



PJM New Services Queue Developer Education

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Why New Services Requests?

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

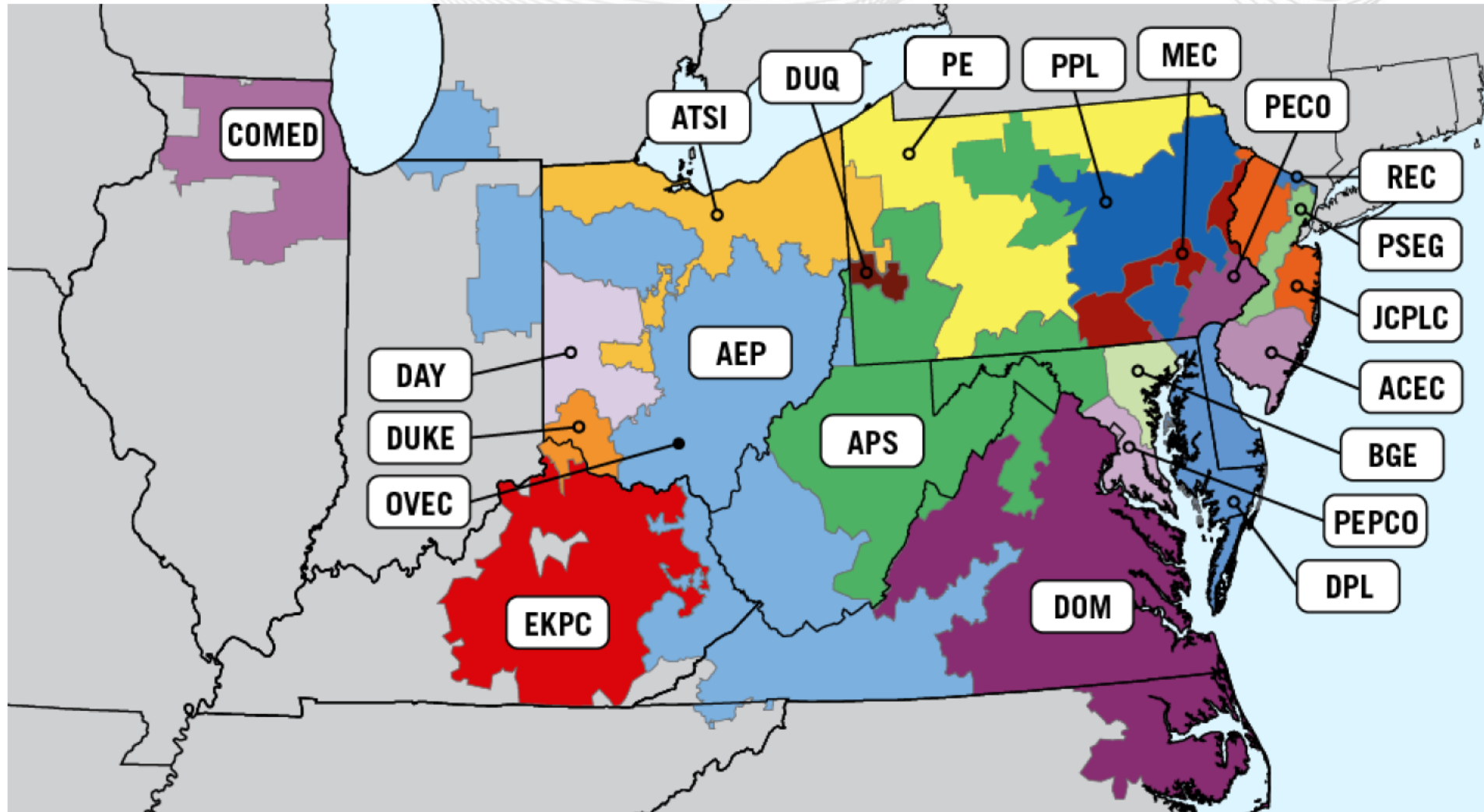
- Evaluations (studies) must be conducted to identify the transmission system upgrades to allow a project to come into service and maintain reliable, secure and safe operations.
- Identify system upgrades required to physically interconnect the project to the Transmission System, if required.
- Project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

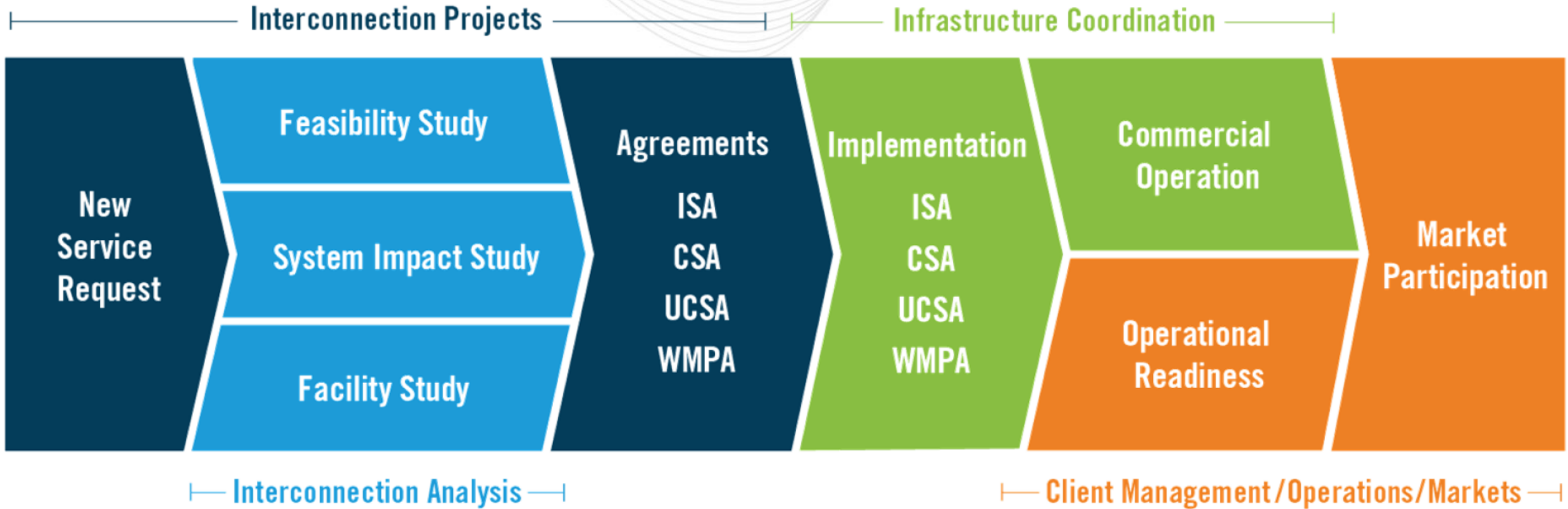
It all starts when an Interconnection Customer submits a complete New Services Request (application) to PJM.

Gain better understanding of New Services Request (NSR) Process including:

- NSR Windows
- Types of NSR Customers
- NSR Process Overview
- NSR Applications
- Class Average Capacity Factors
- Deposit Calculation/Structure
- Site Control Requirements
- Site Plan Requirements
- Single Line Diagram Requirements
- Application via Queue Point
- Study Process Timeline
- New Services Studies Performed
- Interim Deliverability
- Project Modifications
- Output Reduction Rules
- Types of Network Upgrades
- Security Calculation
- Option to Build
- Types of Agreements

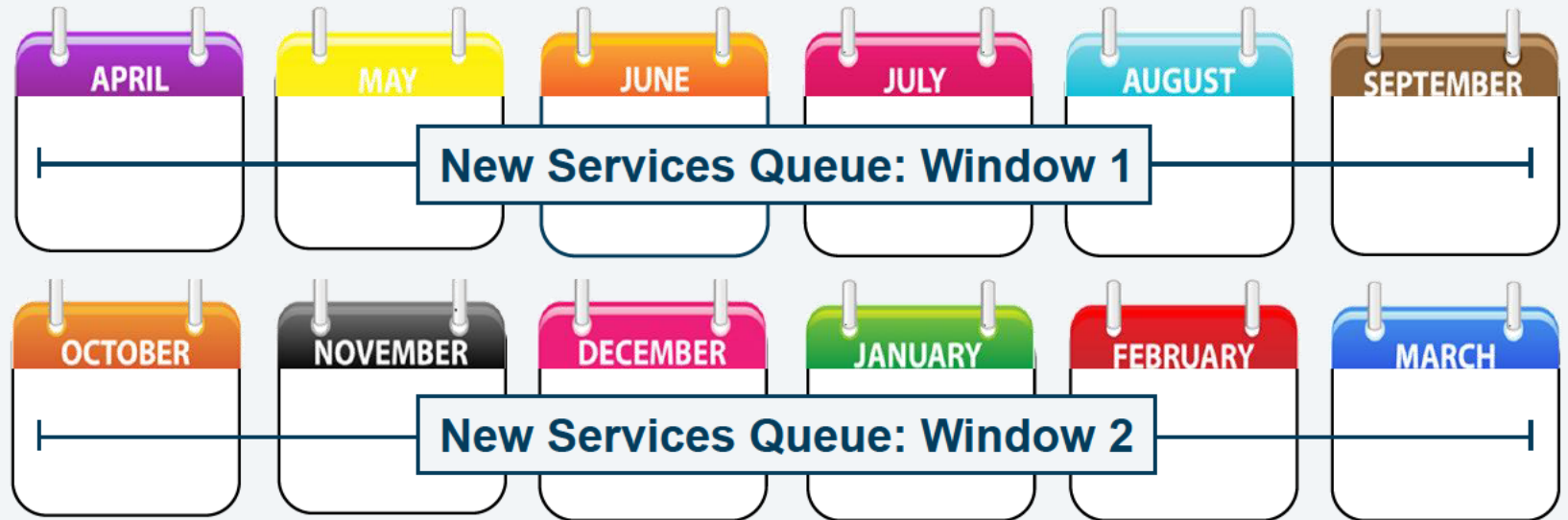
- **CAM** = Company Account Manager
- **CIR** = Capacity Injection Rights
- **CSA/ICSA** = Interconnection Construction Service Agreement
- **IC** = Interconnection Customer, Generator
- **IARRs** = Incremental Auction Revenue Rights
- **ISA** = Interconnection Service Agreements
- **MFO** = Maximum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





