



ACE Presentation to BPU Grid Modernization Proceeding

January 14, 2022

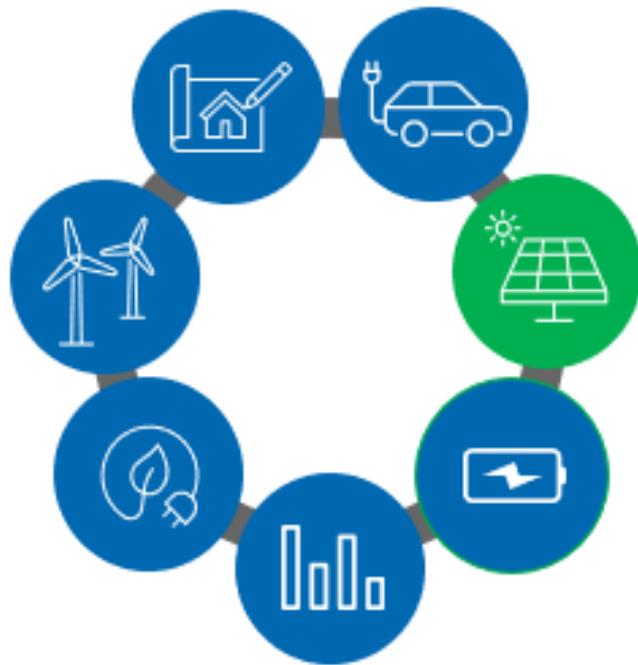


An Exelon Company

Introduction: ACE Solar Approach

ACE is a key partner to meet New Jersey's clean energy goals as the connector of clean resources to the grid.

EMP & Grid Modernization



ACE Solar Approach

- Streamline solar interconnection processes, enhance capacity maps, expand LMI options
- Incentivize smart inverters
- Proactively build out solar hosting capacity systemwide
- Work with developers to leverage distributed solar assets to improve local grid reliability
- Facilitate wholesale market value of aggregated solar resources

ACE: Key Solar Facts

> 20%
capacity of
peak load is
from solar



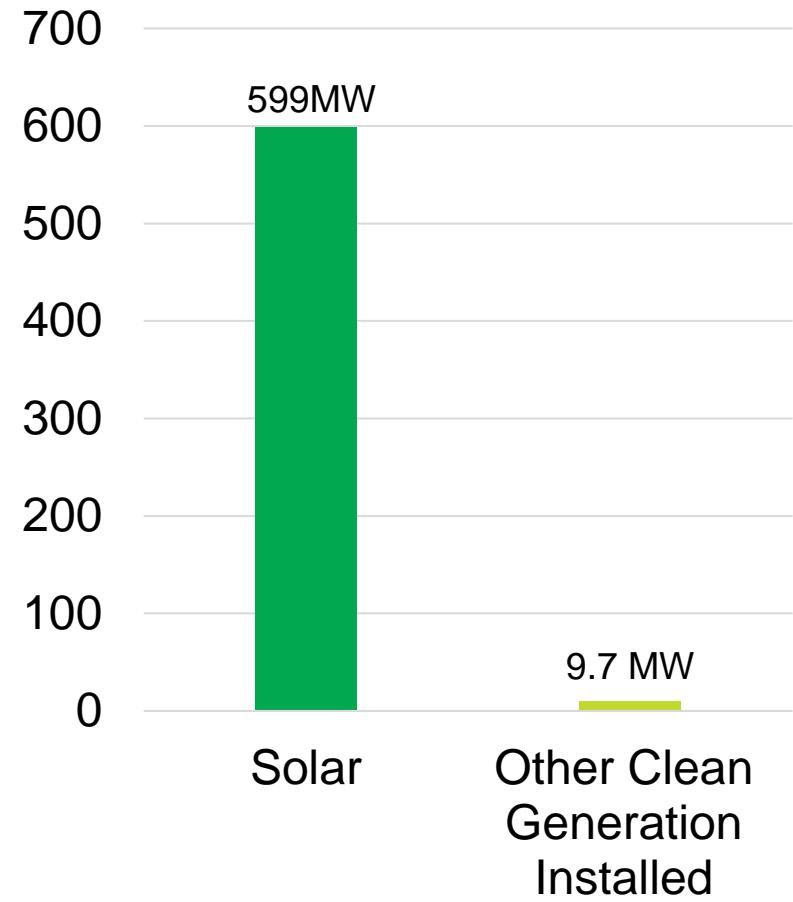
Electric Customers
Served in 2021 (as
of November)
565,482

18.8%
of circuit miles
closed to new
capacity



Total Net Metering
Connections in 2021*
44,066

Approximate Total 2021
Nameplate Clean Energy
MW Approved to Operate



*As of 12.31.21 from program inception

ACE: Application Snapshot

How many interconnection applications (approximately) were completed, withdrawn, or still pending in 2021, by level and generation type?

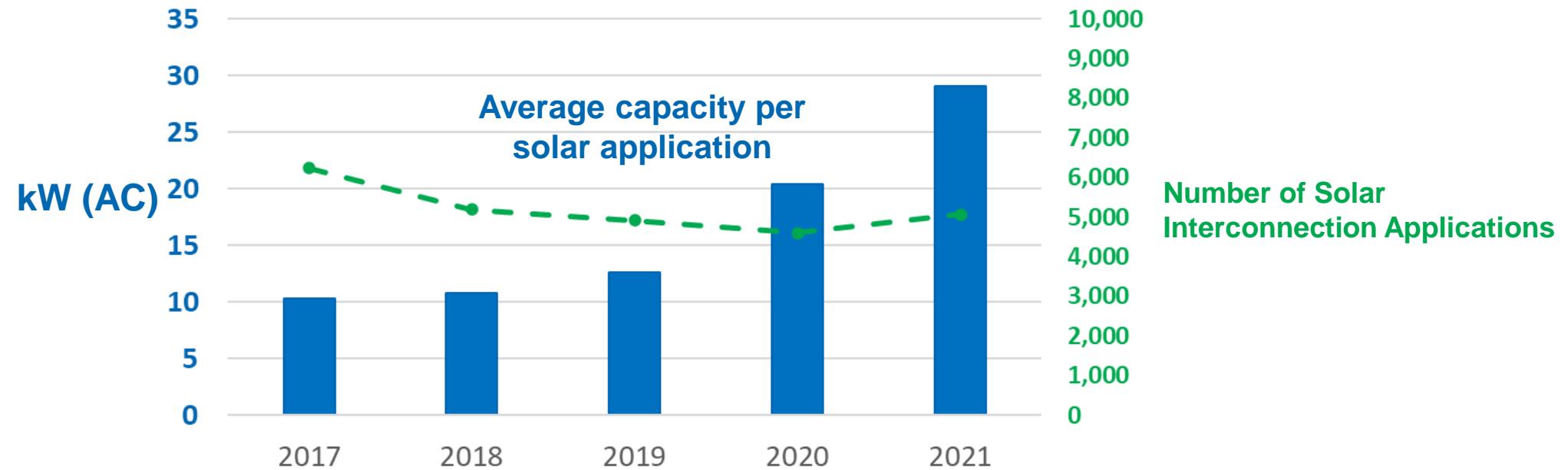
					SOLAR	WIND	CHP	OTHER				
	Completed/ ATO'ed	Withdrawn*	Pending	Completed	Withdrawn*	Pending	Completed	Withdrawn*	Pending	Completed	Withdrawn*	Pending
Level 1	34,455	227	2,277	18	0	0	0	0	0	49	4	4
Level 2	8,949	121	703	13	0	0	0	0	0	16	1	3
Level 3	4	4	57	0	0	0	0	0	0	0	0	0

*As of 12.31.21 from program inception

Growth in Application Complexity

How do you see the path to meeting the NJ clean energy goals?

ACE already has a significant penetration of distributed energy resources with solar capacity equal to >20% of peak load



Interconnection requests are growing more complex due to trends toward larger project sizes and limited hosting capacity



Ongoing Customer Focus & Process Improvement

- Enhanced customer support through dedicated project management teams and single points of contact
- Implemented Digital Solar Toolkit
- Ongoing engagement with developers through Focus Groups to identify ways to streamline the interconnection process
- Continue identifying digital technologies to automate application process and improve timelines
- Work with customers to reduce the cost of required system upgrades where possible
- Maintain and improve 86% overall customer satisfaction with the interconnection experience

Resource Gaps & Policy Considerations

Resource Gaps & Policy Changes

How do you see the path to meeting the NJ clean energy goals?

Challenge #1: Increasing complexity of interconnection applications and dynamic system operations

Potential Mitigation Strategies:

- Enhanced utility technical support for customers & DER developers
- Advanced DER analytics and automation
- “Flexible” interconnection agreements
- Continued grid modernization

Resource Gaps & Policy Changes

How do you see the path to meeting the NJ clean energy goals?

Challenge #2: Enabling distribution system investment to enhance hosting capacity

Potential Mitigation Strategies:

- Advanced DER forecasting
- Metrics or methodologies to enable proactive investment
- Cost-allocation strategies to balance customer, developer, and utility benefits

Resource Gaps & Policy Changes

How do you see the path to meeting the NJ clean energy goals?

