



PJM New Services Queue Request Behind the Meter Generation (BTMG)

Noorgul Dada – Interconnection Projects
MIC Special Session - BTMG Business
Rules on Status Changes
March 30, 2021

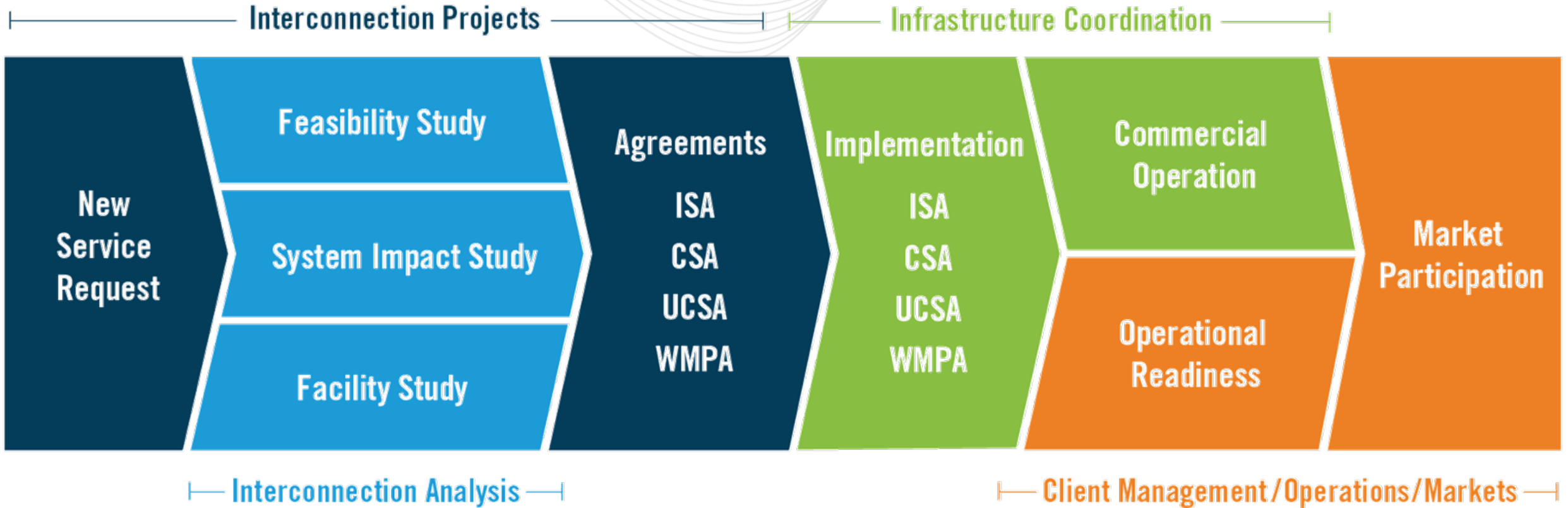
Why New Services Requests?

Provide access to PJM markets while ensuring the continued reliable operation of the Transmission System.

- Evaluations (studies) must be conducted to identify the transmission system upgrades to allow a project to come into service and maintain reliable, secure and safe operations.
- Identify system upgrades required to physically interconnect the project to the Transmission System, if required.
- Project specifics and study results are captured in a three party agreement executed by the Interconnection Customer (IC), Transmission Owner (TO), and PJM.