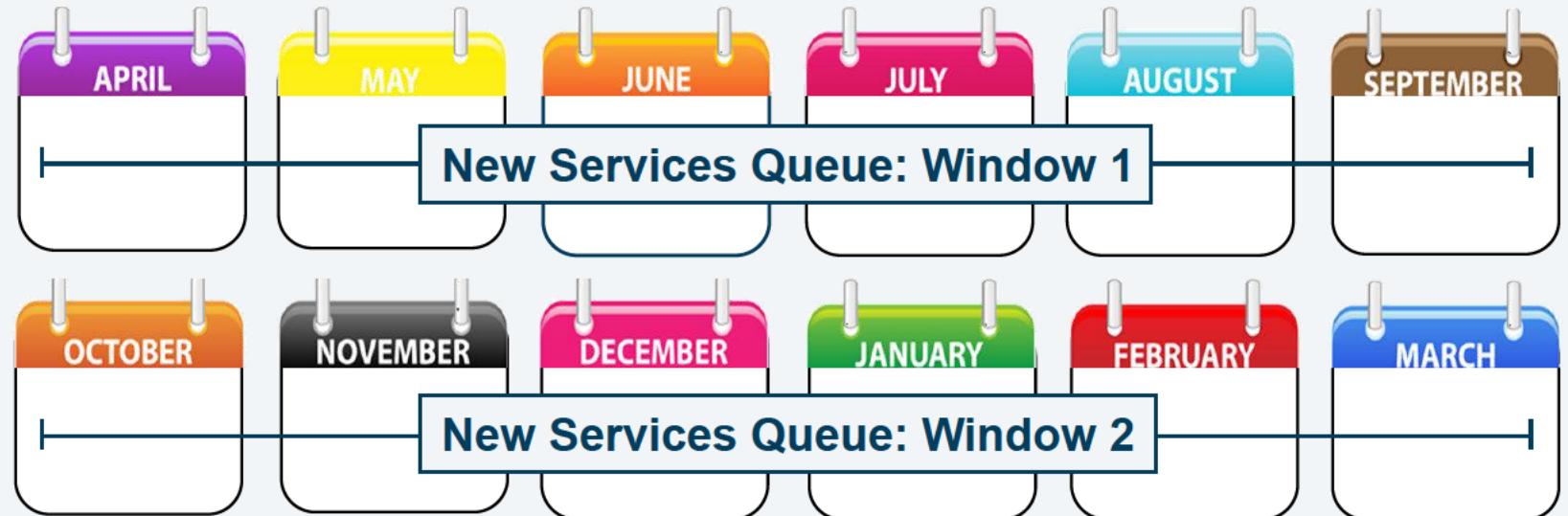


- New Service Requests are submitted in two queue windows
- Deficiency Review occurs in this phase
- If application is accepted, kick off call must occur within tariff timelines





- Projects may drop out of queue at any time.
- Project size may be **reduced** per Tariff rules (explained later) but not increased!



New Service Customer	Sub-Type	OATT Reference
Generation Interconnection Customer	New generation/Uprates, Any size, capacity	Attachment N
	New generation, 5MW or less, and energy-only	Attachment Y
	New generation, 10kW or less, inverter based generation, energy-only	Attachment BB
Transmission Interconnection Customer	New Merchant Transmission Facilities	Attachment S
	Merchant Network Upgrades	Attachment EE
Upgrade Customer	Incremental Auction Rights Request	Attachment EE
Eligible Customer	Long Term Firm Transmission Service	Attachment PP

New Services Requests Process Overview



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

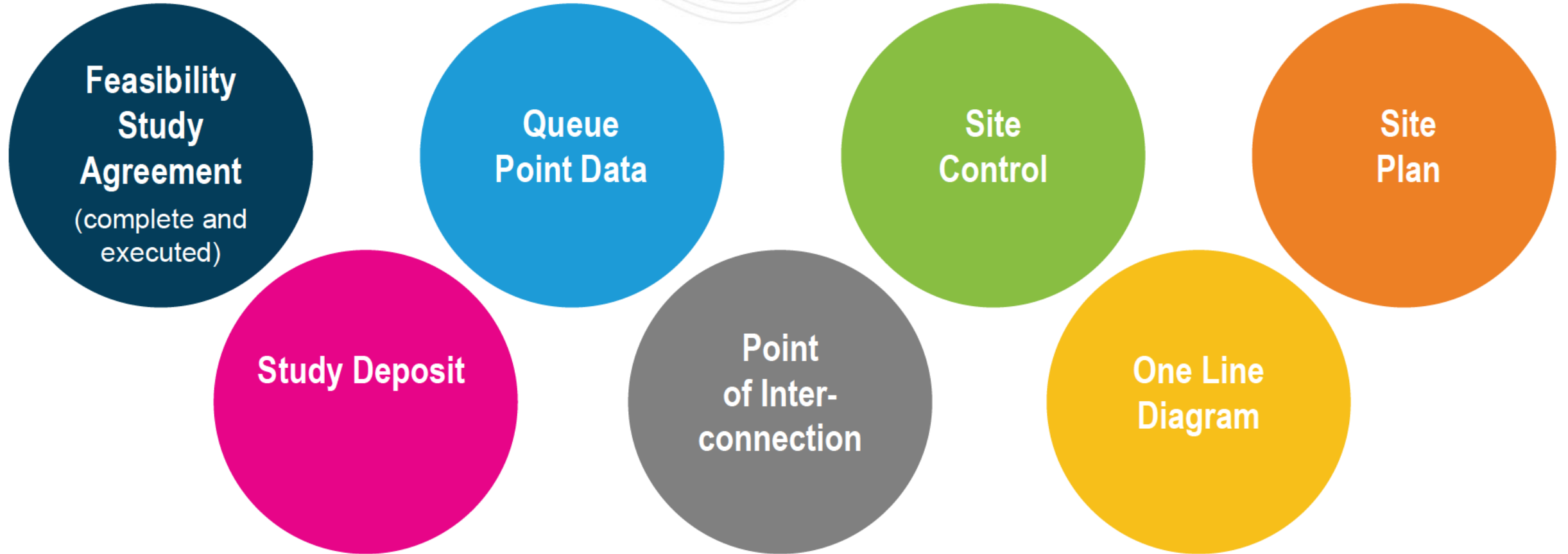
- N – Generation
- Y – Generation (≤ 2 MW synchronous, ≤ 5 MW inverter based, and energy-only)
- BB – Generation (≤ 10 kW inverter based & energy-only)
- S – Merchant Transmission
- EE – Upgrade Request
- PP - Long Term Firm

Required Information

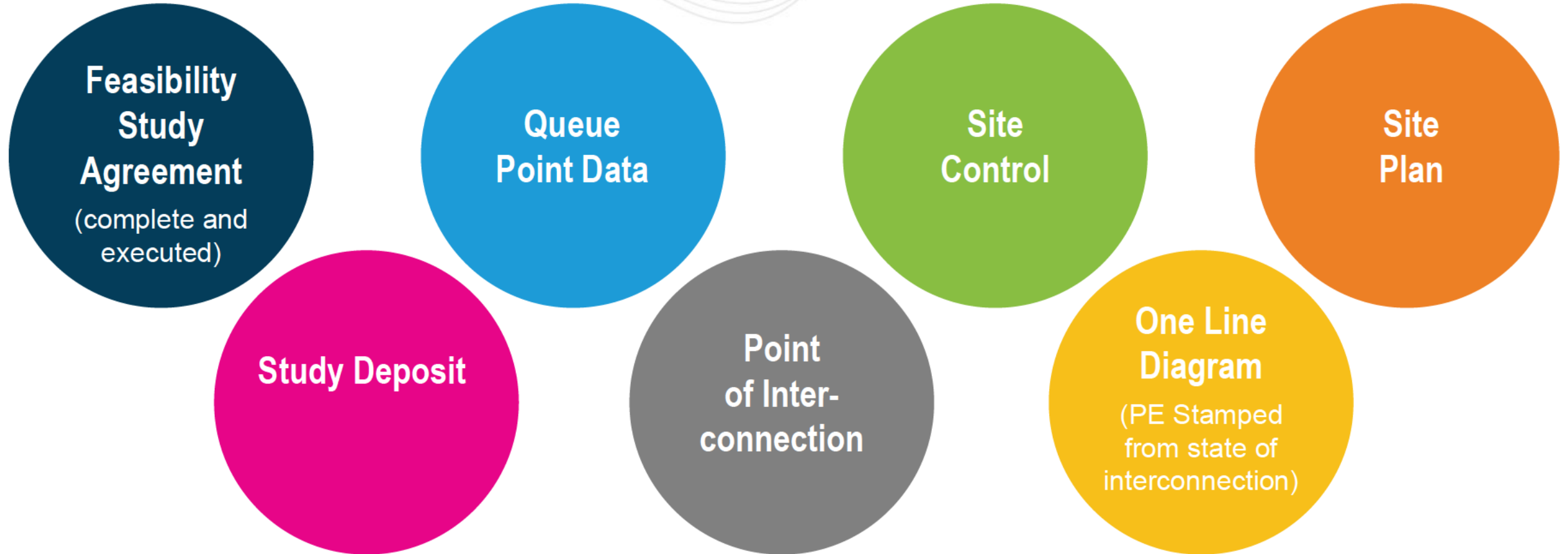
- Location
- Project Size
- Ownership (site control for interconnection requests)
- Equipment Configuration
- Planned In-Service Date
- Deposit
- Queue Point Data

* **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:



Information Required to Achieve Queue Position:



Attachment BB: Small Inverter Facility

(Certified Inverter-Based Generating Facility No Larger Than 10 kW)

Information Required to Achieve Queue Position:

Feasibility Study Agreement
(complete and executed)

Contact Information

Small Inverter Facility Information

Site Control

Processing Fee
- \$500

Legal Name of Owner of Facility

Certification of Small Inverter Facility

Information Required to Achieve Queue Position:

Feasibility Study Agreement
(complete and executed)

Location of Merchant Transmission Facilities

Nominal Capability or Increase in Capability

Requested Rights

Study Deposit

Description of Proposed Facilities

Planned In-Service Date

Information Required to Achieve Queue Position:

Feasibility Study Agreement

(complete and executed)