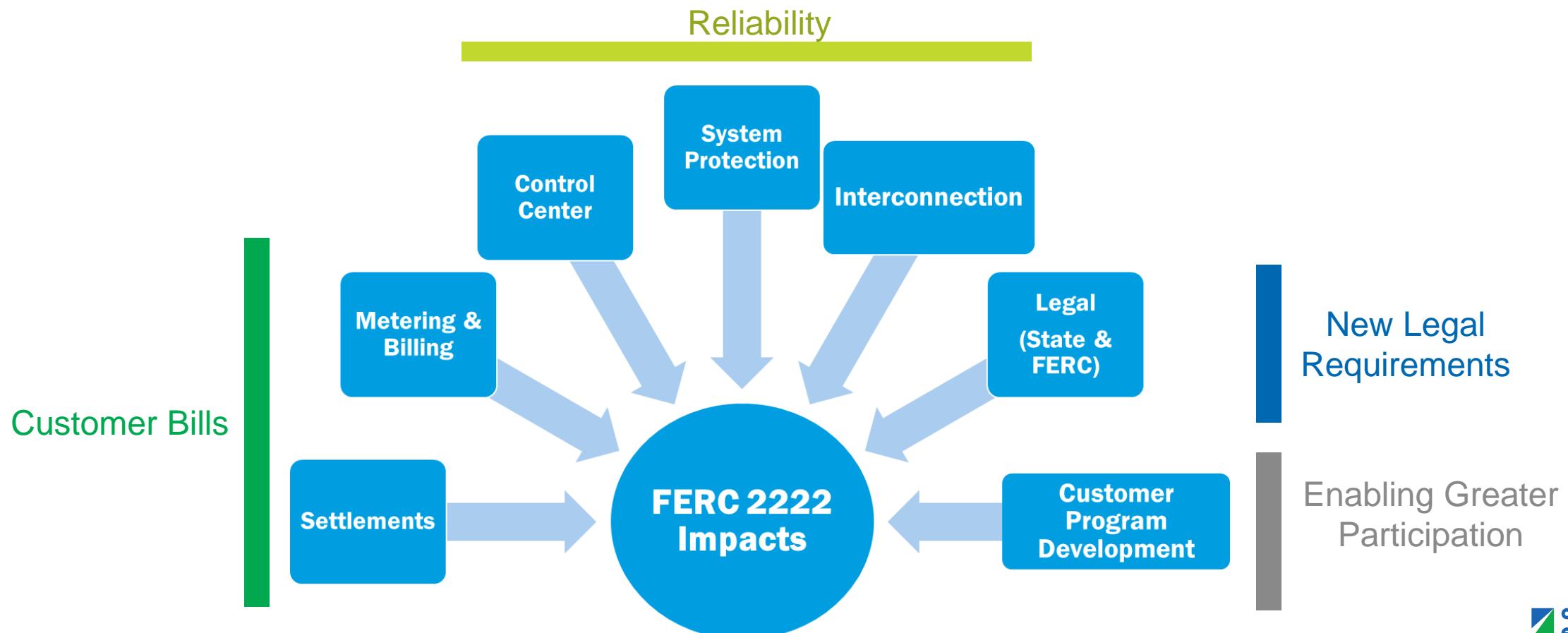
Challenge #3: Inefficient queueing processes at PJM and transmission planning

Potential Mitigation Strategies:

- PJM interconnection queue reform
- State-wide and/or regional transmission planning for renewables

Order 2222 Creates Cross-Utility Impacts

Implementation of PJM's compliance rules on FERC 2222 will create new processes and impacts across distribution companies.



Interconnection Process

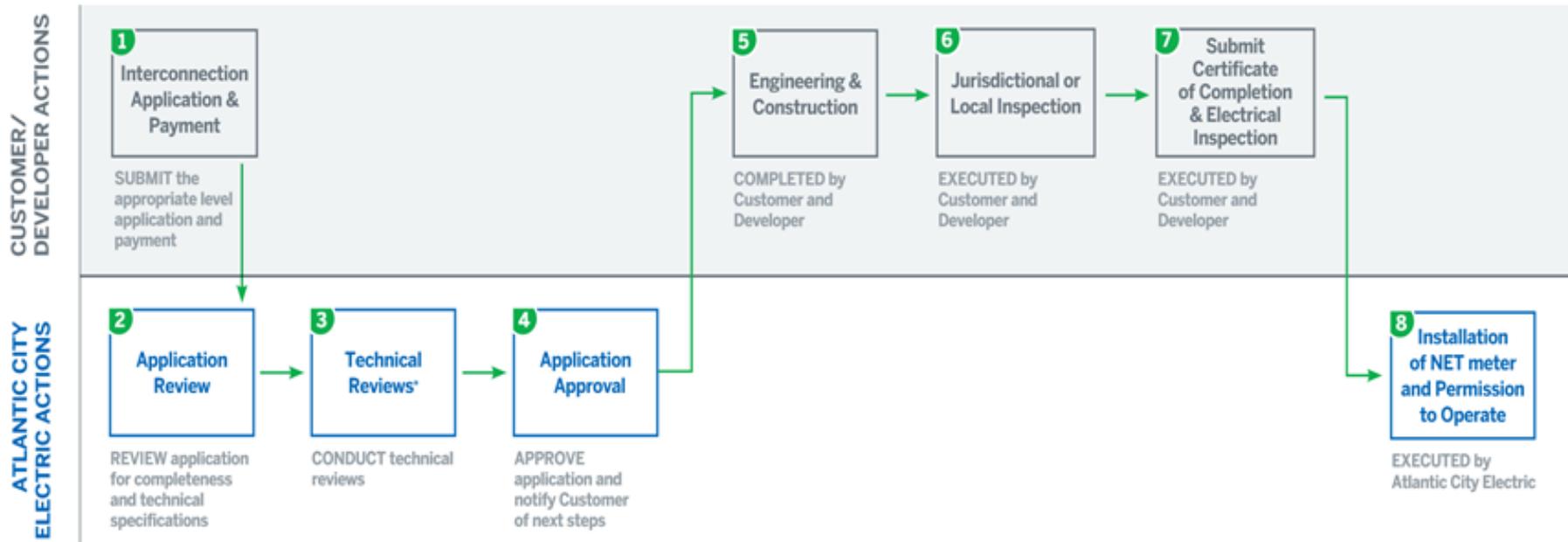
Interconnection Application Approach

Atlantic City Electric application process for Levels 1-3

Levels
1-3

Application Process

The Interconnection Process



Interconnection Application Approach: Process for Levels 1-3

Over the past 2 years ACE has made several improvements to the interconnection process and customer experience

What is going well?

Levels 1-3

- Online application tool ("Connect The Grid" or "CTG") for submittal of interconnect application and documents as well as communications between ACE and developer and within departments at ACE. This tool was first implemented in 2020. Notably, the application will be upgraded further in early 2022, creating further process efficiencies as all interconnection requests will go exclusively through the Company's online portal.
- Single point of contact for customers, dedicated project management teams, including dedicated resources for projects requiring distribution upgrades added during 2020 and 2021 to improve the customer experience.
- Quarterly Solar Collaborative Forums for Developers.
- Hosting capacity maps, which are updated quarterly to provide transparency into potential locations for interconnection.

Interconnection Application Approach

What could be improved?

Levels 1-3

All Levels

- Expand automated application review (for Level 1 and some Level 2 applications)
- Streamline as-built application review
- Improve process for invoicing (system improvement) and cost estimates (process improvement), with potential incorporation into CTG (Level 2 and 3 applications)
- Engage stakeholders in a review of interconnection applications, agreements, and processes/procedures (as written in the regulations) in an effort to modernize and remove barriers to automation
- Once AMI is deployed, it will reduce the time for meter exchanges because of the elimination of truck rolls

Level 2-3 only

- Require all non-FERC jurisdiction interconnections to go through the State-approved Interconnection Process with distribution system impacts and scope and cost identified through a State Study (PJM only reviews for Transmission impacts). Modify Scope and Limitations of existing interconnection agreement, which does not appear written for use with a WMPA or anything outside of NEM, possibly impacting FERC 2222 projects.

Appendix

FERC 2222 Impact

How might the mitigation plans change depending on the outcome of rules currently under revision (e.g., PJM, FERC Order 2222)?

FERC 2222 (i.e. supporting pathways for aggregated DER participation in wholesale market products and services) stands to affect several current EDC customer and reliability focused business daily processes, including interconnection; system planning and real-time operations; customer retail metering/billing functions; resource registration; and wholesale market services settlement functions.

DER Interconnection

- Focused on implications of interconnection agreement between the EDC and the DER aggregator; separate from the PJM Interconnection Agreement
- Size, composition and technical configurations of DER aggregations could require development of new interconnection review processes to align DER integration objectives with system reliability mandates

DER Registration

- Establishment of DERs as a specific market participation category will establish pathway for registration of DERs under various wholesale market participation models
- Definition of appropriate resource registration and product delivery windows, limitations on wholesale market product/portfolio switching during defined delivery windows portfolio splitting

FERC 2222 Impact

How might the mitigation plans change depending on the outcome of rules currently under revision (e.g., PJM, FERC Order 2222)?

Customer Billing + Settlement

- DER aggregations may require additional metering telemetry granularity for wholesale market product and service transactions
- Additional revenue grade metering requirements for billing customer usage from DER aggregations
- On bill vs off bill product offering compensation from DER aggregators to DER owners for wholesale market services

Reliability + Regulatory

- Contractual relationship between EDC interconnection agreement and wholesale market DER aggregation participation agreement
- EDC override capability of DER aggregation commercial market operations activities during reliability events (i.e. scarcity pricing conditions)

Interconnection Staffing for ACE

Were present staffing levels sufficient to meet company internal and/or N.J.A.C. application timelines for each stage of the interconnection application process in 2021?

Stage	Sufficient / Not sufficient
Level 1 Application Screening by GPC	Y
<i>Level 2:</i>	
Application Technical Review – Project Mgmt.	Y
Capacity Planning	Y
Dist./Substation/Telecom Engineer	Y
<i>Level 3:</i>	
Application Technical Review – Project Mgmt.	Y
Capacity Planning	Y
Dist./Substation/Telecom Engineer	Y

Forward-looking Priorities for ACE

What would be the expected impact on the EDC ability to meet current N.J.A.C. or internal timelines if there were a substantial (e.g., more than 25%) increase in interconnection applications without an increase in staffing or other resources?

- ACE believes that staffing levels are sufficient to meet the N.J.A.C. application timelines, where applicable. The average processing times from the part 2/B application through Permission To Operate is approximately 8-9 days.

Levels 1-3	Levels 1-3: In proactively managing and balancing the increase in applications, the Company has recently hired a business program manager and a project manager for New Jersey and expects to add one interconnection specialist for New Jersey in Q1 2022 to the Green Power Connection (GPC) team, which is responsible for accepting and processing interconnection requests as a single point of contact with the customer and developer. Additionally, beginning in early 2022, process efficiencies are expected to be gained by requiring all interconnection requests to go exclusively through the Company's online portal.
Levels 2-3	Levels 2-3: As the technical complexity increases, applications will present bigger challenges. The Company has hired customer-facing and engineering consultants to assist in the interconnection application process.