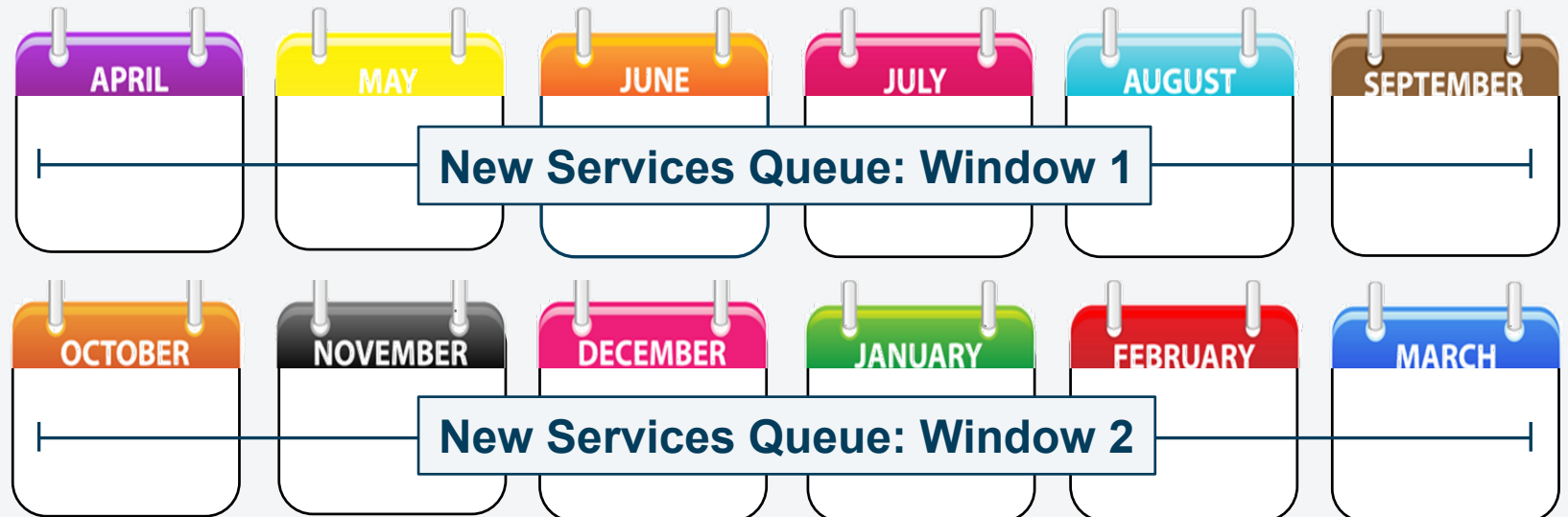
It all starts when an Interconnection Customer submits a complete New Services Request (application) to PJM.

- **CIR** = Capacity Injection Rights
- **CSA/ICSA** = Interconnection Construction Service Agreement
- **IC** = Interconnection Customer, Generator
- **IARRs** = Incremental Auction Revenue Rights
- **ISA** = Interconnection Service Agreements
- **MFO** = Maximum Facility Output
- **TO** = Transmission Owner
- **UCSA** = Upgrade Construction Service Agreement
- **WMPA** = Wholesale Market Participation Agreements





- New Service Requests are submitted in two queue windows
- Deficiency Review occurs in this phase
- If application is accepted, kick off call must occur within tariff timelines
- Projects may drop out of queue at any time.
- Project size may be **reduced** per Tariff rules but not increased.



New Services Requests Process Overview



OATT Attachment N, Y, BB, S, EE*

- N – Generation
- Y – Generation (≤2 MW synchronous, ≤5 MW inverter based, and energy-only)
- BB – Generation (≤10kW inverter based & energy-only)
- S – Merchant Transmission
- EE – Upgrade Request
- PP - Long Term Firm

Required Information

- Location
- Project Size
- Ownership (site control for interconnection requests)
- Equipment Configuration
- Planned In-Service Date
- Deposit
- Queue Point Data

* **NOTE:** Transmission service requests are received through OASIS and are then communicated to System Planning for inclusion in the New Services Queue with remainder of the New Service Requests.