Study Deposit

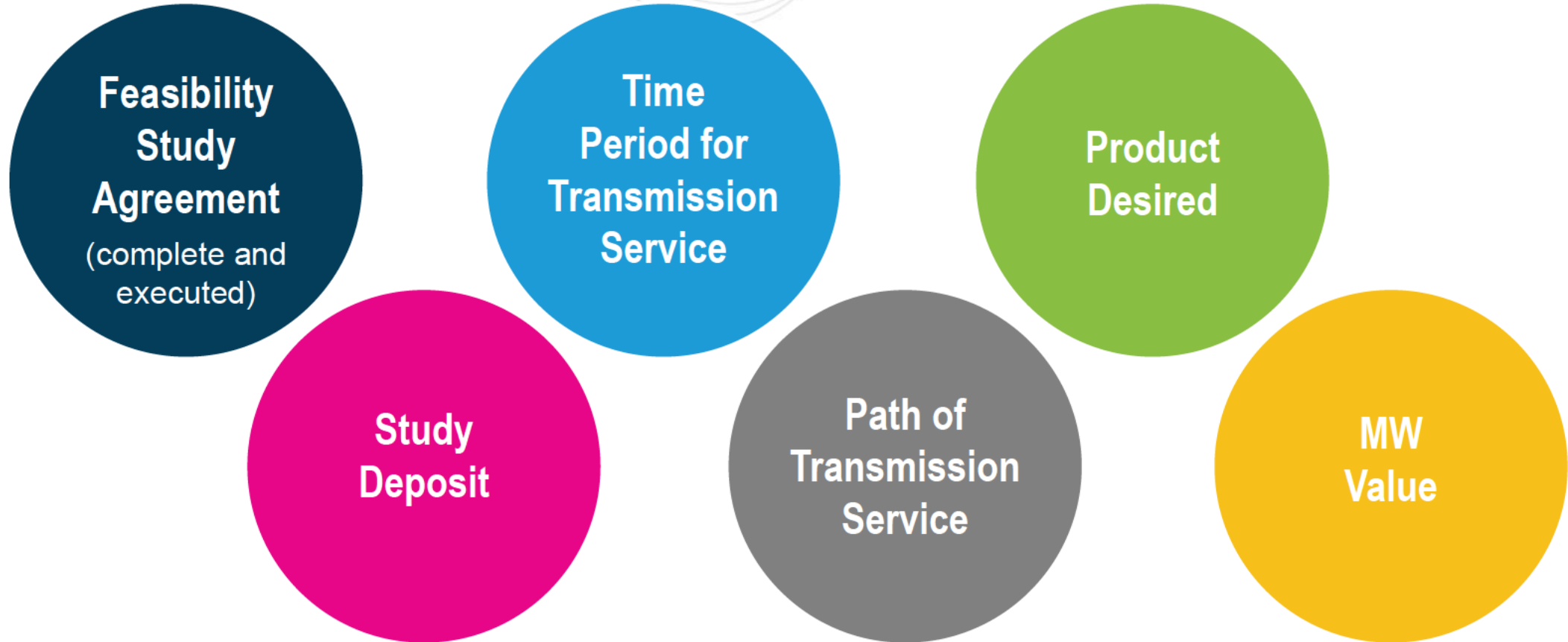
IARRs

Provide Source and Sink Location, MW and IS Date

Merchant Network Upgrades

Identify Transmission Facility and provide increase in rating with IS date

Information Required to Achieve Queue Position:





Class Average Capacity Factors: Wind & Solar

PJM Interconnection LLC

Class Average Capacity Factors: Wind & Solar Resources

(Effective June 1, 2007)

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:** —————

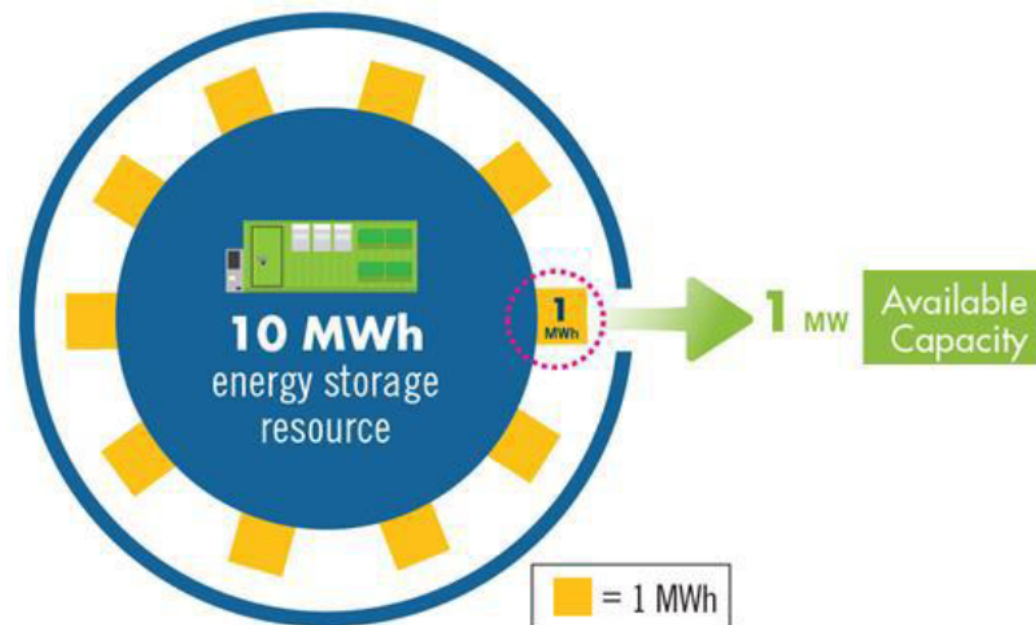
Capacity Factor : Battery Storage

EXAMPLE:

10 MWh battery stockpile

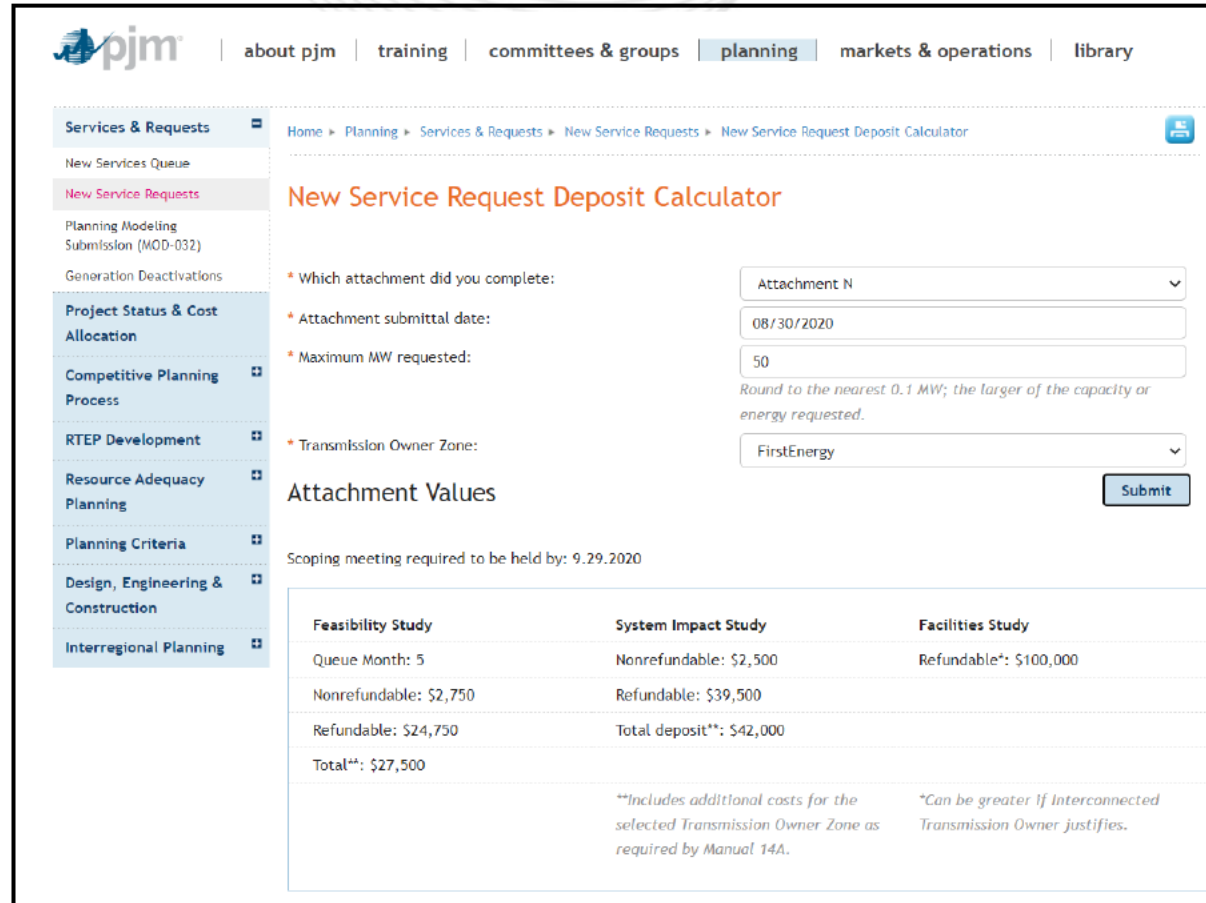
$10 \text{ MWh} / 10 \text{ hours} = 1 \text{ MW Capacity}$

1 MW Capacity for 10 hours contiguous



New Services Queue Application Fee

PJM New Services Queue Page:



The screenshot shows the PJM website's 'New Service Request Deposit Calculator' page. The page includes a navigation menu with 'planning' selected, a breadcrumb trail, and a sidebar with various service categories. The main content area contains a form with the following fields:

- Which attachment did you complete: Attachment N
- Attachment submittal date: 08/30/2020
- Maximum MW requested: 50
- Transmission Owner Zone: FirstEnergy

A 'Submit' button is located at the bottom right of the form. Below the form, the 'Attachment Values' section displays a table of costs and a note about the scoping meeting.

Feasibility Study	System Impact Study	Facilities Study
Queue Month: 5	Nonrefundable: \$2,500	Refundable*: \$100,000
Nonrefundable: \$2,750	Refundable: \$39,500	
Refundable: \$24,750	Total deposit**: \$42,000	
Total**: \$27,500		

Scoping meeting required to be held by: 9.29.2020

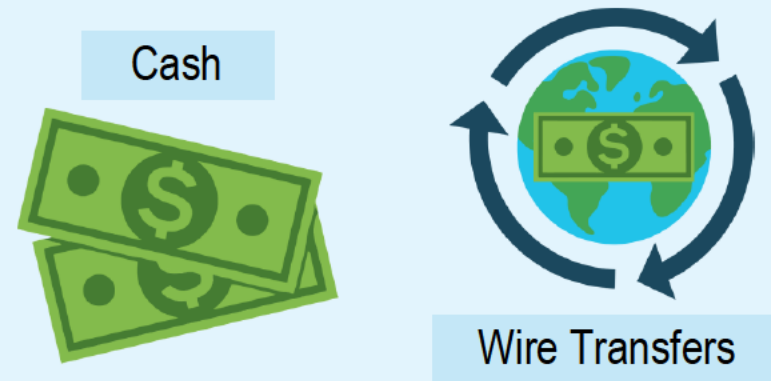
**Includes additional costs for the selected Transmission Owner Zone as required by Manual 14A.

*Can be greater if interconnected Transmission Owner justifies.