Interconnection Timeline Delays for the Customer

- + What were the most frequently missed milestones by the customer in 2021? *Add/Remove “X” to all that apply.*

Applications

Level 1-3: The customer submits incomplete applications, resubmittals, and revisions to the application (“remove to revise”)

Funding

Level 2-3: The customer’s project needs upgrades and the customer does not return agreements or agrees to pay, or the timeline gets pushed when the customer ultimately pays

Permitting

Level 1-3: N/A, the customer handles permitting outside of utility involvement, so it does not affect the timelines for ACE

Third party delays

Level 1-3: Customer requested accommodations/extensions given can create delays, and late submittals can cause developers to miss a deadline

Interconnection Timeline Delays for ACE

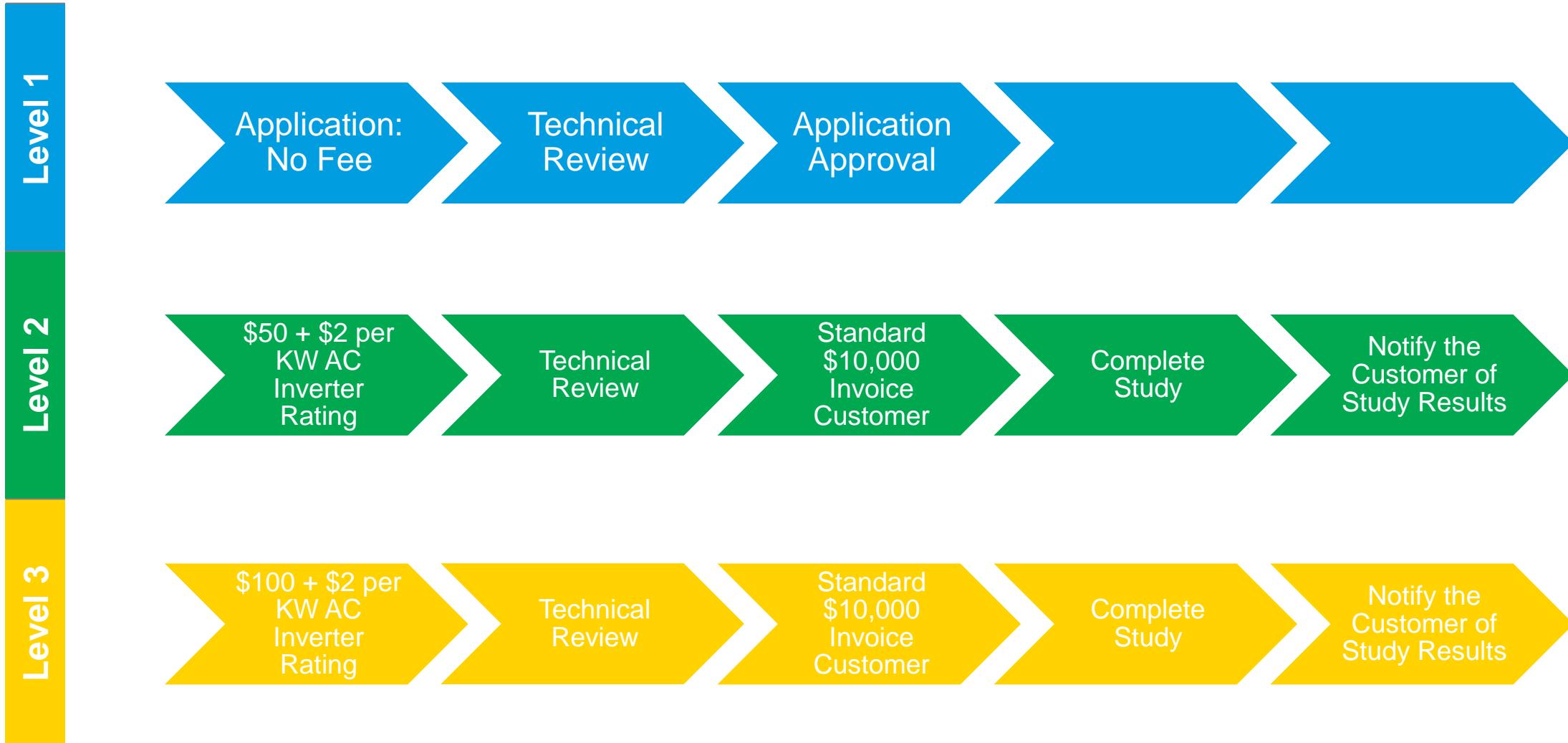
Were there common delays that impacted the actual date of operations permission to operate (PTO) in 2021?

The most common delays were the following:

- Revisions to applications by the developer from information initially submitted and approved. The current process requires a developer to resubmit an application when changes are made, thus causing additional review by the company.
- Upgrades identified as necessary due to the interconnection, especially extensive (and expensive) upgrades, can extend the timeframe for permission to operate, for a variety of reasons including good faith negotiations with the developer.
- Improvements in issuing invoices and completing the cost estimates could improve processing delays. The system improvement would incorporate this into our application portal to provide a more streamlined process.

Application and Load Study Fees for ACE

How are application and load study fees assessed, where applicable?



Cost Responsibility for System Upgrades for ACE

In 2021, what were the primary drivers considered to be for upgrading the system

Level 1	<ul style="list-style-type: none">• Distribution line upgrades• Conductor upgrades and transformer upgrades for voltage issues and equipment ratings
Level 2	<ul style="list-style-type: none">• Telemetry• Transfer trips• Line reclosers
Level 3	<ul style="list-style-type: none">• Feeder upgrade or express feeder where required to connect directly to the substation

How was the cost allocation primarily determined for upgrades?

Level 1	<ul style="list-style-type: none">• When a feeder is closed or restricted and cannot accommodate more capacity without a system upgrade, the "causer" of the upgrade is responsible for the costs. The causer pays model typically applies regardless of the size of the project.
Level 2	<ul style="list-style-type: none">• Site specific requirements for upgrades may also incur costs, which are paid by the customer.
Level 3	<ul style="list-style-type: none">• Where a metering upgrade is required, the costs are paid by the customer.

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for ACE

Which parts of the interconnection process were subject to delays due to cost-related issues in 2021?

Although ACE did not have delays in the interconnection process relating to cost-related issues in 2021, a significant cost of upgrades for projects would largely be the driver for exceeding the cost envelope. ACE has seen instances where delay associated with the interconnection timeline is due to the developer seeking to renegotiate the upgrades associated with a project or make other modifications to the project to bring costs down. ACE has been accommodative of these renegotiations, but still faced objections from developers about the time. Parts of the interconnection process subject to delay owing to cost would also include the issuing of the Authorization to Install and the construction phase.

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for ACE

Which parts of the process cost more or added more workload than they should in 2021?

The significant cost upgrades for projects is a driver, especially in instances where developers sought to renegotiate or modify projects to bring the cost down. Workload increased during the technical review and construction phases for the more complex projects requiring significant upgrades.

Where could standardization of the application process expedite processing and reduce costs?

Upgrades are identified on a case-by-case basis, so the cost owing to them, and their potential reduction, is not possible to standardize. For all levels, the Company offers the following improvements and/or standardization to the following processes as a means of expediting processing.

- Automation and/or an improved process for application fees, i.e., more streamlined process.
- As-built implementation. Currently any revisions with Part 2 Applications require an updated application to be submitted and undergo engineer review. With an automated as-built process, the need for a new application could be eliminated.
- Invoicing (system improvement) and cost estimates (process improvement), with potential incorporation into the customer portal.

Interconnection Fees for ACE

What were the average fees paid by interconnection customers in 2021 for each stage of the interconnection application process?

Stage	Average Fees
Initial Application Screening	N/A
Level 1 Application	N/A
Level 2	
Application Technical Review	\$50 + \$2 per KW AC Inverter Rating
Load Study	\$10,000
Inspection	N/A
Level 3:	
Application Technical Review	\$100 + \$2 per KW AC Inverter Rating
Load Study	\$10,000
Inspection	N/A

Are load study fees due 100% up front for work to proceed, or is a deposit (e.g., 10%) sufficient for work to go ahead:

Stage	% Upfront Load and Cost Study Fees
Level 2	\$10,000
Level 3:	\$10,000

Telemetry for ACE

What are the telemetry (revenue grade metering) requirement thresholds for your EDC?

Area	Requirement Threshold
Project Capacity	250 kWac, with exceptions described below
Radial Versus Networked Circuits	150 kWac on Secondary Networks, 250kWac on radial circuits with (or with planned) Distribution Automation, 2MW on remaining circuits
Other Requirements (Please Specify)	Telemetry is not required to be revenue grade

Renewables Integration for ACE

Hosting Capacity

Question	Response
What percent of total circuit miles are closed to new distributed energy resources (DER)	2232 total miles closed across 49 circuits. Representing 18.8% of total circuit miles
Were hosting capacity maps available in your utility jurisdiction in 2021?	Yes
When was the last update?	October 7, 2021
What is the targeted update frequency for hosting capacity maps?	Quarterly

Renewables Integration for ACE

In 2021, what renewable resources integration strategies were leveraged in your service area?

Add/Remove “X” to all that apply.



Inverter-based Controls

- Constant power factors ranging 0.95 leading and lagging has been used to mitigate violations yielded in the technical interconnection study.



Volt-Var Controls



Other?

- Direct Transfer Trip required for system greater than 750 kW to mitigate system protection violations
- Telemetry for coordination with Distribution Automation programs.

Renewables Integration for ACE

N.J.A.C. §14:8-5.4 3(c) Level 1 interconnection review

Question

What percentage of Level 1 applications in 2021 required revision due to N.J.A.C. 14:8-5.4(c)?

Response

The Company has not collected data regarding revisions to Level 1 applications required by N.J.A.C. 14:8-5.4(c).

N.J.A.C. 14:8-5.4(c) The aggregate generation capacity on the line section to which the customer-generator facility will interconnect, including the capacity of the customer-generator facility, shall not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the high voltage (primary) level that is nearest the proposed point of common coupling.

Renewables Integration for ACE

N.J.A.C. §14:8-5.4 3(e) Level 1 interconnection review

Question

What percentage of Level 1 applications in 2021 required revision due to N.J.A.C. 14:8-5.4(e)?

Response

The Company has not collected data regarding revisions to Level 1 applications required by N.J.A.C. 14:8-5.4(e).

N.J.A.C. 14:8-5.4(e) If a customer-generator facility is to be connected to a radial line section, the aggregate generation capacity connected to the circuit, including that of the customer-generator facility, shall not exceed 10 percent (15 percent for solar electric generation) of the circuit's total annual peak load, as most recently measured at the substation.

