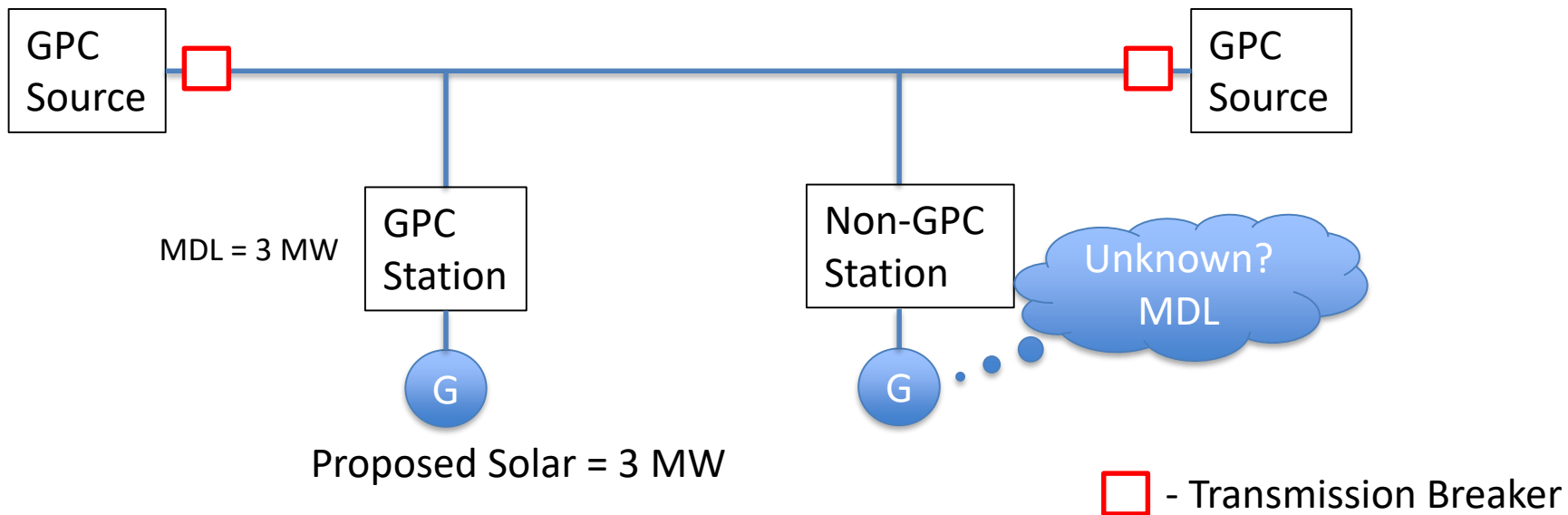




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Example Scenario #7 – Networked Transmission Line

100% GPC MDL on Transmission Line Rule
(e.g. 3 MW*100% = 3 MW Available = **PASS**)