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

STUDY DEPOSITS

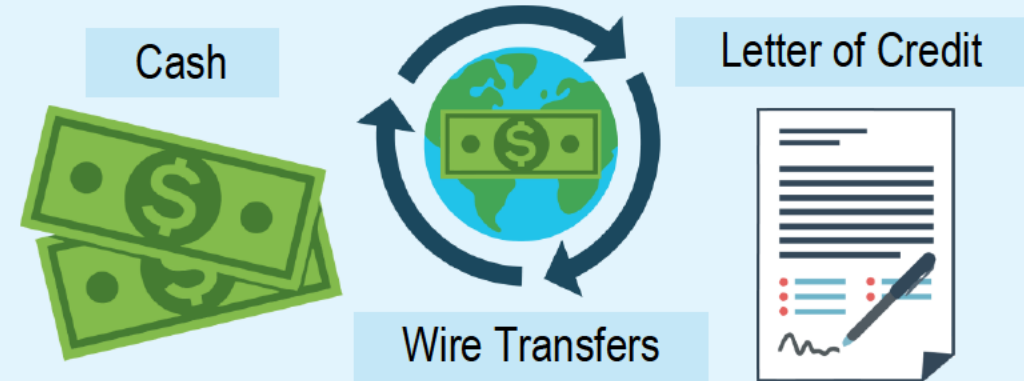
Deposits can be in the form of:



Deposits are due at the same time as each subsequent agreement

FINAL AGREEMENT SECURITY

Deposits can be in the form of:



Security is due at the same time as the final agreement is due

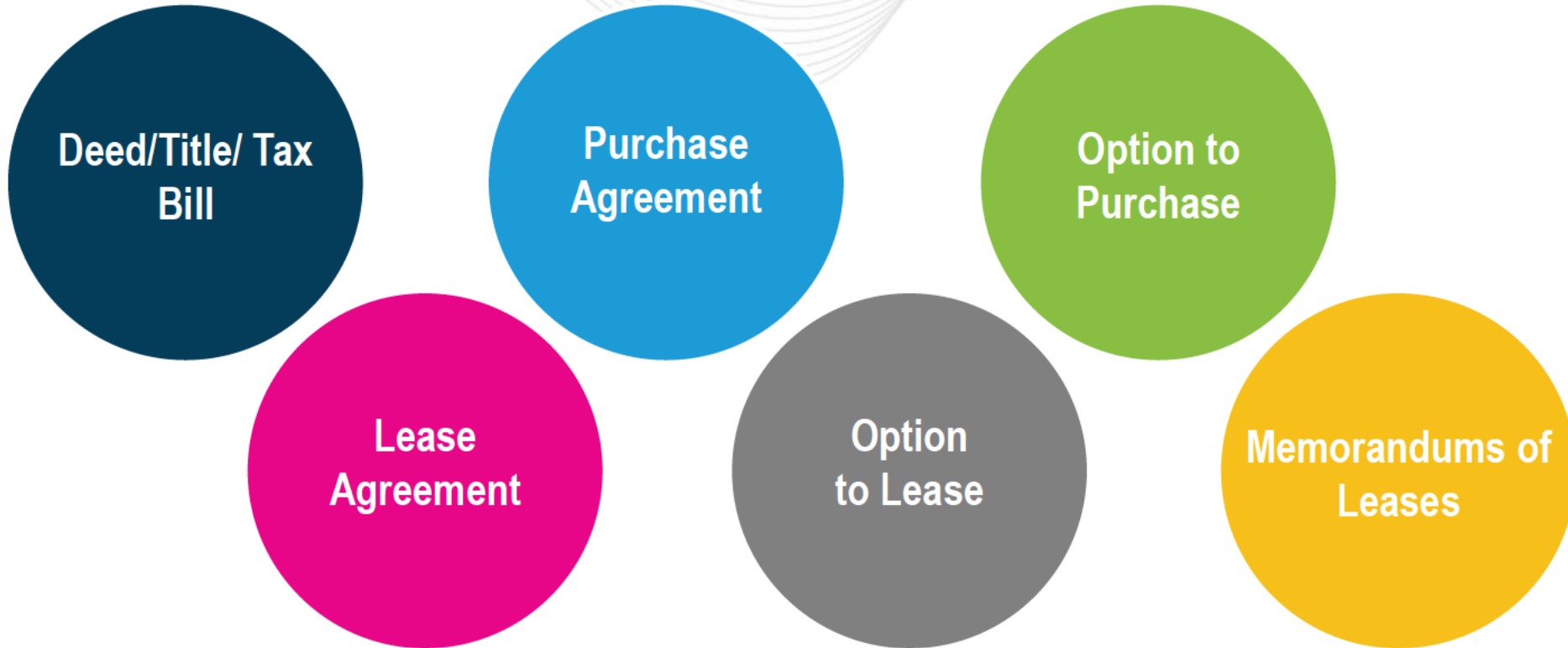
Refunds will be issued:

- 90 days after close of each study phase
- 120 days after closing out an ISA



Site Control

Acceptable Forms of Site Control



PJM needs assurance that the customer holds control of the site where the generation is to be located.

When are Memorandums Accepted?

1. Explicitly states the memorandum is memorializing the underlying option/lease agreement.
2. Fully executed by same parties that are parties to underlying agreement.
3. Contains key terms for conveyance, exclusivity and term.
4. Memorandum indicates that underlying option/lease agreement was already fully executed.
5. Memorandum indicates that the underlying option/lease agreement contains same terms as memorandum.

Site Control must be in the name of the Interconnection Customer

EXCEPTION:

PJM will accept the site control in another name only if you can demonstrate the business relationship between the entity that has site control and the interconnection customer.

The IC must provide Officer Certification, operating agreement or other documentation demonstrating the affiliate relationship.

FOR EXAMPLE:

Company A

Interconnection Customer

Company B

Entity with Site Control

If **Company A** is a wholly-owned subsidiary of **Company B**, then the site control is acceptable with an Officer Certification.

Required Components:

PJM looks for ***three specific components*** in the site control:

A large, solid dark blue circle containing the word "Conveyance" in white, bold, sans-serif font.

Conveyance

A large, solid blue circle containing the word "Exclusivity" in white, bold, sans-serif font.

Exclusivity

A large, solid green circle containing the word "Term" in white, bold, sans-serif font.

Term

CONVEYANCE

Conveyance is accomplished through the deed, lease agreement, purchase agreement, option to lease, option to purchase, etc.

This document conveys the property to the Interconnection Customer.

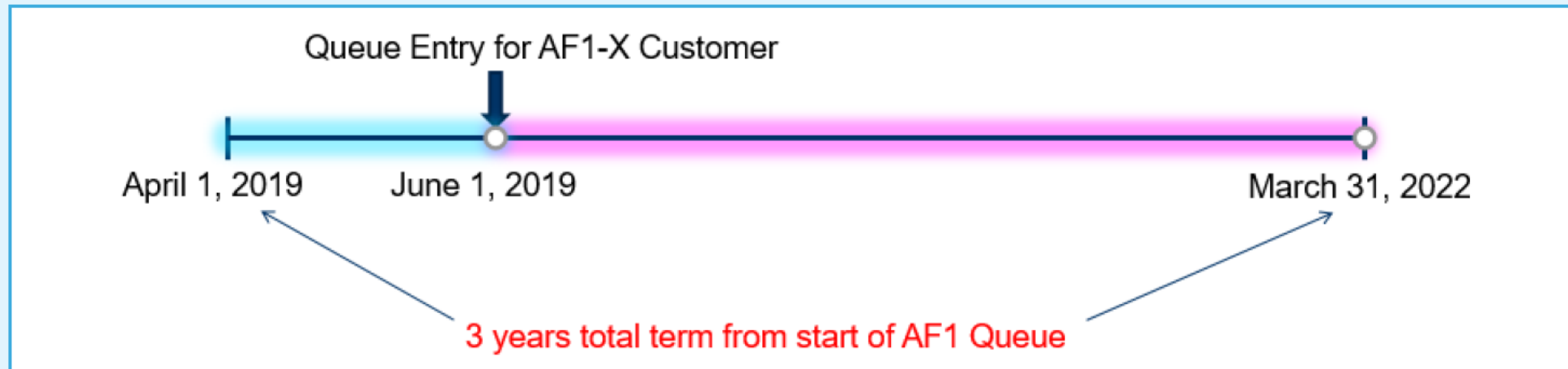
EXCLUSIVITY

- Interconnection customer must have “exclusive use” of the property.
- Site control must explicitly indicate exclusivity.

Officer Certification can be used for verification in addition to site control document.

TERM

Site control for a generator must have a term of at least 3 years (or 2 years for 20 MW or less) past the first day of the New Services Queue in which the Interconnection Customer submits its Generation Interconnection Request.



TERM EXTENSIONS:

Extensions to site control term must have been already exercised by the Developer at the time site control evidence is provided to PJM.

(If initial term is less than the required 2 or 3 year term)

Officer Certification can be used for verification in addition to site control document.

OFFICER CERTIFICATION

- Does not replace evidence of site control
- Used for verification of conveyance, exclusivity and term in addition to site control documentation.

Acreage Requirement:

- **Solar:** 5 acres/MW
- **Wind:** 10 acres/MW
- **Battery:** PJM may request a PE-stamped site plan from the state in which the interconnection is made.