Customer Satisfaction for ACE

Do you solicit customer satisfaction feedback on the following? If so, please share the results.

Area	Top Level Customer Survey Results
Application Process Overall	Customers are satisfied overall with the interconnection experience – 86% <i>(Q: Overall, how satisfied are you with your ACE Interconnection Experience)</i>
	Customers are also satisfied with the ease of completing the interconnection process - 84% <i>(Q: How satisfied are you with the ease of completing the Interconnection Process)</i>
Application Process to Approval to Install (ATI)	Not asked
Application Process between ATI and Permission to Operate (PTO)	Not asked
Load Study Process (where applicable)	Not asked

Does your website have a frequently asked questions (FAQ) specifically for issues with interconnection requests?

- Yes, the Atlantic City Electric website includes detailed information regarding interconnection requests and the application process

Source: ACE Interconnection Survey Results YTD November 2021

COVID impact statement for ACE

Please briefly comment on the impact of the COVID pandemic, if any, on how interconnection requests are handled at Atlantic City Electric Company.

A number of factors can impact ACE's ability to complete work as planned, including the availability of needed work crews and required materials; unplanned outages due to severe weather conditions; and the timing of completion of necessary permitting. Customers may also delay the interconnection process by seeking to negotiate changes, reduce costs, or change course. Major storm events, such as Tropical Storm Ida impacted supplies and crews that traveled to support restoration efforts.

- The on-going COVID-19 pandemic introduces additional uncertainty which, so far, has had limited impact on the Company's workplan. However, ACE has had customers seek extension due to COVID-19 pandemic challenges and has generally accommodated such requests where feasible.
 - Regarding Telemetry, the Company has seen cabinet and radio delays due to COVID-19/supply issues and chip shortages.
-



NJBPU Grid Modernization

Stakeholder Meeting #3

EDC Readout

Jersey Central Power & Light Co.



January 14, 2022

COVID impact statement for JCP&L

Please briefly comment on the impact of the COVID pandemic, if any, on how interconnection requests are handled at JCP&L

Remote work	Supply chain issues	Other [please specify]
JCP&L employees directly involved in receiving, reviewing and approving DER applications began mobile/work from home arrangements in March 2020. To date, employees continue to work remotely. Little to no impact on overall DER application workflow.	No significant issues to date.	Some clerical support are working on site as needed for application check processing. No impact on overall workflow. Some minor issues early in the pandemic with inability to access indoor meters

Introduction to JCP&L

EDC 2021 characterization snapshot (all values are approximate for 2021)



Electric Customers Served
in 2021

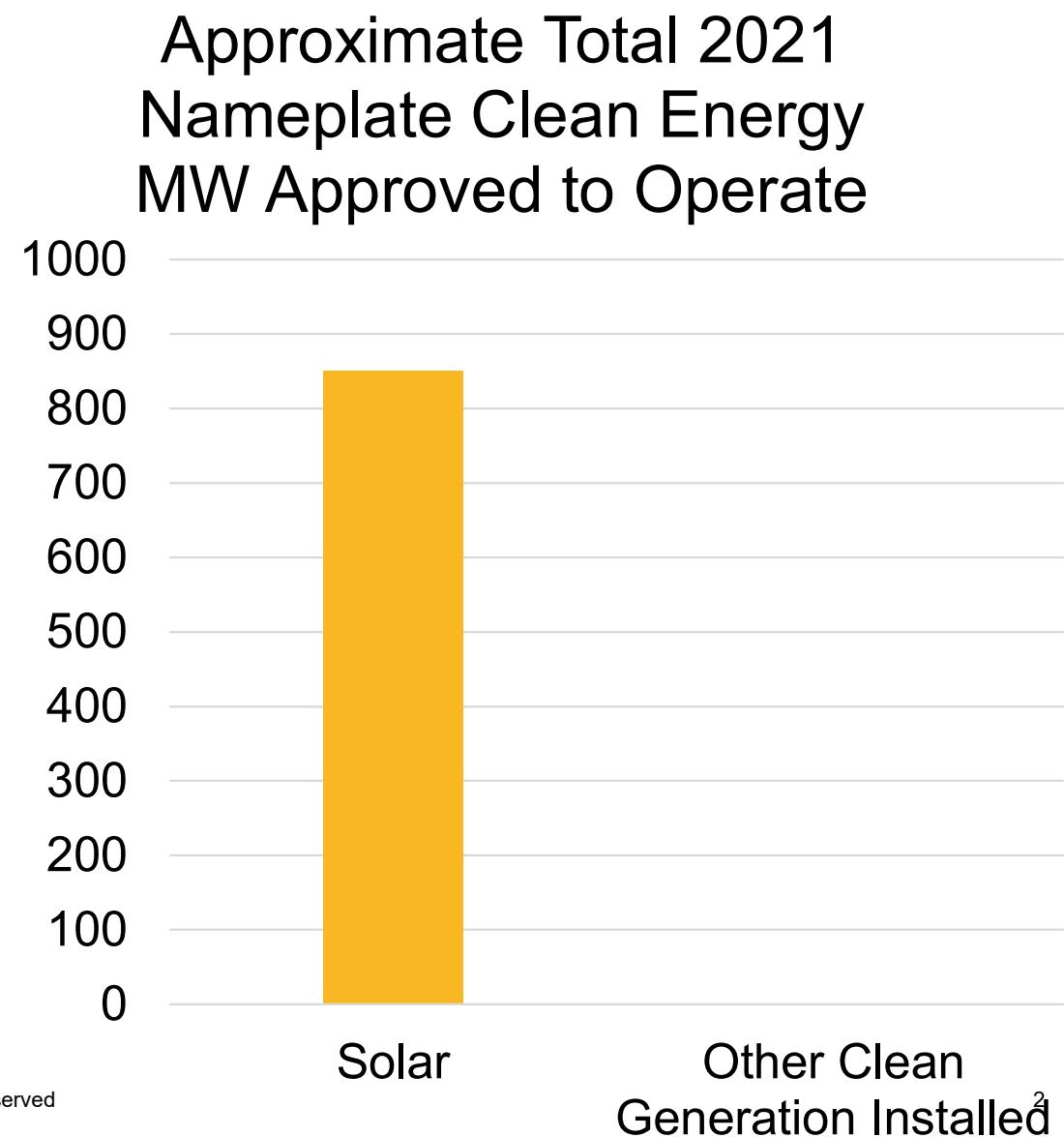
1,134,891



Total Net Metering
Connections* in 2021

47,764

* distribution-side connections



Introduction to JCP&L

How many interconnection applications (approximately) were completed, withdrawn, or still pending in 2021, by level and generation type?*

	SOLAR			WIND			CHP			OTHER		
	Completed	Withdrawn	Pending									
Level 1	2261	Unk	11	0	0	0	0	0	0	0	0	0
Level 2	1038	Unk	11	0	0	0	0	0	0	0	0	0
Level 3	3	Unk	0	0	0	0	1	0	0	0	0	0

Introduction to JCP&L

How do you see the path to meeting the NJ clean energy goals?

What resource gaps* and policy changes need to be addressed to interconnect the required clean energy capacity?

- Energy Storage as a Dx asset
- Energy Storage as a Tx asset
- DERMs as part of Grid Modernization
- Recovery on regulated electrification opportunities –
(Support policies that accelerate EV penetration and preserve utilities' role in infrastructure development)
- Implement a more automated DER tracking database

Introduction to JCP&L

How do you see the path to meeting the NJ clean energy goals?

What are possible mitigation plans to address resource gaps starting from the current status quo?

By: 2025	2030	2050
Scale employee resources to meet incoming DER application demand.		
Investigate/pilot additional DER integration technologies.		

Introduction to JCP&L

How do you see the path to meeting the NJ clean energy goals?

How might the mitigation plans change* depending on the outcome of rules currently under revision (e.g., PJM, FERC Order 2222)?

- | | |
|---|---|
| <ul style="list-style-type: none">Increased volume of interconnection requests. Re-evaluation of existing interconnection agreementsDevelop new technical processes & standards for inclusion/exclusion of DERDevelop new demand response review and approval processRetail programs must be re-evaluated to separate what constitute “double counting” in the event of wholesale participation at PJMFuture interconnections will need DER Aggregation review processBehind-the-Meter aggregations that require netting out of the retail bill will require revenue grade production metering for the EDC, in order to adjust the bill accuratelyPricing node mapping - TO/Dx interface mapping for PJM market participationHosting capacity to support planning process/web portal integrationFuture operations will need DER Aggregation real-time contingency analysis and modified override capabilities | <ul style="list-style-type: none">Additional human resources necessary to implementSystem investments that benefit all customers will need to be evaluated for socialized cost responsibilityPotential for some type of demand charge or capacity reservation fee to capture ongoing distribution system related costsPlanning will transform from a discrete to a probabilistic process. Advanced analytics and a robust contingency analysis will be required for analyzing and planning for time series-based DERA scenariosFuture operations will need DER Aggregation real-time contingency analysis and modified override capabilitiesAutomated data sharing capabilities will be needed |
|---|---|

Interconnection Application Approach

JCP&L application process for Level 1

Level 1

Application Process

- Receive incoming application (>99 % through email)
- Administrative review of application
 - Completeness, Validate address, customer of record, account number, meter number, signature
 - Customer single line verification, Inverter specs, etc.
- Review GIS system for distribution transformer size, and for other DER on same transformer
 - Discussion with applicant to downsize, or pay for transformer upgrade if necessary
- Review customer billing history (annual kwhr)
 - Discussion with applicant if necessary
- Issue Part 1 Approval to Install
 - Log PTI into tracking spreadsheet
- Receive Part 2 completed application
 - Review for completeness, changes, etc.
- Issue Part 2 Approval to Operate (PTO) and notify Meter Department to upgrade to Bi-Directional Meter

• >99% - NO site inspection

Interconnection Application Approach

JCP&L application process for Level 1

What is going well?

- Many good/knowledgeable installers/applicants
- Somewhat consistent daily workflow
- Email communications creates a trackable workflow by project
- Consistent treatment of applicants
- Very few EDC upgrades required
- Little to zero operational impacts once systems go online

Level 1

Interconnection Application Approach

JCP&L application process for Level 1

What could be improved?