Information Required to Achieve Queue Position:

**Feasibility
Study
Agreement**
(complete and
executed)

**Queue
Point Data**

**Site
Control**

**Site
Plan**

Study Deposit

**Point
of Inter-
connection**

**One Line
Diagram**



Class Average Capacity Factors: Wind & Solar

PJM Interconnection LLC

Class Average Capacity Factors: Wind & Solar Resources

Wind Class Average Capacity Factors

Wind Farm Location	Capacity Factor
In Mountainous Terrain	14.7%
In Open/Flat Terrain	17.6%

Solar Class Average Capacity Factors

Solar Installation Type	Capacity Factor
Ground Mounted Fixed Panel	42.0%
Ground Mounted Tracking Panel	60.0%
Other Than Ground Mounted	38.0%

<https://www.pjm.com/-/media/planning/res-adeq/class-average-wind-capacity-factors.ashx?la=en>

————— **Currently based on 10 hour contiguous battery run time:** —————

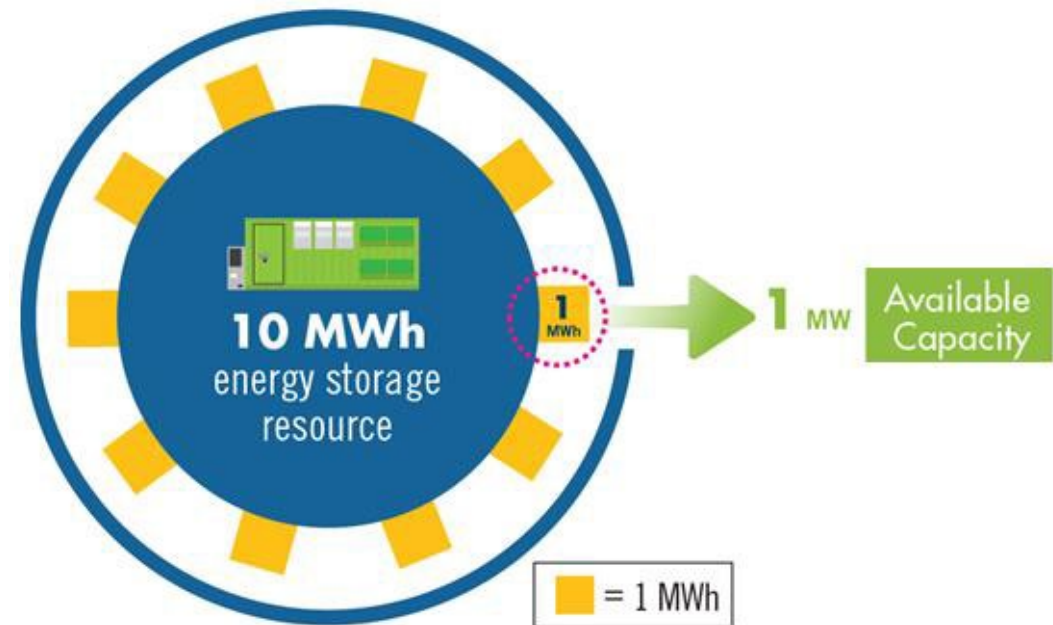
Capacity Factor : Battery Storage

EXAMPLE:

10 MWh battery stockpile

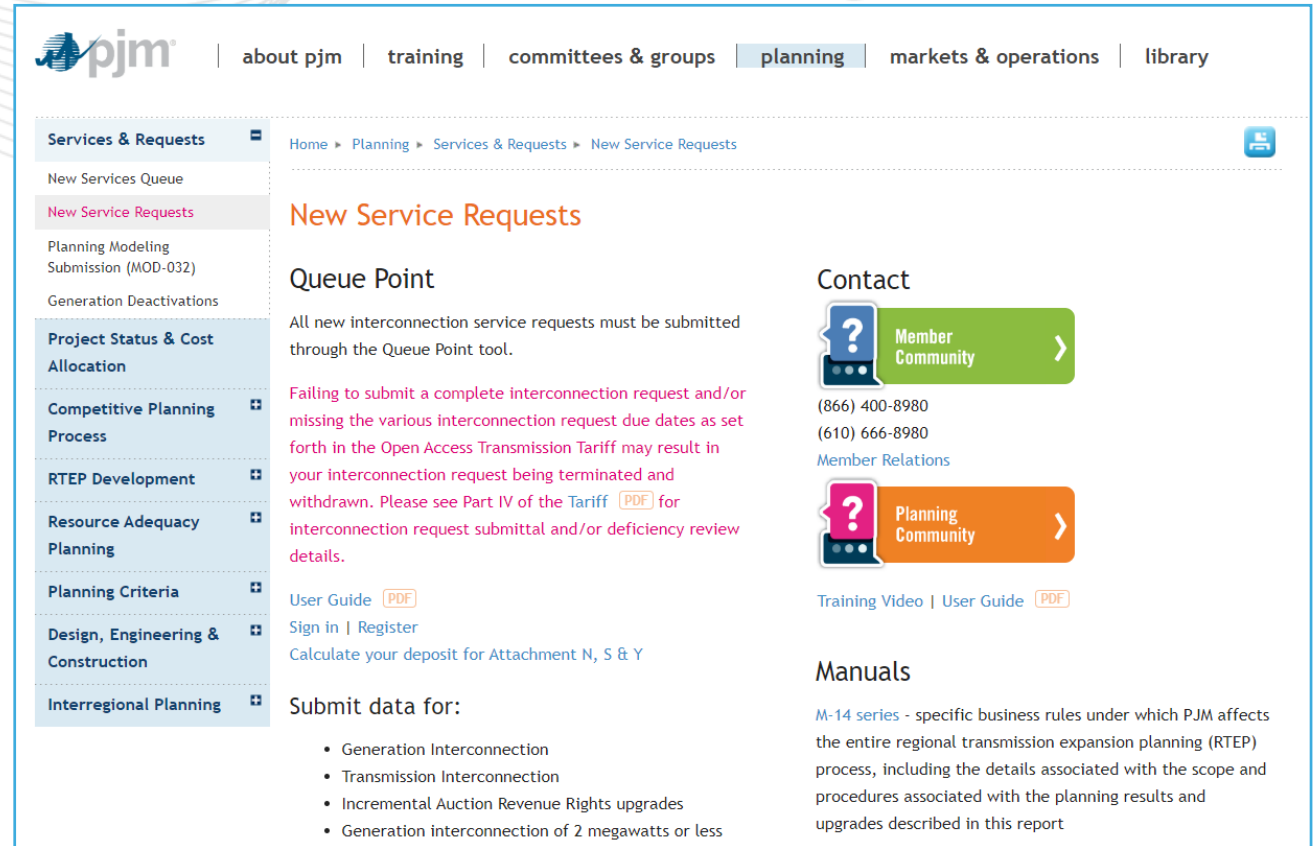
$10 \text{ MWh} / 10 \text{ hours} = 1 \text{ MW Capacity}$

1 MW Capacity for 10 hours contiguous



Navigating to Queue Point

- Use direct link:
<https://planningcenter.pjm.com/>
- From <https://pjm.com>
 - Select “Planning” from top level menu
 - Select “Services and Requests” from left menu
 - Select “New Service Requests”



The screenshot shows the PJM.com website interface. At the top, there is a navigation menu with links for 'about pjm', 'training', 'committees & groups', 'planning', 'markets & operations', and 'library'. The 'planning' link is highlighted. Below the menu, a breadcrumb trail reads 'Home > Planning > Services & Requests > New Service Requests'. The left sidebar contains a list of menu items, with 'New Service Requests' highlighted in pink. The main content area is titled 'New Service Requests' and features a section for 'Queue Point' with a warning message about interconnection requests. To the right, there are 'Contact' buttons for 'Member Community' and 'Planning Community', along with links for 'Training Video' and 'User Guide'. At the bottom, there is a 'Submit data for:' section with a bulleted list of request types.

Services & Requests

- New Services Queue
- New Service Requests**
- Planning Modeling Submission (MOD-032)
- Generation Deactivations
- Project Status & Cost Allocation
- Competitive Planning Process
- RTEP Development
- Resource Adequacy Planning
- Planning Criteria
- Design, Engineering & Construction
- Interregional Planning

Home > Planning > Services & Requests > New Service Requests

New Service Requests

Queue Point

All new interconnection service requests must be submitted through the Queue Point tool.