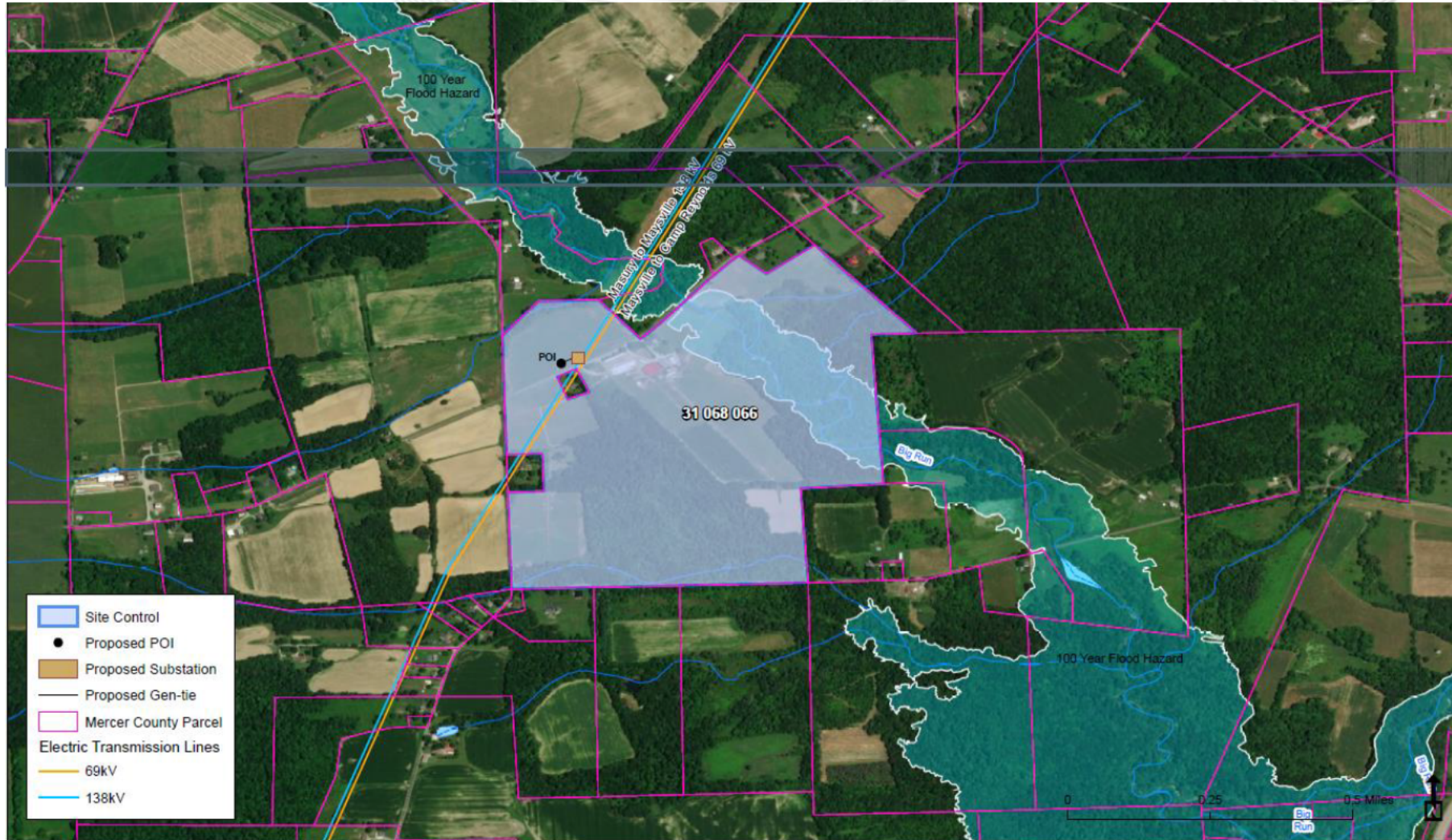


Note: If your site control does not meet the expected acreage requirements, PJM will accept a PE-stamped site plan from the state in which the interconnection is made.

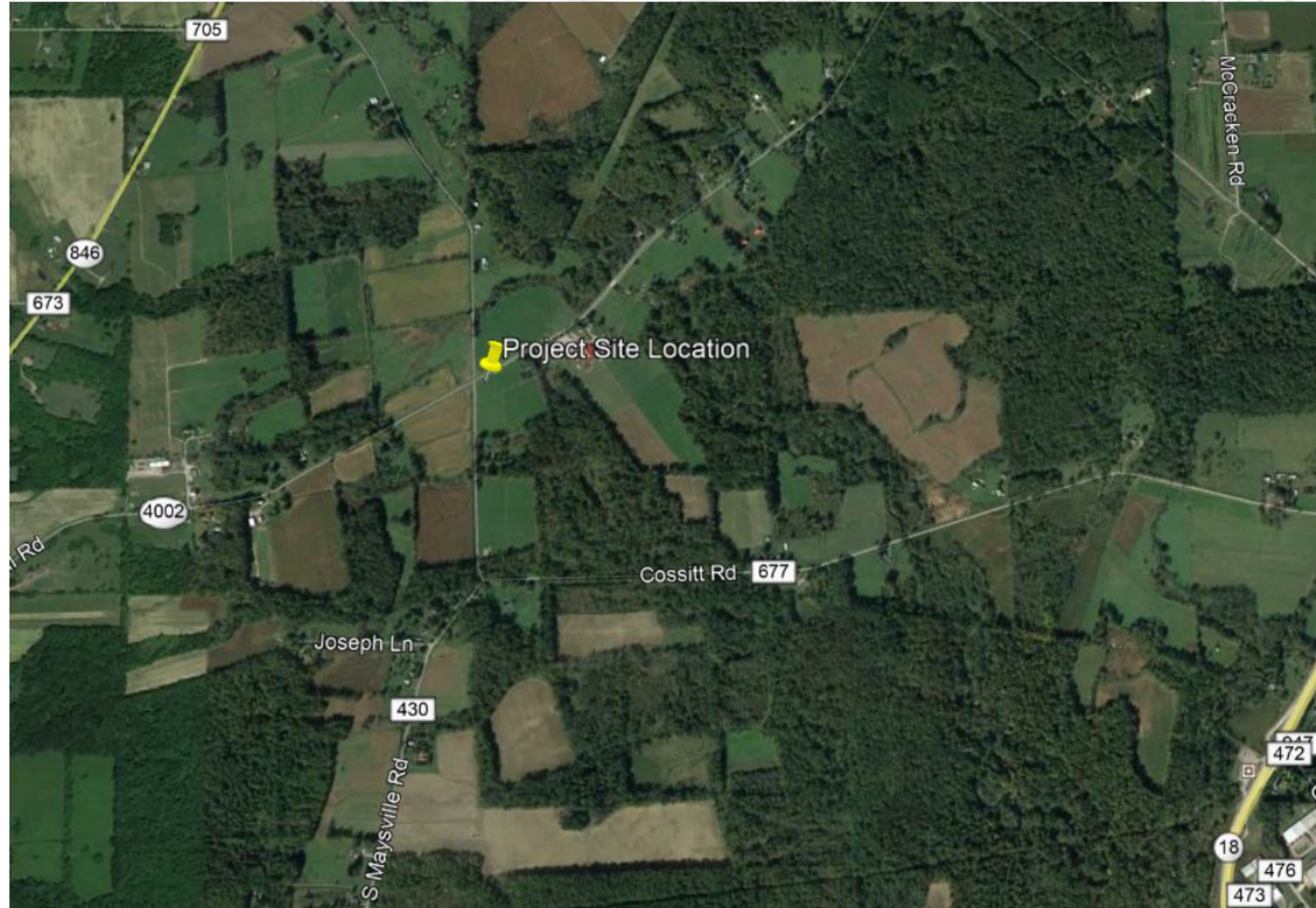
Site Plans

Site Plans should identify:

- Site boundaries
- Layout of customer facilities
- Location of collector bus
- Location of interconnection switchyard (if applicable)
- Location of Point of Interconnection to Transmission Owner's system



Please don't provide just this:



Single Line Diagrams

Single Line Diagram should show:

- Point of Interconnection to the Transmission Owner's system
- High Side Generator Step-up Transformer (GSU) with voltages, MVA rating and winding configuration
- High Side Circuit Breaker (CB)
- Metering between High Side CB and GSU
- Generator Collector Bus
- Individual Generating Unit's Step-Up transformers and breakers
- Generators

Examples of one line submissions that are not acceptable:

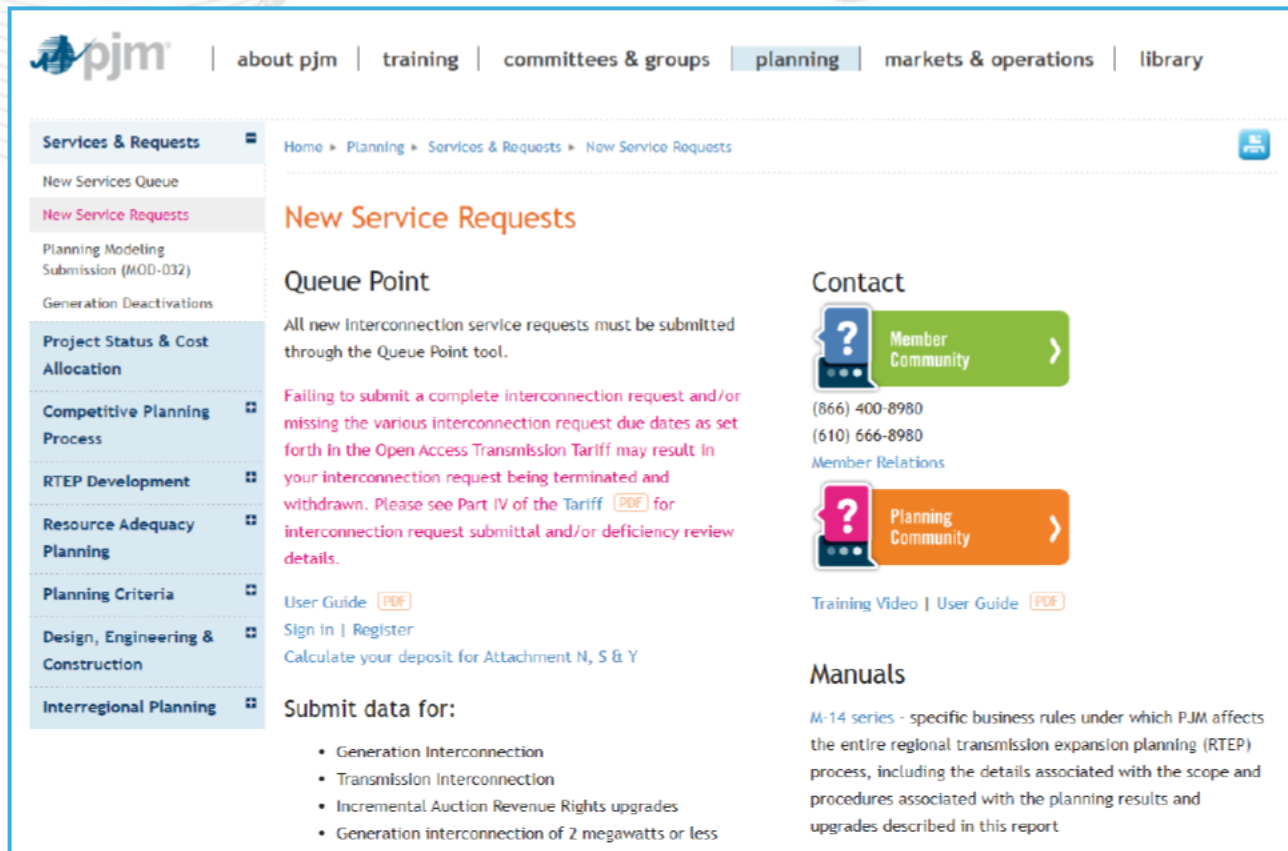
Non-standard connections to the TO facility (need to check on posted TO standards)

- GSU winding configurations
- Metering location
- High side interrupting device

Queue Point

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 website interface. At the top, there is a navigation bar with links for 'about pjm', 'training', 'committees & groups', 'planning', 'markets & operations', and 'library'. The 'planning' link is highlighted. Below the navigation bar, there is a left-hand menu with categories such as 'Services & Requests', 'Project Status & Cost Allocation', 'Competitive Planning Process', 'RTEP Development', 'Resource Adequacy Planning', 'Planning Criteria', 'Design, Engineering & Construction', and 'Interregional Planning'. The 'New Service Requests' link under 'Services & Requests' is highlighted. The main content area displays the 'New Service Requests' page, which includes a 'Queue Point' section 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 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