Level 1

- Explore development of a consistent system for the State for determining sizing for new construction (no historical data) or expansions/upgrades (where historical usage may not be indicative of future usage)
- Explore new methods for receipt of payments for smaller applications
- Determine if there are benefits to a unified, or State-based, application platform

Interconnection Application Approach

JCP&L application process for Level 2

Level 2

Application Process

- Workflow begins with the same process as Level 1 applications.
- For small Level 2 applications, there is no change from Level 1, other than the receipt and processing of the application fee
- Larger Level 2- >50 or 100 kW goes to a Distribution Planning Engineer for evaluation
 - Transformer verification
 - Customer single line review
 - Distribution circuit modeling
 - Determination whether the application falls under Level 3 protocol.
 - Identify infrastructure upgrades (if needed), SCADA requirements, etc.

Interconnection Application Approach

JCP&L application process for Level 2

What is going well?

Level 2

Consistent approach- treating applicants fairly
Good experience over the past 10+ years
Little to no operational impacts once systems go online

Interconnection Application Approach

JCP&L application process for Level 2

What could be improved?

Level 2

- Same as Level 1 response
- Continued investigation into new/proven DER integration technologies, for example:
 - Dynamic inverter settings
 - Poletop var compensator
- Continue ongoing process of comparing our study assumptions and criteria to EPRI and utility best practices

Interconnection Application Approach

JCP&L application process for Level 3

Level 3

Application Process

- Same general workflow as Level 2
- Level 3 applications generally require a \$15K special study fee and most are currently being outsourced for detailed circuit analysis.
- All level 3, and Level 2 > 1000 kW need a customer RTU/SCADA tie in to the JCP&L EMS system
 - On site commissioning and testing
 - SCADA/Telemetry verification

Interconnection Application Approach

JCP&L application process for Level 3

What is going well?

- Generally, a limited number of Level 3 applications are received on an annual basis
- Impacts from Level 3 systems have greater potential to cause operational issues
 - Circuit modeling is critical
 - Established constraint criteria
 - Cost causer- full reimbursement
 - Current process allows time for required in depth study and modeling

Level 3

Interconnection Application Approach

JCP&L application process for Level 3

What could be improved?

Level 3

- Better application timelines/queue procedure
 - Level 2/3 and RNM, ANM and Community Solar
 - Queue integration
 - Overlapping interconnection queues
 - More defined process for ‘stale’ applications

Interconnection Staffing for JCP&L

Were present staffing levels sufficient to meet company internal and/or N.J.A.C. application timelines for each stage of the interconnection application process in 2021?*

Stage	Sufficient / Not sufficient
Initial Application / Intake	Sufficient
Level 1 Application Screening	Sufficient
Level 2:	
Application Technical Review Staff	Sufficient
Load Study Engineer	Sufficient
Inspection Engineer	Sufficient
Level 3:	
Application Technical Review Staff	Sufficient
Load Study Engineer	Sufficient
Inspection Engineer	Sufficient

* e.g., were there difficulties meeting internal or N.J.A.C. target timelines that were considered by the EDC to be attributable to not enough staff to perform the required tasks in the target timeframe

Forward-looking Priorities for JCP&L

What would be the expected impact on the EDC ability to meet current N.J.A.C. or internal company timelines if there were a substantial (e.g., more than 25%) increase in interconnection applications without an increase in staffing or other resources?

Level 1	Level 1: A 'substantial' increase in applications, coupled with anticipated increases in workload associated with the requirements of FERC 2222, would potentially drive the need for additional staffing or other resources.
Level 2	Level 2: A 'substantial' increase in applications, coupled with anticipated increases in workload associated with the requirements of FERC 2222, would potentially drive the need for additional staffing or other resources.
Level 3	Level 3: A 'substantial' increase in applications, coupled with anticipated increases in workload associated with the requirements of FERC 2222, would potentially drive the need for additional staffing or other resources.

Interconnection Timeline Delays for JCP&L

What were the most frequently missed milestones by the customer in 2021? Add/Remove “X” to all that apply.

Applications

Generally- application errors of account number, customer name and/or system size based on historical usage. Most of these are cleared up through conversation/emails with the applicant.

Funding

While JCP&L is generally aware of some larger Level 2 and Level 3 projects that have decided not to move forward due to the expected EDC cost of infrastructure upgrades, the Company has no way to know whether the projects were incapable of receiving funding to support the upgrades as seeking and receiving such funding is the responsibility of the project developer

Permitting

None known

Third party delays

None known

Interconnection Timeline Delays for JCP&L

Approximately what percent of the time were customer delays* due to the following in 2021?

i. Project Commissioning Issues

- Less than 1%

ii. Project access and inspection issues

- Less than 1%

iii. Project costs and financing delays

- Unknown

iv. Delays in the developer workflow

- Unknown

* where a delay is relative to either company internal or N.J.A.C timelines

Interconnection Timeline Delays for JCP&L

Were there common delays that impacted the actual date of operations permission to operate (PTO) in 2021?

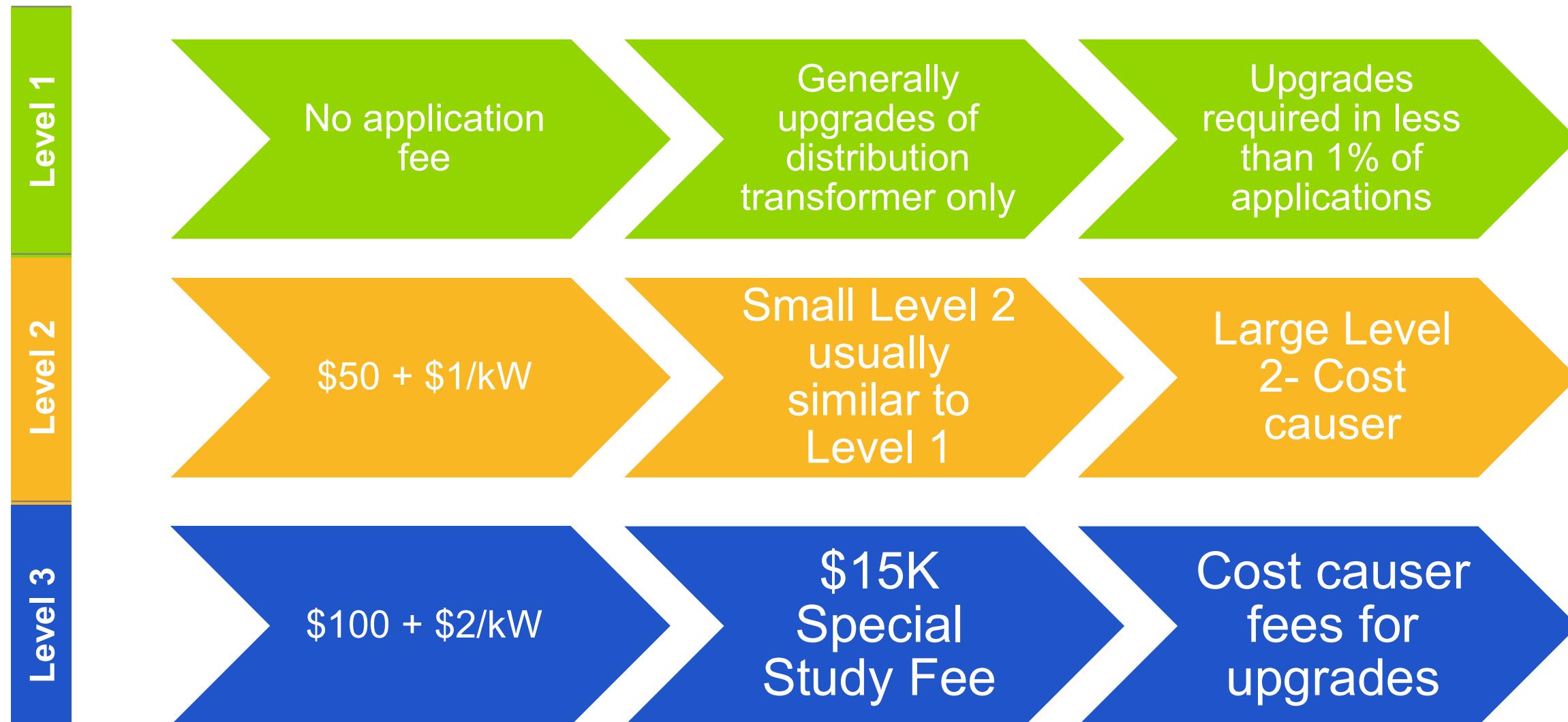
- JCP&L can research individual concerns, but generally, projects proceed with little to no delays. There have been some where the circuit analysis indicated several violations of standard operating constraints, and as such, the developer was requested to either downsize, modify its mode of operation, and/or pay for distribution circuit modifications. Depending on the constraints involved, the developer had to reevaluate its application and work with JCP&L on the optimal solution that met the customer's needs.

In 2021, what were common reasons each of these delays?

Generally, the vast majority of projects proceed with no delays. When there is a complaint of a delay from an end use customer, a common reason is because the solar developer incorrectly informed and/or implied that a Part 2 application had been submitted to JCP&L, when in fact it had not yet been.

Application and Load Study Fees for JCP&L

How are application fees assessed, where applicable?



Cost Responsibility for System Upgrades for JCP&L

In 2021, what were the primary drivers considered to be for upgrading the system

Level 1	<ul style="list-style-type: none">1. DER in excess of distribution transformer capacity
Level 2	<ul style="list-style-type: none">1. Minor distribution circuit modifications to address circuit coordination issues, voltage rise, reverse power flow, etc.
Level 3	<ul style="list-style-type: none">1. Distribution circuit modifications to address voltage rise, circuit coordination issues, reverse power flow on the circuit and on the substation transformer, possible dedicated circuit or conversion to higher voltage connection

How was the cost allocation primarily determined for upgrades?

Level 1	<ul style="list-style-type: none">1. Cost causer
Level 2	<ul style="list-style-type: none">1. Generally, cost causer. Some sharing of costs if several applications from the same applicant appear in queue at the same time
Level 3	<ul style="list-style-type: none">1. Generally, cost causer. Some sharing of costs if several applications from the same developer appear in queue at the same time

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for JCP&L

Which parts of the interconnection process were subject to delays due to cost-related issues in 2021?