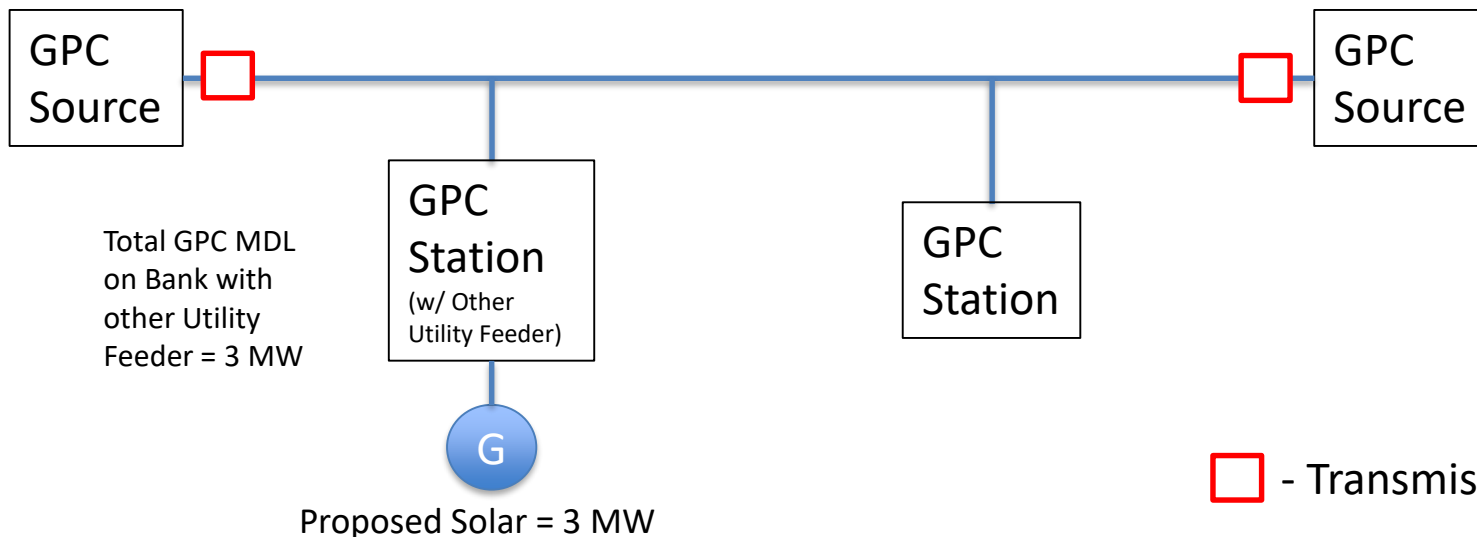




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Example Scenario #8 – GPC Substation

100% GPC MDL on GPC Bank Rule
(e.g. 3 MW*100% = 3 MW Available = **PASS**)



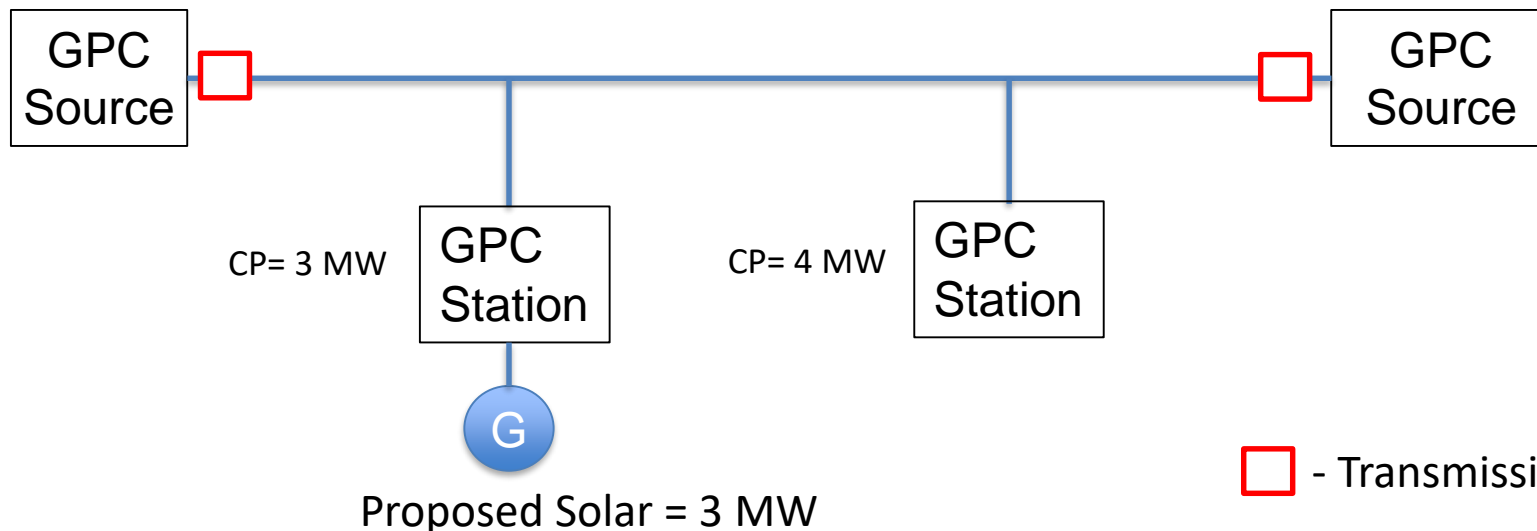


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Example Scenario #9 – Networked Transmission Line