Failing to submit a complete interconnection request and/or missing the various interconnection request due dates as set forth in the Open Access Transmission Tariff may result in your interconnection request being terminated and withdrawn. Please see Part IV of the Tariff PDF for interconnection request submittal and/or deficiency review details.

User Guide PDF
Sign in | Register
Calculate your deposit for Attachment N, S & Y

Submit data for:

- Generation Interconnection
- Transmission Interconnection
- Incremental Auction Revenue Rights upgrades
- Generation interconnection of 2 megawatts or less

Contact

Member Community

(866) 400-8980
(610) 666-8980
Member Relations

Planning Community

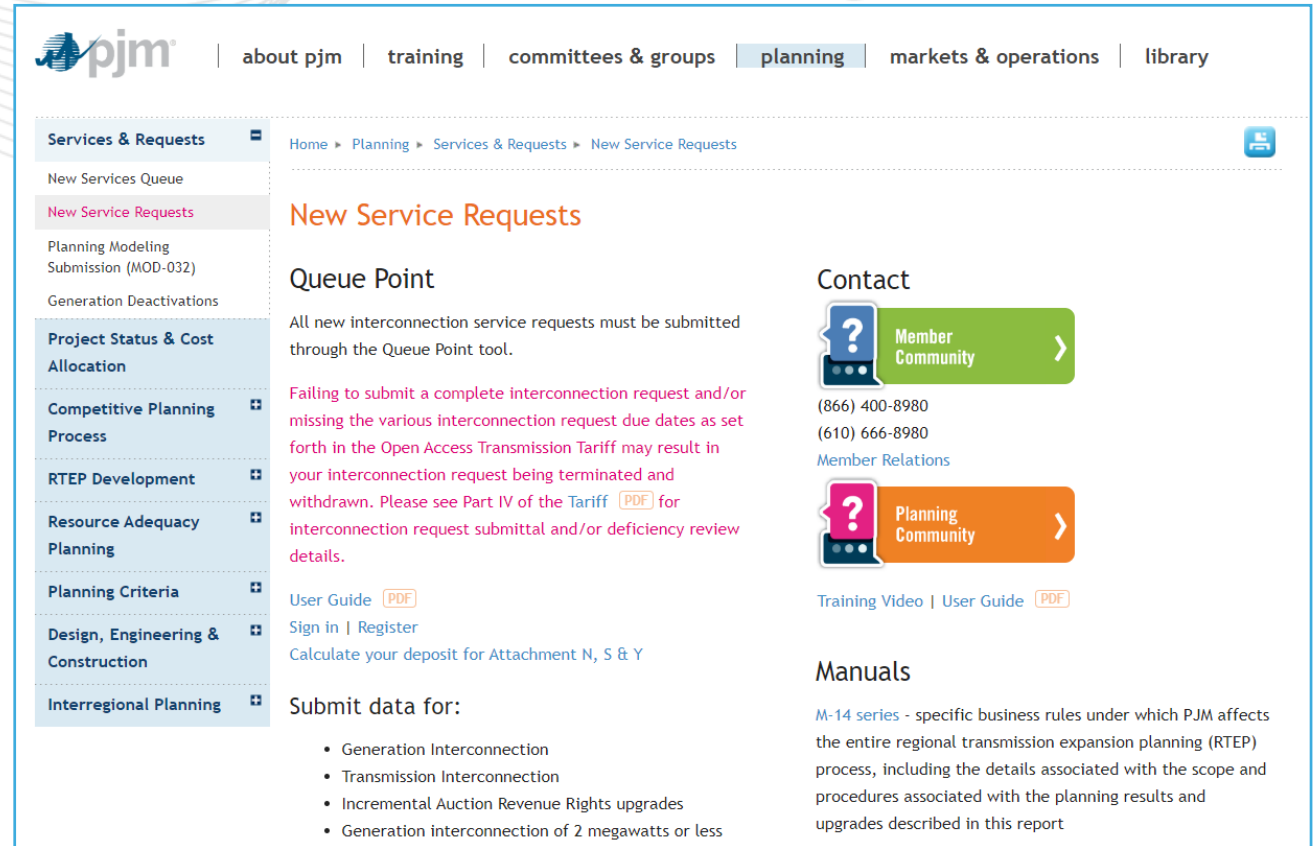
Training Video | User Guide PDF

Manuals

M-14 series - specific business rules under which PJM affects the entire regional transmission expansion planning (RTEP) process, including the details associated with the scope and procedures associated with the planning results and upgrades described in this report