A small number of applicants were not anticipating any significant connection costs related to circuit modifications. These are generally larger level 2 and level 3 applications in remote or DER constrained areas. The number of times a Developer with a large application in a remote area comes up is rare- occurring in less than 1% of the incoming DER applications. JCP&L will engage with the applicant to determine options for reduction in system size, modification to customer operations and/or conversion to a higher voltage circuit.

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for JCP&L

Which parts of the process cost more or added more workload than they should in 2021?

Application errors,
Discussions on oversizing,
Applications in violation of Net Metering regulations.

Where could standardization of the application process expedite processing and reduce costs?

Increase Level 1 to 15 or 20 kW.

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for JCP&L

Clustering



How many projects were interconnected using a clustering approach in 2021?

Very few. In general, 'clustering' has been only used in the following situations:

Multiple commercial applications in a single area by the same developer at the same time. Cost sharing by application was agreed to by the developer

A single existing residential development where a single developer is planning to install PV on each unit. The developer contacted JCP&L in advance to work through a cost aggregation program as well as an application submittal protocol.

Interconnection Fees for JCP&L

What were the approximate average fees paid by interconnection customers in 2021 for each stage of the interconnection application process?

Stage	Average Fees (Approximate)
Initial Application Screening	
Level 1 Application	
Level 2	
Application Technical Review	\$50 +\$1/kW
Load Study	Generally none
Inspection	Generally none
Level 3:	
Application Technical Review	\$100 + \$2/kW
Load Study	\$15K
Inspection	No stand alone fee- part of commissioning costs

Are load study fees due 100% up front for work to proceed, or is a deposit (e.g., 10%) sufficient for work to go ahead:

Stage	% Upfront Load and Cost Study Fees
Level 2	N/A
Level 3:	<i>Up front if developer wants to proceed</i>

Telemetry for JCP&L

What are the telemetry (revenue grade metering) requirement thresholds for your EDC?

Area	Requirement Threshold
Project Capacity	1000 kW (recently changed from 2000 kW)
Serial Versus Parallel Circuits	1000 kW threshold.
Other Requirements (Please Specify)	Community Solar 500 kW

Renewables Integration for JCP&L

Hosting Capacity

Question	Response
What percent of total circuit miles are closed to new distributed energy resources (DER)	None
Were hosting capacity maps available in your utility jurisdiction in 2021?	Yes
When was the last update?	To be posted January 2022, with a revision date of December 31, 2021
What is the targeted update frequency for hosting capacity maps?	Every 6 months

Renewables Integration for JCP&L

In 2021, what renewable resources integration strategies were leveraged in your service area? Add/Remove "X" to all that apply.

Inverter-based Controls

- Offered to applicants to mitigate voltage rise

Volt-Var Controls

Other?

- Poletop Var Compensator
- Size reduction

Renewables Integration for JCP&L

N.J.A.C. §14:8-5.4 3(c) Level 1 interconnection review

Question	Response
What percentage of Level 1 applications in 2021 required revision due to N.J.A.C. §14:8-5.4 3 (c)?	None

N.J.A.C. §14:8-5.4 3 (c)The aggregate generation capacity on the line section to which the customer-generator facility will interconnect, including the capacity of the customer-generator facility, shall not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the high voltage (primary) level that is nearest the proposed point of common coupling.

Renewables Integration for JCP&L

N.J.A.C. §14:8-5.4 3(e) Level 1 interconnection review

Question	Response
What percentage of Level 1 applications in 2021 required revision due to N.J.A.C. §14:8-5.4 3 (e)?	None

N.J.A.C. §14:8-5.4 3 (e) If a customer-generator facility is to be connected to a radial line section, the aggregate generation capacity connected to the circuit, including that of the customer-generator facility, shall not exceed 10 percent (15 percent for solar electric generation) of the circuit's total annual peak load, as most recently measured at the substation.

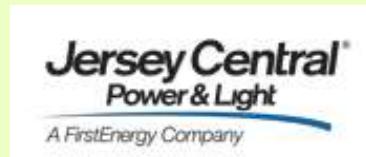
Customer Satisfaction for JCP&L

Do you solicit customer satisfaction feedback on the following that you are willing to share? If so, please share the results.

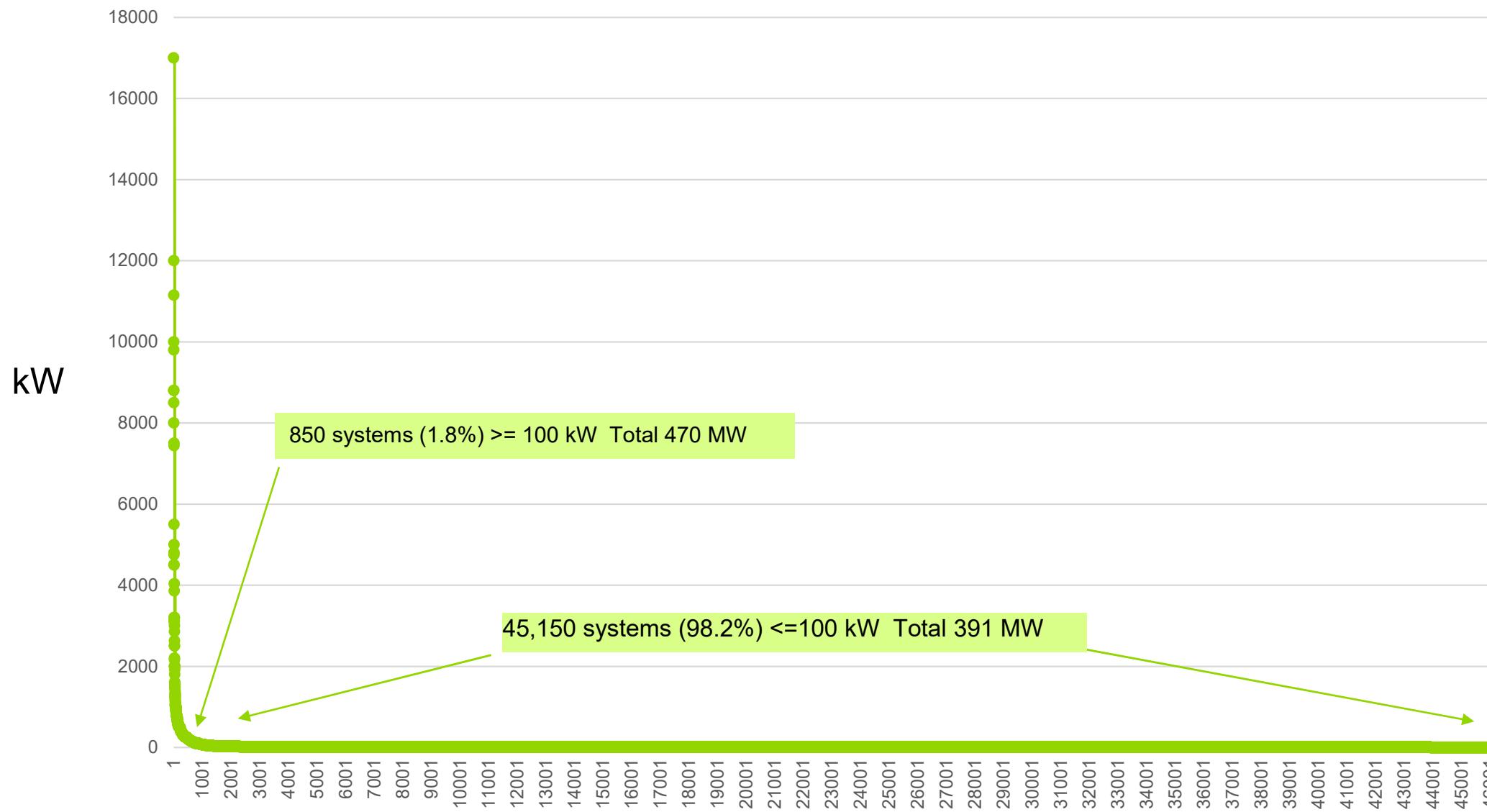
Area	Top Level Customer Survey Results
Application Process Overall	Very few- check Office of Clean Energy website for historical data. Most inquiries in 2020/2021 have been related to billing/meter reading and not application review/processing
Application Process to Approval to Install (ATI)	
Application Process between ATI and Permission to Operate (PTO)	
Load Study Process (where applicable)	

Does your website have a frequently asked questions (FAQ) specifically for issues with interconnection requests?