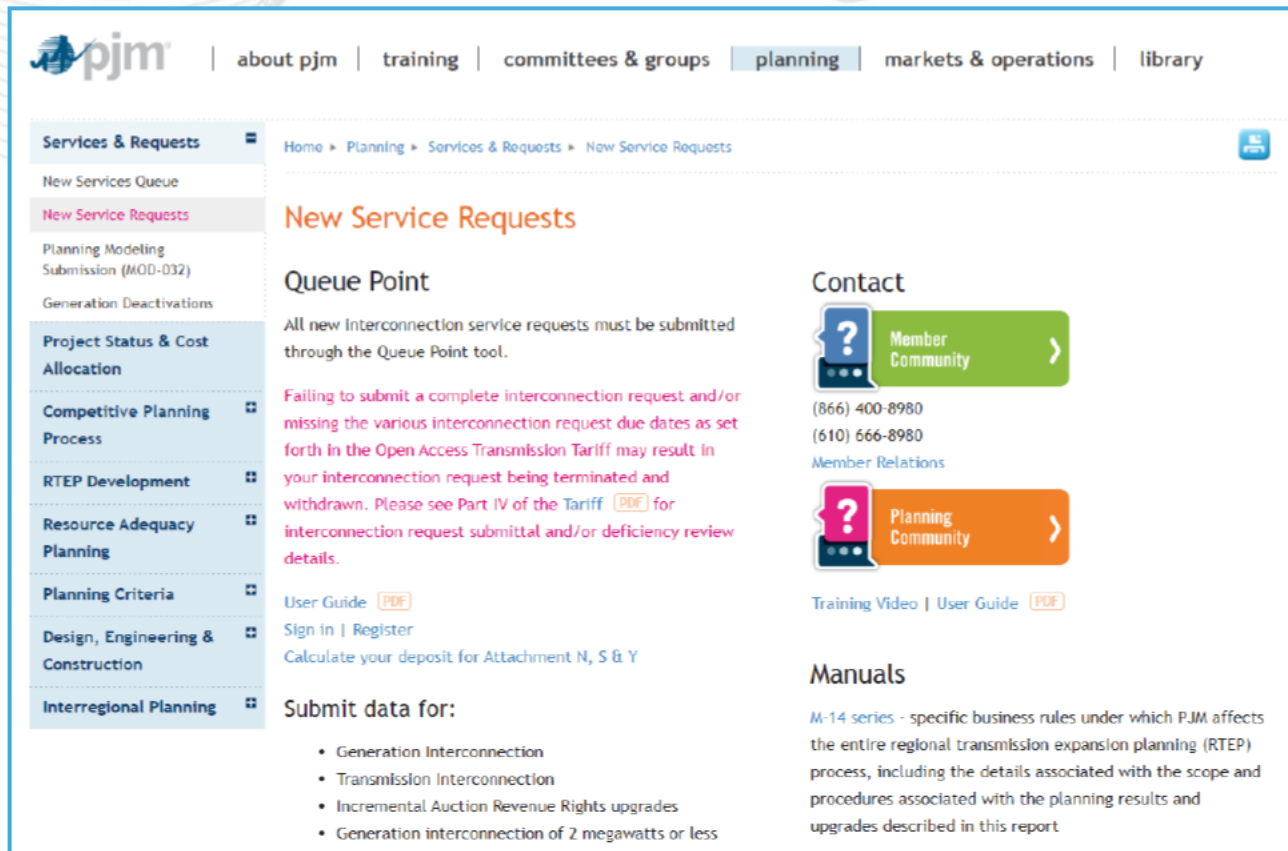
Training Video | User Guide [PDF](#)

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 'about pjim', 'training', 'committees & groups', 'planning', 'markets & operations', and 'library'. The left sidebar lists various services and requests, with 'New Service Requests' highlighted. The main content area features a 'Queue Point' section with a warning about interconnection requests and links to a 'User Guide' and 'Register' page. A 'Contact' section provides phone numbers and links to 'Member Community' and 'Planning Community'. A 'Manuals' section mentions 'M-14 series' business rules.

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

Not a PJM Member

- Register for a CAM account
- Check box that says “my company is not listed”

PJM Member

- Request access permissions in Account Manager
- Planning Center Queue Point Read/Write
- Granted by your company CAM

Homepage - Attachments

Find out the appropriate attachment form for your project.

Start your Attachment N Feasibility Study submission here.

- › Specify a project queue number to begin System Impact Study submission.
- › Project information entered during Attachment N Feasibility Study will display on this form.

View sample before beginning your submission.

Homepage – Existing Requests

All your saved and submitted projects will display here.

Queue Number	Project Name	Reference Number	Phase	Status	Project Manager	Submitted	Actions
ACI-003	Project 1	13958087	Attachment N - Feas	Under Review	PJM Project Manager	12.12.2016	
N26	Project 2	7613213	Attachment N - Feas	Accepted	PJM Project Manager	12.12.2016	
L05-CE22	Project 3	14699604	Attachment N - Feas	Accepted	PJM Project Manager	12.12.2016	
Not Assigned	Project 4	7121120	Attachment Y	Submitted	PJM Project Manager	12.12.2016	
ACI-003	Project 5	5887571	Attachment N - Feas	Under Review	PJM Project Manager	12.12.2016	
A2-015	Project 6	10066968	Attachment Y	Under Review	PJM Project Manager	12.12.2016	

Edit project

View project

Begin System Impact Study submission

Copy existing Feasibility Study data into a new request.

Delete unneeded submissions

“I want to keep working on a submission, but my work isn’t there when I go back to it.”

SOLUTION:

User is selecting the green “start a new study” button. This starts a new submission every time.

- Use the green buttons one time to start a new submission.
- To edit an in progress submission, navigate to the Existing Requests tab and selecting the Edit button.

“My File uploads
won’t save.”

SOLUTION:

Look for the red error message
at the top of the page.

File extensions must be in lowercase

- site-diagram.PDF will give an error
- site-diagram.pdf will be accepted

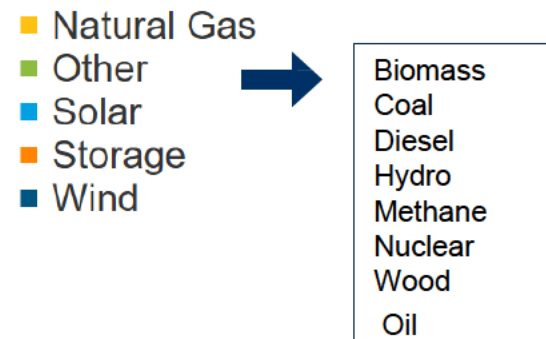
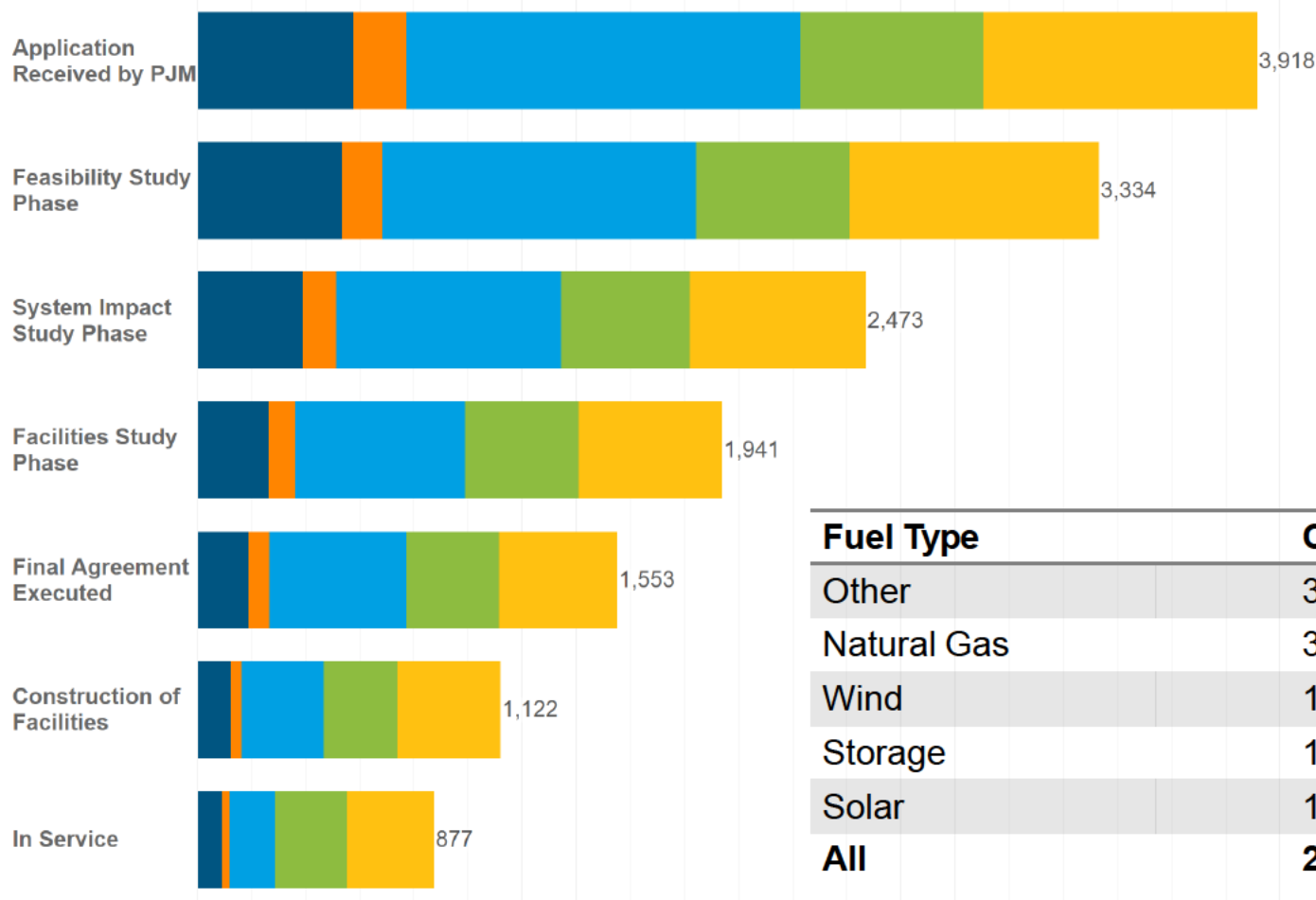
Apple Macs may add extra payload data to some files (e.g. PDF files).