New Service Request Page

- Information about Queue Point
- **Links to:**
 - Login page
 - Register for an account
 - User guide
 - Related manuals and agreements
 - Deposit calculator



The screenshot shows the PJM website's 'New Service Requests' page. The navigation bar includes links for 'about pjm', 'training', 'committees & groups', 'planning', 'markets & operations', and 'library'. The left sidebar contains a menu with categories like 'Services & Requests', 'Project Status & Cost Allocation', 'Competitive Planning Process', 'RTEP Development', 'Resource Adequacy Planning', 'Planning Criteria', 'Design, Engineering & Construction', and 'Interregional Planning'. The main content area is titled 'New Service Requests' and features a 'Queue Point' section with a warning message about interconnection request submission. Below this, there are links for 'User Guide', 'Sign in', and 'Register'. A 'Submit data for:' section lists various interconnection types. On the right, there are 'Contact' buttons for 'Member Community' and 'Planning Community', along with 'Manuals' information.

<https://pjm.com/planning/services-requests/new-service-requests.aspx>



- Gen/Trans Interconnection Customers
- Eligible Customers (LTF)
- Upgrade Customers (IARRs)

Queue	2019												2020												2021											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
AF1				█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█												
AF2																																				
AG1																																				
AG2																																				

- █ PJM Receives Queue Requests
- █ PJM Model Build
- █ Feasibility Study Period
- █ 30 Day Review and Agreement Return by Customer
- █ System Impact Study Period

Rule of Thumb for Study Issue Dates		
	FEAS	SIS
Queue Ends with 1	JAN	AUG
Queue Ends with 2	JUL	FEB

BTMG Request



1.6 Behind the Meter Generation

Any Behind the Meter Generation which seeks to be designated in whole or in part as an energy or capacity resource must submit a Generation Interconnection Request for the portion of the unit's output that will participate in the PJM market. Further, sites with 10 MW or more must abide by PJM metering requirements as well as market, operational and settlement requirements. Manual 14D (Appendix A) describes the treatment of Behind the Meter generation, provisions for which are captured in PJM's Tariff, Subpart A, Section 36.1.A.

- Change to Capacity Resource and/or Energy Resource status represents an increase in the MW of capability designated as Generation Capacity Resource and/or Energy Resource
 - Generation Interconnection Request must be submitted
 - ISA/WMPA indicates the MW of capability designated as Capacity MWs (CIRs) and/or Energy MWs
- Change to BTMG status represents a decrease in the MW of capability designated as Generation Capacity Resource and/or Energy Resource
 - Removal from Generation Capacity Resource Status business rules apply
 - Necessary Study request may be required
 - Results in the amendment or termination of ISA/WMPA



- General Information
- Point of Interconnection
- Project Capability**
- Generator Information
- Transformer Information
- Attachment Line Data
- Review
- Confirmation

Work Being Performed

Type of request *

- Modify existing facility or facility construction
- Build new facility

Describe the facility *

[Empty text box for describing the facility]

Generating Facility Capability

Maximum Facility Output (MFO) of the facility *

[Input field] MW

as defined in section 1.18A.03 of the PJM Tariff

Capacity Interconnection Rights (CIRs) *

[Input field] MW

Summer

Winter

Net energy *

[Input field]

[Input field] MW

Gross energy output of facility *

[Input field]

[Input field] MW

Behind The Meter

Is this application for: *

- New Behind The Meter generating unit(s)
- Existing Behind The Meter generating unit(s)
- Not applicable

Gross generator output *

[Input field] MW

Behind The Meter load *

[Input field] MW

Requested (MFO) *

[Input field] MW

Capacity Interconnection Rights (CIRs) *

[Input field] MW

Describe electrical connections between the generation facility and the load.