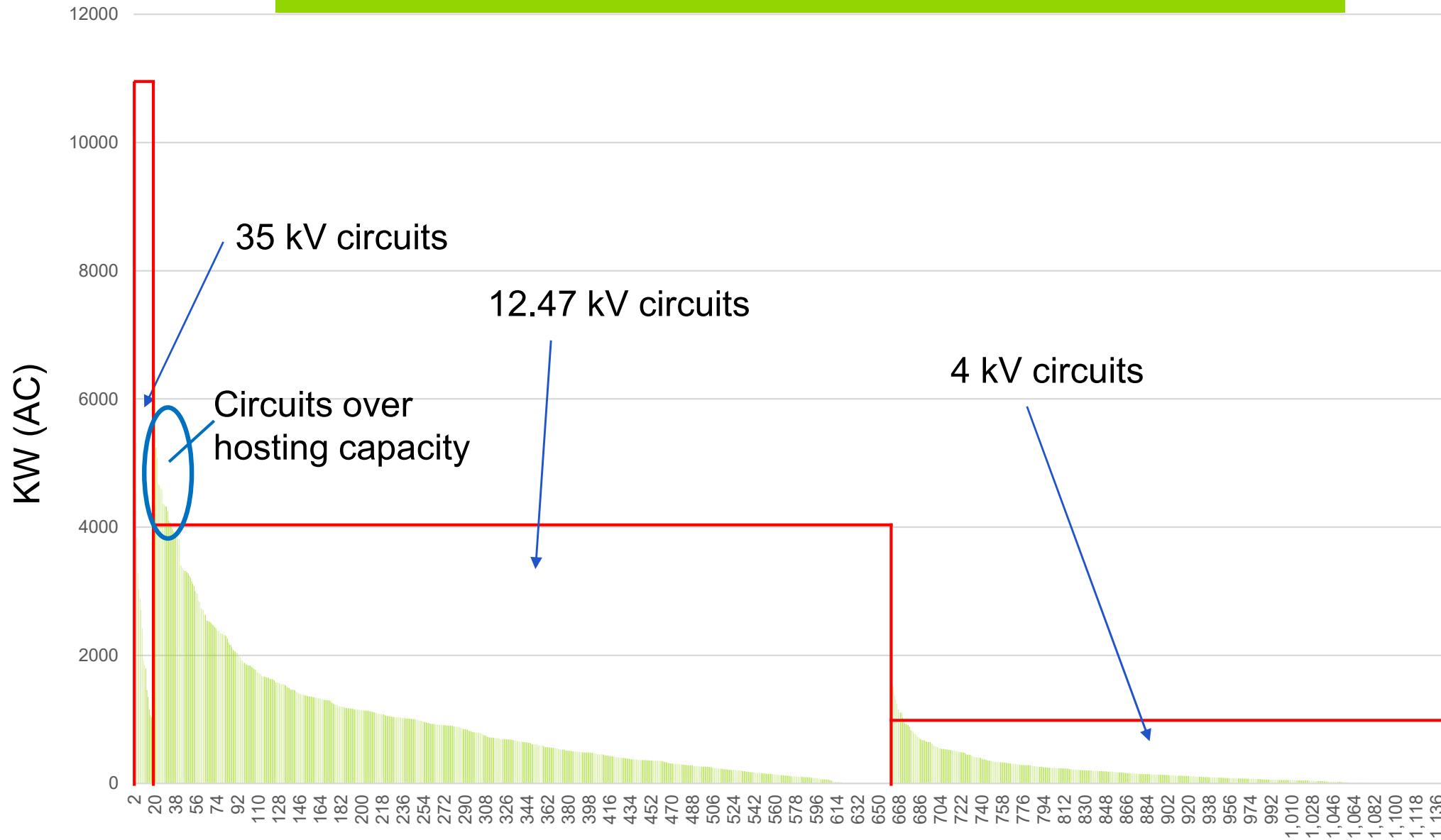
- YES



• JCP&L Net Meter Applications- by AC Capacity (kW)



JCP&L Hosting Capacity by Circuit vs Installed Nameplate (AC)



Contacts

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NJBPU Grid Modernization Stakeholder Meeting #3

EDC Readout – PSE&G

Ricardo G. Fonseca
Senior Director, Utility Investment Planning, Business Improvement & Processes

January 14, 2022

COVID Impact Statement for PSE&G

Guidehouse Question:

Please briefly comment on the impact of the COVID pandemic, if any, on how interconnection requests are handled at PSE&G.

PSE&G Response:

Remote work	Supply chain issues	Other
<ul style="list-style-type: none">▪ No impact	<ul style="list-style-type: none">▪ Yes, specific to real-time metering for larger projects. Mitigation actions deployed resulting in no project delays.	<ul style="list-style-type: none">▪ In 2021, employee availability due to COVID has caused challenges with timelines approximately 10% of the time.

Introduction to PSE&G

Guidehouse Question:

EDC 2021 characterization snapshot (all values are approximate for 2021)

PSE&G Response:



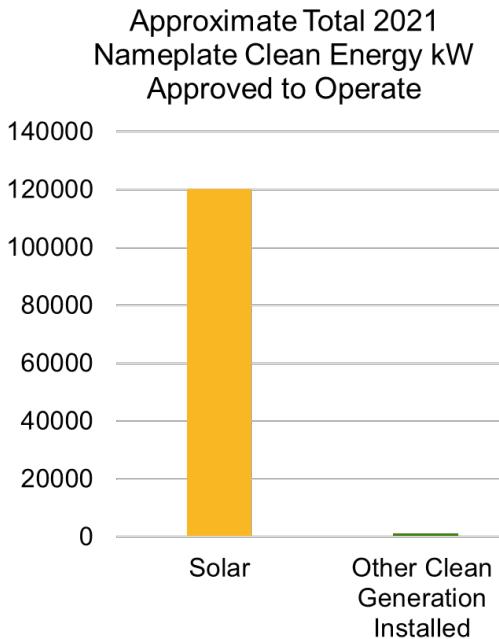
Electric Customers Served in 2021

2,300,000



Total Net Metering Connections* in 2021

7,288



Introduction to PSE&G

Guidehouse Question:

How many interconnection applications (approximately) were completed, withdrawn, or still pending in 2021, by level and generation type?*

PSE&G Response:

	SOLAR		WIND			CHP			OTHER		
	Completed	Pending	Completed	Withdrawn	Pending	Completed	Withdrawn	Pending	Completed	Withdrawn	Pending
Level 1	5,104	3,712	0	0	0	0	0	0	136	0	397
Level 2	2,033	1,977	0	0	0	0	0	0	0	0	0
Level 3	12	59	0	0	0	3	0	15	0	0	0

~90% of Level 1 and Level 2 applications have been completed within the N.J.A.C. timeline requirements

* applications may have been initiated prior to 2021

Introduction to PSE&G - Clean Energy Goals

How do you see the path to meeting the NJ clean energy goals?

Guidehouse Question:

What resource gaps* and policy changes need to be addressed to interconnect the required clean energy capacity?

PSE&G Response:

2025 – 2050

Staffing:

- Additional staff and development of new skills sets (e.g. Distribution System Operators, technical skills relating to interconnection facilities)

Electric Distribution Company Software:

- Implement new capabilities to enhance software and tracking tools to facilitate deployment and safe operation of DERs, both wholesale and retail, that are located on the distribution system, including Distribution Management System (DMS)/ Distributed Energy Resources Management System (DERMS)/Advanced Distribution Management System (ADMS) as well as Advanced load forecasting and load flow tools.
- Development and implementation of a statewide software tool to manage the interconnection process.

Distribution System Equipment:

- Additional implementation of utility equipment to help enable the distribution system to handle an increased number of DERs and prevent adverse distribution system impacts. Equipment includes capacitor bank remote control, fast acting electronics (such as STATCOM), utility remote DER inverter control.
- Anticipated need for higher voltage system with a higher capacity for future solar interconnections, such as 69kV system.
- Could be beneficial for state policy to incentivize pairing large solar sites with energy storage

Policy & Regulatory Action:

- Move forward with the development and implementation of the Integrated Distribution Plan (IDP) as a roadmap to unrestricted distribution system and large scale implementation of renewable interconnections.

Note: Nuclear, Offshore Wind and Energy Efficiency are also critical to meeting NJ's clean energy goals.

* resource gaps could include staff, tools such as software and tracking tools, distribution system equipment and materials, information, other

Introduction to PSE&G

How do you see the path to meeting the NJ clean energy goals?

Guidehouse Question:

What are possible mitigation plans to address resource gaps starting from the current status quo?

PSE&G Response:

By: 2025	2030 - 2050
<ul style="list-style-type: none">PSE&G resource requirements will vary depending on degree and volume of renewable requests; however, PSE&G continually assesses resource requirements to match forecasted workload and the N.J.A.C timeline requirements, as well as monitors evolving federal and state public policy activities.	<ul style="list-style-type: none">TBD

Introduction to PSE&G

How do you see the path to meeting the NJ clean energy goals?

Guidehouse Question:

How might mitigation plans change* depending on the outcome of rules currently under revision (e.g. PJM, FERC Order 2222)?

PSE&G Response:

By: 2025	2030 - 2050
<ul style="list-style-type: none">▪ No change to prior slide mitigation strategy, and in addition the following:▪ Per PJM's current plan, Order 2222 may be partially implemented by 2025. As a result, utility roles and responsibilities may require:<ul style="list-style-type: none">• Incremental distribution system upgrades• Continued assessment of utility staffing needs• Distribution-level coordination with PJM• Development of new utility processes and operational requirements• Systems and tools upgrades and modifications▪ Impact to the utility and distribution system will depend on the number of interconnecting DERs through the state-jurisdictional process and subsequent DER Aggregator registrations through the PJM process and the details of PJM's implementation plan, which will be developed after PJM makes its Order 2222 compliance filing.	<ul style="list-style-type: none">▪ TBD

Interconnection Application Approach

Guidehouse Question:

PSE&G application process for Level 1

PSE&G Response:

Application Process	
Level 1	<ul style="list-style-type: none">▪ Application is received via e-mail and reviewed for completeness▪ If complete, job is created and sent to Engineering for review▪ Job is approved or denied based on factors such as available circuit capacity▪ Status communicated to customer (if approved, customer can begin construction)▪ Customer completes construction and sends PSE&G township approval and Certification of Completion▪ Meter Change Service Order is created and sent to Meter Department▪ Meter Department inspects the installation and changes the meter if approved▪ If the installation fails inspection, the customer is notified as to what needs to be corrected▪ Corrections are made and customer notifies PSE&G▪ Meter Department goes back to re-inspect and if approved, changes the meter

Interconnection Application Approach

Guidehouse Question:

PSE&G application process for Level 2

PSE&G Response:

Application Process	
Level 2	<ul style="list-style-type: none">▪ Application is received via e-mail and reviewed for completeness▪ If complete, job is created and sent to Engineering for review▪ Engineering reviews and sends to local Planning and System Protection Depts. for review▪ Job is approved or denied based on factors such as available circuit capacity▪ Status communicated to customer (if approved, customer can begin construction)▪ Customer completes construction and sends PSE&G township approval and Certification of Completion▪ Meter Change Service Order is created and sent to Meter Department▪ Meter Department inspects the installation and changes the meter if approved▪ If the installation fails inspection, the customer is notified as to what needs to be corrected▪ Corrections are made and customer notifies PSE&G▪ Meter Department goes back to re-inspect and if approved, changes the meter

Interconnection Application Approach

Guidehouse Question:

PSE&G application process for Level 3

PSE&G Response:

Application Process	
Level 3	<ul style="list-style-type: none">▪ Application is received via e-mail and reviewed for completeness▪ If complete, job is created and sent to Engineering for review▪ Engineering reviews and sends to Asset Planning and System Protection Depts. for review and study▪ Job is approved or denied based on factors such as available circuit capacity▪ Status communicated to customer (if approved, customer can begin construction)▪ Customer completes construction and sends in township approval and Certification of Completion▪ Meter Change Service Order is created and sent to Meter Department▪ Meter Department inspects the installation and changes the meter if approved▪ If the installation fails inspection, the customer is notified as to what needs to be corrected▪ Corrections are made and customer notifies PSE&G▪ Meter Department goes back to re-inspect and if approved, changes the meter

Interconnection Application Approach

Guidehouse Question:

PSE&G application process for Levels 1 – 3; what is going well and what could be improved?