- Try saving the PDF on a PC



Volume of Projects in a Queue Reduces through Study Process

All Generation Requests (A – AF1)



Fuel Type	Completion Rate*
Other	39%
Natural Gas	32%
Wind	16%
Storage	13%
Solar	12%
All	22%

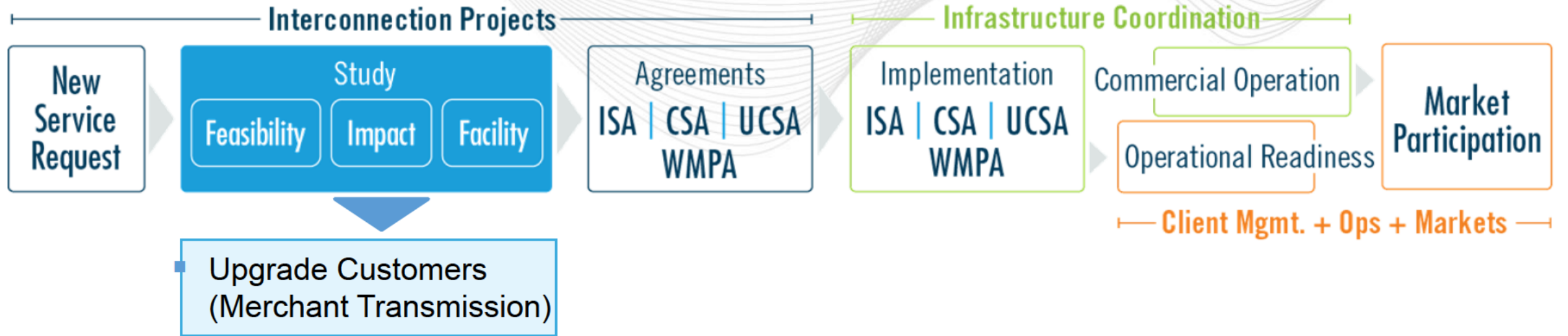


- Gen/Trans Interconnection Customers
- Eligible Customers (LTF)
- Upgrade Customers (IARRs)

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



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

Feasibility Study Phase

Table 5.1.2-1: Large New Services Request Process Deposit Requirements

Month of New Services Queue	Deposit Requirement Fixed Deposit	Deposit Requirement Per MW Portion of Deposit	Portion Held as Non-Refundable	Maximum Deposit
1 st – 4 th	\$10,000	\$100	10%	\$110,000
5 th	\$20,000	\$150	10%	\$120,000
6 th	\$30,000	\$200	10%	\$130,000

Note: The per MW value is the maximum of the Capacity or Maximum Facility Output requested.

*10% of deposit is non-refundable

—Table 5.1.2-2: Larger New Services Request Process expected costs—

Transmission Owner Zone	Expected Costs
AEP	\$26,000
BGE	\$15,000
ComEd	\$15,000
Dayton	\$13,000
Dominion	\$12,000
Duquesne	\$19,000
FirstEnergy	\$23,000
AEC/DPL/Pepco	\$12,000
PPL	\$20,000
PSEG	\$17,000

Attachment S

Queue Month	Deposit Calculation*	Max Deposit
1-4	\$10,000 + \$100 per MW	\$110,000
5	\$20,000 + \$150 per MW	\$120,000
6	\$30,000 + \$200 per MW	\$130,000

*10% of deposit is non-refundable

Attachment EE Deposits

Flat Deposit

\$50,000

*Merchant Network Upgrade Skips Feasibility and goes right to System Impact

**IARR Request requires both Feasibility and System Impact Study



Required

- Deposit for Interconnection Requests based on request receipt timing and MW size
- 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)
- **Study Completion:** Target approximately 120 Days after close of queue
- **Study participants:** PJM & TO (Contractor under TO)

Results

- Attachment Facilities Needed for Interconnection
- **Powerflow Analysis** - Identify thermal overloads and Required Upgrades (Costs and Construction Schedule Estimates for primary POI)
- **Powerflow Analysis** - Identify thermal overloads with secondary POI (no cost/schedule estimates)
- **Short Circuit Analysis**
- Customers receive a Feasibility Study Report and have 30 days to sign a System Impact Study Agreement (SISA)

System Impact Study Phase

Table 5.2.1-1: System Impact Study Costs

Project Size	Required Deposit Fixed Portion	Required Deposit Per MW Portion	Portion of Deposit that is Non-Refundable	Maximum Deposit
>20MW	None	\$500/MW	10%	\$300,000
>2MW and ≤20MW	\$10,000	None	10%	\$10,000
≤2MW	\$5,000	None	10%	\$5,000

Table 5.2.1-2 System Impact Study PJM Expected Costs

TO Zone	Expected Cost (\$) Requests > 20 MW	Expected Cost (\$) Requests ≤ 20 MW
AEP	\$46,000	\$16,000
BGE	\$50,000	Bounded
ComEd	\$99,000	\$32,000
Dayton	\$25,000	Bounded
DL	\$23,000	Bounded
Dominion	\$26,000	\$15,000
FE	\$42,000	\$16,000
PECO	\$17,000	Bounded
PHI	\$28,000	\$15,000
PPL	\$31,000	Bounded
PSEG	\$38,000	Bounded

*PJM expects the standard Tariff deposit will cover the System Impact Study costs

Attachment EE

Project Type	Flat Deposit
Merchant Upgrade*	\$50,000
IARR Request**	\$20,000

*Merchant Network Upgrade Skips Feasibility and goes right to System Impact

**IARR Request requires both Feasibility and System Impact Study



- **Required**
 - 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)
- **Study Completion:** Target 120 days after start of queue study or execution of Impact Study Agreement
- **Study participants:** PJM & TO (Contractor under TO) and Affected Systems (FSA)
- **Results**
 - Summer Peak Powerflow Analysis
 - Light Load Powerflow Analysis (if applicable)
 - Short Circuit Analysis
 - Other Powerflow Analyses as applicable
 - Cost Estimates and Allocations
- Customers receive an Impact Study Report and have 30 days to sign a Facility Study Agreement (FSA)

Facilities Study Phase

Table 5.3.3-1: Facilities Study Costs

Project Size	Required Deposit
>20MV	The greater of: \$100,000 or estimated amount of Facilities Study cost for the first three months
>2MW and ≤20MV	\$50,000
≤2MW	\$15,000

Facilities Study (Initial Engineering Review)



- Conduct governed by procedures as set forth in Attachment D of Manual M-14A
- Required
 - Deposit based on MW size
- Completion
 - Dependent on individual Transmission Owner zone and queue volume
- Study By
 - TO (or Contractor under direction of TO)
 - Affected System study
- 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

Combined Feasibility/System Impact Study

- 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.



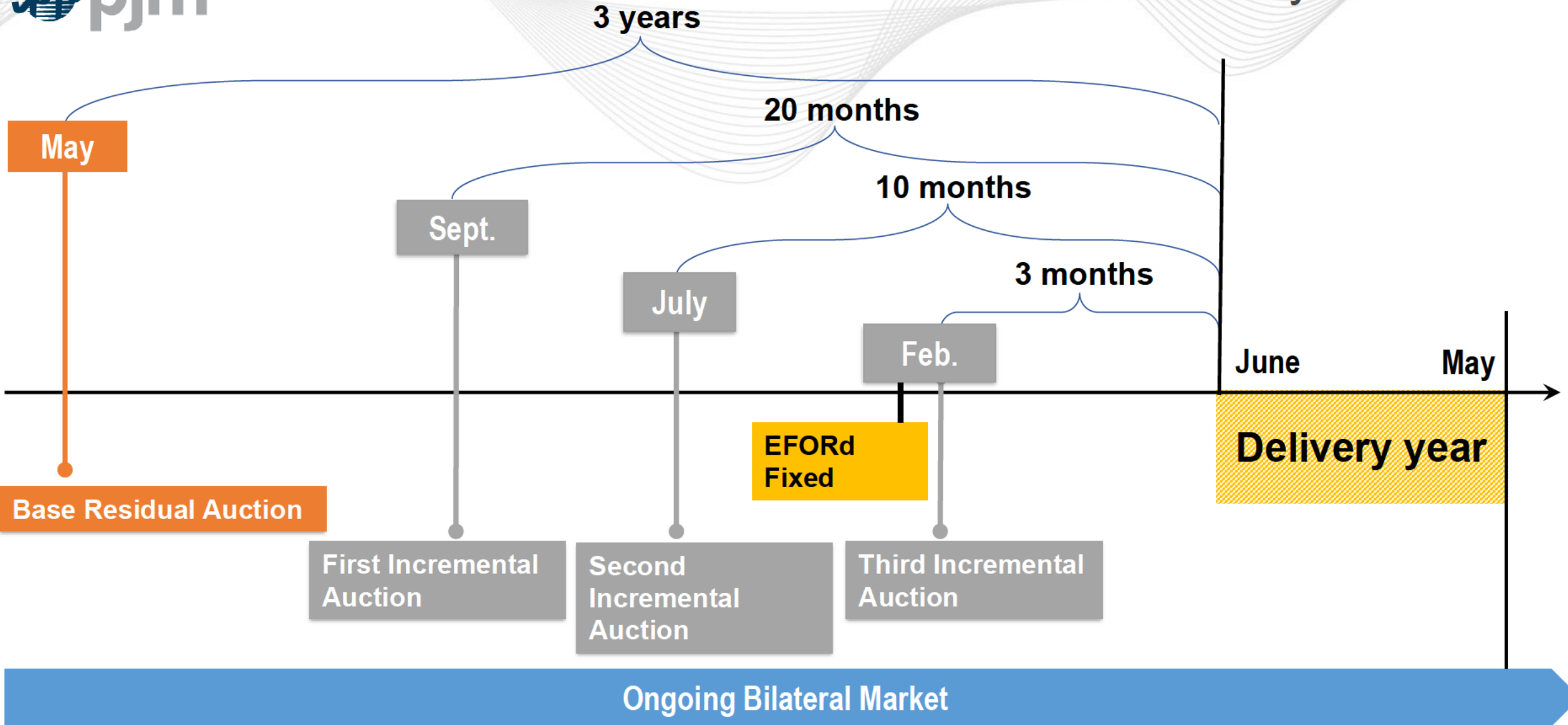
Interim Deliverability Study

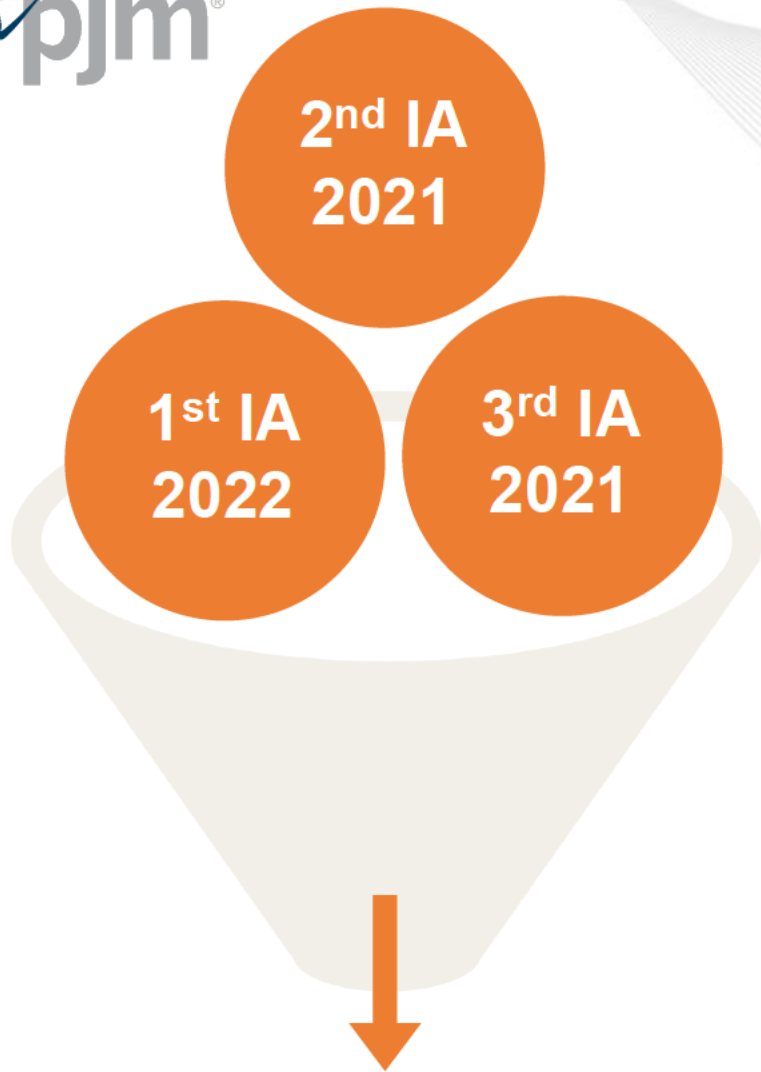
Interim Deliverability Study is targeted towards:

- Projects coming into service prior to the impact study year
- Projects that are dependent on a network or baseline upgrade that expect the dependent reinforcement to be not completed at the time of the project coming online*

*Only facilities identified at constraints in the impact study will be monitored

Incremental Auction Study Timeline





2nd IA 2021	<ul style="list-style-type: none"> Study Begin : February 2020 Study End : June 2020 Auction Date : August 1st Week
1st IA 2022	<ul style="list-style-type: none"> Study Begin : June 2020 Study End : August 2020 Auction Date : October 1st Week
3rd IA 2021	<ul style="list-style-type: none"> Begin : September 2020 End : January 2021 Auction Date : March 1st Week

*BRA studies are performed as needed

Project Modifications/ Output Reduction Rules

Material Modification: a change that has a material adverse impact/effect to any later subsequently queued project in relation to scope, cost, or time.

- Changes that result in a Material Modification will not be accepted by PJM for current queue position held.
- A project may never increase the MFO or CIR without an additional new service request.
- A change in fuel type would require a material modification review.
- Significant changes to POI are considered material. Project must be withdrawn and a new Interconnection Request submitted for the modification.
(Tariff Section 36.2A.3)

Permissible Technological Advancement: New Tariff Section 36.2A.22

A Technological Advancement submitted to PJM no later than the return of an executed Facilities Study Agreement (or return of an executed ISA if a Facilities Study is not required) is classified as a **Permissible Technological Advancement** if the proposed change does not:

- Increase the capability of the Generating Facility
- Represent a different fuel type or
- Cause any material adverse impact(s) on the Transmission System.

If a proposed technological advancement is deemed a Permissible Technological Advancement, then the proposed change will not be considered a Material Modification and no additional PJM study will be required. All other proposed technological changes will require a study to determine if the change would constitute a Material Modification.

Modification Prior to the Commencement of the Feasibility Study (Tariff Section 36.2A.1.1)

Interconnection Customer may reduce its project by up to **60%** of the electrical output. Timing of the announcement depends on which month of the queue they entered:

- i. For projects that enter the queue in Months 1-5, customer must identify the change prior to the close of business on the last day of the sixth month.
- ii. For projects that enter the queue in Month 6, the customer must identify the change no later than close of business on the day following the completion of the scoping meeting.

Modification After the start of the Feasibility Study but Prior to Executing a System Impact Study Agreement (Tariff Section 36.2A.1.2)

Interconnection Customer may reduce its project by up to **15%** of the electrical output. For a request to reduce by more than 15%, customer must request PJM to determine whether such a change would be a material modification. PJM will allow the customer to reduce the size of its project:

- i. to any size if PJM determines the change is not a material modification, or
- ii. by up to **60%** of the electrical output if PJM determines it is material, however, in this case the project would be removed from its current position and be assigned a new queue position at the beginning of the subsequent queue and your future studies will be performed consistent with the timing of studies for projects submitted in the subsequent queue.

Modifications After the System Impact Study Agreement but prior to Executing an Interconnection Service Agreement (Tariff Section 36.2A. 2)

Interconnection Customer may reduce its project by the greater of **10 MW or 5%** of the electrical output. For a request to reduce by more than this, customer must request PJM to determine whether such a change would be a material modification. PJM will allow the customer to reduce the size of its project:

- i. to any size if PJM determines the change is not a material modification, or
- ii. by up to the greater of **50 MW or 20%** of the electrical output if PJM determines it is material, however, in this case the project would be removed from its current position and be assigned a new queue position at the beginning of the subsequent queue and a new **System Impact Study** will be performed consistent with the timing of studies for projects submitted in the subsequent queue



Agreement Type	New Service Customer	FERC Jurisdictional ?
Interconnection Service Agreements (ISA)	Generation/Transmission Interconnection Customer	Yes
Wholesale Market Participation Agreements (WMPA)	Generation Interconnection Customer	No
Interconnection Construction Service Agreement (CSA)	Generation/Transmission Interconnection Customer	Yes
Upgrade Construction Service Agreement (UCSA)	Transmission Interconnection Customer (Merchant Network Upgrades)	Yes



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

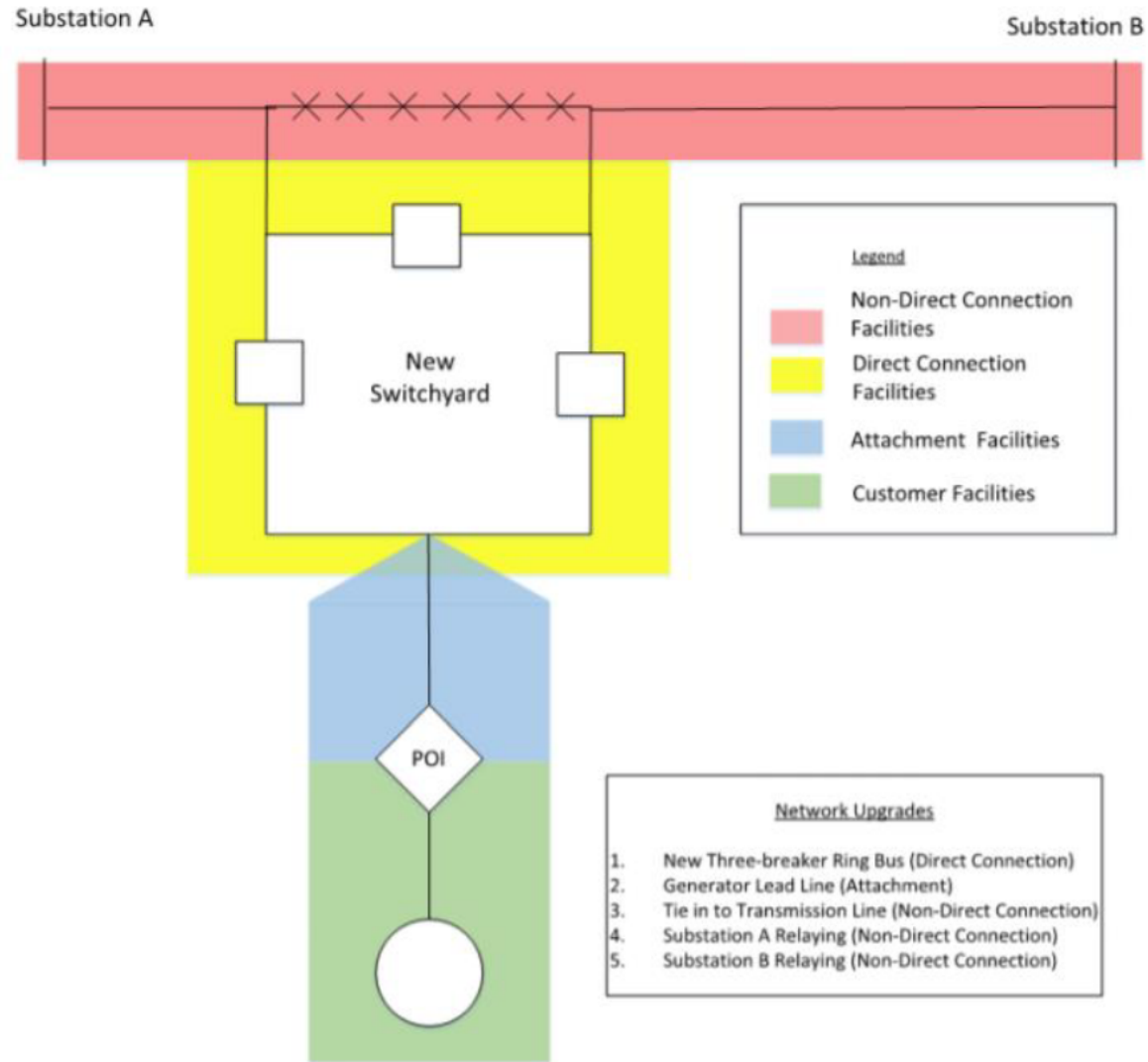
- Grants rights to interconnect and generate
- Defines project milestones
- Describes the project's point of interconnection
- Describes system upgrades and costs
- Outlines metering requirements
- Security requirement
- Persists after construction

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 with TO
- Grants rights to participate in PJM's market
- Persists after construction



Attachment Facilities

- Carry generator flows only (Generator lead line)

Direct Connection Facilities

- No outage of existing facilities required to construct (Greenfield Interconnection Switchyard)

Non-Direct Connection Facilities

- Modifications to existing TO facilities

How Security is Calculated for ISA:

The Security amount is determined by PJM and is estimated to be the sum of the cost of:

- Required Non-Direct Network Upgrades.
- Any Network Upgrades that Transmission Owner(s) will be responsible for constructing that the customer has cost allocations towards.
- Required Attachment Facilities and Direct Connection Network Upgrades work that the Interconnected Transmission Owner expects to complete during the first three months of construction work.

Customer can select Option to Build (OTB)

- Up to 30 days after receiving the Facilities Study.
- Customer can only build Direct Connection Facilities (facilities that can be built without interrupting existing Transmission Owner facilities)

Interconnection Service Agreement Implementation

Agreement Implementation (Construction)



PJM's Responsibilities:

- Periodic construction status meetings
- Outage coordination
- Billing and cost tracking for each Network Upgrade Number
- Metering and telemetry from IC to PJM
- Test energy injection
- Project close out

KEY TAKEAWAYS

- Participation in the PJM markets requires a New Services Request.
- New Services Application type depends on the customer type (PJM M14A).
- Customer must have a complete application including an executed agreement, requisite deposit and required Queue Point data.
- Feasibility, System Impact and Facilities Studies are performed.
- Modifications to New Services projects must follow PJM Tariff 36.2A rules.
- Final agreement received depends on FERC jurisdiction and customer type.