50% Coincident Peak on Transmission Line Rule (Redundant Source)

(e.g. $(3 \text{ MW} + 4 \text{ MW}) * 50\% = 3.5 \text{ MW Available} = \text{PASS}$)





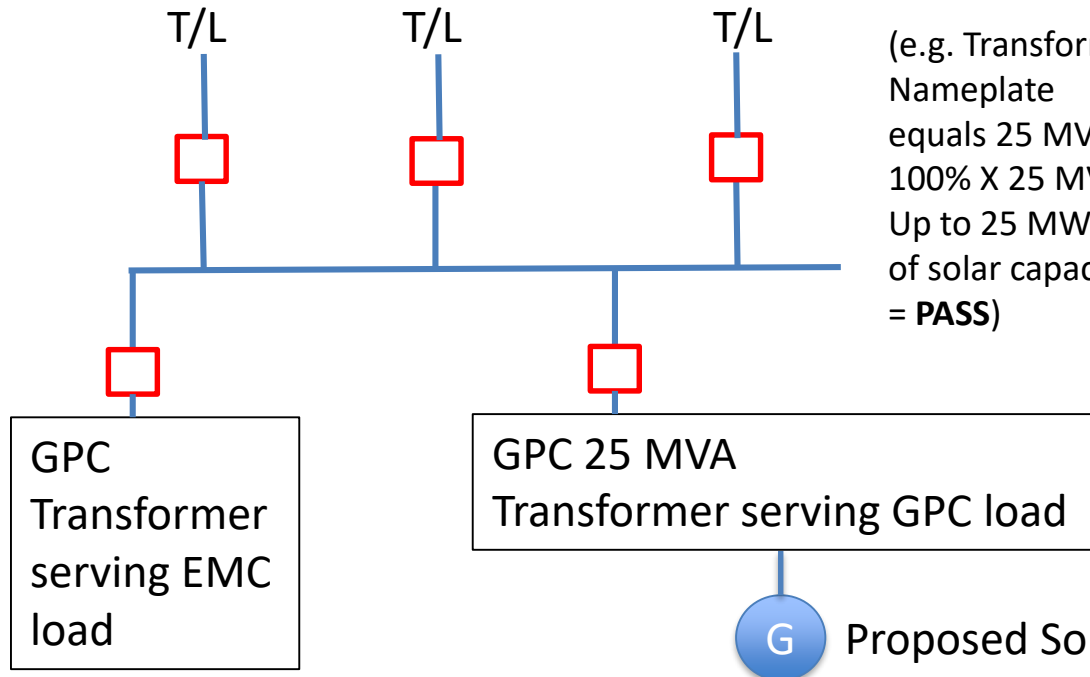
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Example Scenario #10 – GPC Substation

100 % of Nameplate of Distribution Transformer Rule

With all GPC load in a GPC Transmission station with minimum of three transmission line sources (115kV or higher)

(e.g. Transformer Nameplate equals 25 MVA.
 $100\% \times 25 \text{ MVA} = 25 \text{ MVA}$
Up to 25 MW
of solar capacity available
= **PASS**)



 - Transmission Breaker



Questions

For additional information and questions click on links below:

- DG RFP Accion Website

<https://gpcdgrfp20.accionpower.com/>

- REDI CS II Accion Website

<https://gpcdgredecsii.accionpower.com/>

- Customer Connected Solar Program

<https://www.georgiapower.com/company/energy-industry/energy-sources/solar-energy/solar/customer-connected-solar.html>

- Georgia Power Interconnection Guidance

<https://www.georgiapower.com/company/energy-industry/energy-sources/solar-energy/solar.html>