[Empty text box for describing electrical connections]

Purpose of application:

New Behind The Meter generating unit(s)

Enter Comments

Gross generator output

17.100000 MW

Enter Comments

Behind The Meter load

12.100000 MW

Enter Comments

Requested (MFO)

5.000000 MW

Enter Comments

Capacity Interconnection Rights (CIRs)

0.000000 MW

Enter Comments

Describe electrical connections between the generation facility and the load.



Required

- Feasibility Study Agreement
- Deposit for Interconnection Requests based on request receipt timing and MW size
- Queue Point Data
- Site control for generation requests
- In-service date within 7 years of entering queue
- Customer can select a primary and secondary Point of Interconnection (POI)

Results

- Attachment Facilities Needed for Interconnection
- **Powerflow Analysis** - Identify thermal overloads and Required Upgrades (Costs and Construction Schedule Estimates for primary POI only)
- **Short Circuit Analysis**
- Customers receive a Feasibility Study Report and have 30 days to sign a System Impact Study Agreement (SISA)



- **Required**
 - System Impact Study Agreement
 - Queue Point Data
 - Deposit based on MW size
 - Initial Air Permit Application (N/A for solar/wind projects)
 - Ownership (Transmission Interconnection Requests)
- Customer must select a single POI (if 2 were evaluated in the Feasibility Study)
- **Results**
 - Summer Peak Powerflow Analysis
 - Light Load Powerflow Analysis (if applicable)
 - Short Circuit Analysis
 - Cost Estimates and Allocations
- Customers receive an Impact Study Report and have 30 days to sign a Facility Study Agreement (FSA)

- Small Projects (≤ 20 MW)
- If Customer requests acceleration
- Are not permitted when the project:
 - causes or contributes to a system constraint; or
 - requires stability analysis, light load analysis; or
 - requests secondary Point of Interconnection be studied.
- Perform AC analysis for combined study.
- Combined report and associated agreement will be issued by the Feasibility Study due date per the PJM Tariff.



Facilities Study (Initial Engineering Review)



- Conduct governed by procedures as set forth in Attachment D of Manual M-14A
- Required
 - Facilities Study Agreement
 - Deposit based on MW size
- Completion
 - Dependent on individual Transmission Owner zone and queue volume
- Potential for Impact Study re-tool analysis
- Stability Analysis
- Additional studies as required by type of technology being connected
- Facility Study Report: Conceptual Design
- Attachment Facilities
- Network Upgrades
 - Cost Estimates
 - Preliminary Engineering and Construction Schedule



FERC Jurisdictional Facilities

- Any facility that is part of the Transmission System
- Any distribution facility where there has been a prior wholesale sale
- Any facility that self certified to FERC as a Qualified Facility

Interconnection Service Agreement

- Grants rights to interconnect and generate
- Defines project milestones
- Describes the project's point of interconnection
- Describes system upgrades and costs
- Outlines metering requirements
- Security requirement
- Persists after construction

Construction Service Agreement

- Outlines construction responsibility
- Contains upgrade construction schedule
- Contains notification and insurance obligations
- Terminates after construction

Wholesale Market Participant Agreement

- Connects to distribution line
- No prior wholesale sales
- Requires customer to pursue a two-party Interconnection Agreement (IA) with TO
- Grants rights to participate in PJM's market
- Persists after construction

KEY TAKEAWAYS

- Participation in the PJM markets requires a New Services Request.
- Customer must have a completed application including an executed agreement, requisite deposit and required Queue Point data.
- Feasibility, System Impact and Facilities Studies are performed.
- Final agreement (ISA, ICSA, WMPA) are executed.

Facilitator:

Nick DiSciullo,

Nicholas.DiSciullo@pjm.com

Secretary:

Andrea Yeaton,

Andrea.Yeaton@pjm.com

SME/Presenter:

Noorgul Dada,

Noorgul.Dada@pjm.com

PJM New Services Queue Request
Behind the Meter Generation (BTMG)



Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com