PSE&G Response:

	What is going well?	What could be improved?
Summary	<ul style="list-style-type: none">▪ Approximately 90% of the time, PSE&G is meeting N.J.A.C timeline requirements.▪ PSE&G has implemented certain process improvements to streamline applications, such as tracking software and billing enhancements.▪ Customers and Developers can now make payments electronically.▪ Applications are processed before application fee is required.▪ Circuit Suitability Map is regularly maintained with a high level of accuracy.	<ul style="list-style-type: none">▪ Formalized process for receipt of customer feedback and incorporation of customer suggestions.▪ Development and utilization of a statewide interconnection application.▪ Development and implementation of a software tool.

Interconnection Staffing for PSE&G

Guidehouse Question:

Were present staffing levels sufficient to meet company internal and/or N.J.A.C. application timelines for each stage of the interconnection application process in 2021?*

PSE&G Response:

Stage	Sufficient / Not sufficient
Initial Application / Intake	Sufficient
Level 1 Application Screening	Sufficient
Level 2:	
Load Study Engineer	Sufficient
Inspection Engineer	Sufficient
Level 3:	
Load Study Engineer	Sufficient
Inspection Engineer	Sufficient

N.J.A.C = New Jersey Administrative Code

* e.g., were there difficulties meeting internal or N.J.A.C. target timelines that were considered by the EDC to be attributable to not enough staff to perform the required tasks in the target timeframe

Forward-looking Priorities for PSE&G

Guidehouse Question:

What would be the expected impact on the EDC ability to meet current N.J.A.C. or internal company timelines if there were a substantial (e.g., more than 25%) increase in interconnection applications without an increase in staffing or other resources?

PSE&G Response:

Level 1	With an increase in the number of applications, there will be a delay in meeting N.J.A.C timeline requirements. Additional resources and tools will be required to meet a substantial increase to interconnection applications.
Level 2	With an increase in the number of applications, there will be a delay in meeting N.J.A.C timeline requirements. Additional resources and tools will be required to meet a substantial increase to interconnection applications.
Level 3	With an increase in the number of applications, there will be a delay in completing interconnection requests. Additional resources and tools will be required to meet a substantial increase to interconnection applications.

Interconnection Timeline Delays for PSE&G

Guidehouse Question:

What were the most frequently missed milestones by the customer in 2021?

PSE&G Response:

PSE&G does not track customer/developer milestones.

Interconnection Timeline Delays for PSE&G

Guidehouse Question:

What percent of time (applications/projects) were customer delays due to the following in 2021?

PSE&G Response:

Developer Application Issues (e.g. incomplete applications, application errors, consumption history concerns):

- Approximately 33% of applications received are returned to the applicant for revision/resubmittal, delaying the initiation of the process.

Project access and inspection issues:

- Approximately 10% of projects

Delays in Part 2 or Attachment B submission documents:

- Approximately 2% of projects

Interconnection Timeline Delays for PSE&G

Guidehouse Question:

Were there common delays that impacted the actual date of operations permission to operate (PTO) in 2021?

PSE&G Response:

Yes

Guidehouse Question:

In 2021, what were common reasons each of these delays?

PSE&G Response:

Failing the witness test or lack of access to meters

Interconnection Fees for PSE&G

Guidehouse Question:

What were the approximate average fees paid by interconnection customers in 2021 for each stage of the interconnection application process?

PSE&G Response:

Stage	Average Fees (Approximate)
Initial Application Screening	
Level 1 Application:	N/A
Level 2:	
Application Technical Review	\$50 plus \$1 per KW system size
Load Study	\$10,000
Inspection	N/A
Level 3:	
Application Technical Review	\$100 plus \$2 per KW system size
Load Study	\$10,000
Inspection	N/A

Guidehouse Question:

Are load study fees due 100% up front for work to proceed, or is a deposit (e.g., 10%) sufficient for work to go ahead?

PSE&G Response:

Stage	% Upfront Load and Cost Study Fees
Level 2:	Yes
Level 3:	Yes

Cost Responsibility for System Upgrades for PSE&G

Guidehouse Question:

In 2021, what were the primary drivers considered to be for upgrading the system?

PSE&G Response:

Level 1	Not applicable.
Level 2	Insufficient capacity on the circuit.
Level 3	Insufficient capacity on the circuit.

Guidehouse Question:

How was the cost allocation primarily determined for upgrades?

PSE&G Response:

Level 1	Not applicable.
Level 2	Engineering study and estimate. The engineering study determines the circuit that has capacity and as part of that study, an estimate is created to determine the costs associated with bringing that circuit to the facility requesting solar.
Level 3	Engineering study and estimate. The engineering study determines the circuit that has capacity and as part of that study, an estimate is created to determine the costs associated with bringing that circuit to the facility requesting solar.

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for PSE&G

Guidehouse Question:

Which parts of the interconnection process were subject to delays due to cost-related issues in 2021?

PSE&G Response:

For PSE&G, there were no delays due to the cost-related issues. However, investing in software and tools would enhance efficiency to front-end process.

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for PSE&G

Guidehouse Question:

Which parts of the process cost more or added more workload than they should in 2021?

PSE&G Response:

PSE&G does not track cost of individual projects; however, PSE&G experienced additional costs due to the following:

- Returned applications related to conflicting usage data and incomplete applications
- Electrical one-line submission do not match what was built in the field
- Access issues
- Failed inspections
- Line extensions

Guidehouse Question:

Where could standardization of the application process expedite processing and reduce costs?

PSE&G Response:

Level 1: Statewide interconnection application

Level 2: Statewide interconnection application

Level 3: Statewide interconnection application

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for PSE&G

Guidehouse Question:

How many projects were interconnected using a clustering approach in 2021?

PSE&G Response:

0 Projects

Telemetry for PSE&G

Guidehouse Question:

What are the telemetry (revenue grade metering) requirement thresholds for your EDC?

PSE&G Response:

Area	Requirement Threshold
Project Capacity	500KW for 13kV. Case by case basis for 4kV.
Serial Versus Parallel Circuits	Same as above.
Other Requirements (Please Specify)	None.

Renewables Integration for PSE&G

Hosting Capacity

Guidehouse Question:

How many circuits are closed to new distributed energy resources (DER)?

PSE&G Response:

Approximately 150

Guidehouse Question:

Were hosting capacity maps available in your utility jurisdiction in 2021?

PSE&G Response:

Yes

Guidehouse Question:

When was the last update?

PSE&G Response:

December 13, 2021

Guidehouse Question:

What is the targeted update frequency for hosting capacity maps?

PSE&G Response:

Quarterly

Renewables Integration for PSE&G

Guidehouse Question:

In 2021, what renewable resources integration strategies were leveraged in your service area?

PSE&G Response:

The below apply to certain Level 2 and Level 3 applications:

- Install smart inverters with Voltage VAR Control to maintain voltage at POI (point of interconnection) and PCC (Point of Common Coupling) within allowed voltage range (1.05 pu - 0.95 pu).
- To accommodate increased solar on 4kV circuits, 4kV regulators are programmed to be able to maintain stable voltages under reverse power flow.
- Limit for total solar allowed for 13kV circuits is being studied to determine if the limit can be relaxed to accommodate more solar without causing any reliability violations in the PSEG grid.
- For all applications which may contribute to thermal or voltage violations in the PSEG grid, the following methodologies are used to accommodate the solar application:
 - Nearby feeder is recommended for interconnection, or
 - Applications may be approved without allowing export.

Renewables Integration for PSE&G

N.J.A.C. §14:8-5.4 3(c) Level 1 interconnection review

Guidehouse Question:

What percentage of Level 1 applications in 2021 required revision due to the N.J.A.C. §14:8-5.4 3 (c)?

PSE&G Response:

0%

N.J.A.C. §14:8-5.4 3 (c) The aggregate generation capacity on the line section to which the customer-generator facility will interconnect, including the capacity of the customer-generator facility, shall not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the high voltage (primary) level that is nearest the proposed point of common coupling.

Renewables Integration for PSE&G

N.J.A.C. §14:8-5.4 3(e) Level 1 interconnection review

Guidehouse Question:

What percentage of Level 1 applications in 2021 required revision due to N.J.A.C. §14:8-5.4 3 (e)?

PSE&G Response:

0%

N.J.A.C. §14:8-5.4 3 (e) If a customer-generator facility is to be connected to a radial line section, the aggregate generation capacity connected to the circuit, including that of the customer-generator facility, shall not exceed 10 percent (15 percent for solar electric generation) of the circuit's total annual peak load, as most recently measured at the substation.

Customer Satisfaction for PSE&G

Guidehouse Question:

Do you solicit customer satisfaction feedback on the following that you are willing to share? If so, please share the results?

PSE&G Response:

Area	Top Level Customer Survey Results
Overall Interconnection Process	PSE&G does not have a formal process to solicit feedback, but meets with a sampling of customers to solicit feedback throughout the process. PSE&G is working to develop a more standard process for receipt of feedback. Additionally, PSE&G has staff readily available by phone and email to provide updates on applications and projects.

Guidehouse Question:

Does your website have frequently asked questions (FAQ) specifically for issues with interconnection requests?

PSE&G Response:

Yes



Thank You

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NJBPU Grid Modernization Stakeholder Meeting #3

Rockland Electric Company Overview

January 14, 2022

COVID impact statement for Rockland Electric Company (RECO)

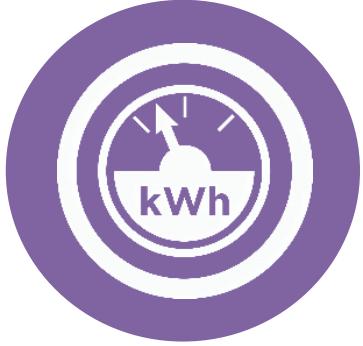
Impact of COVID on handling of interconnection requests		
Remote work	Supply chain issues	Other [please specify]
The team transitioned to remote work and continued to meet deadlines, respond to customer inquiries, and issue Permission to Operate (PTO) to projects.	None noted	

Introduction to RECO

- EDC 2021 characterization snapshot (all values are approximate for 2021)



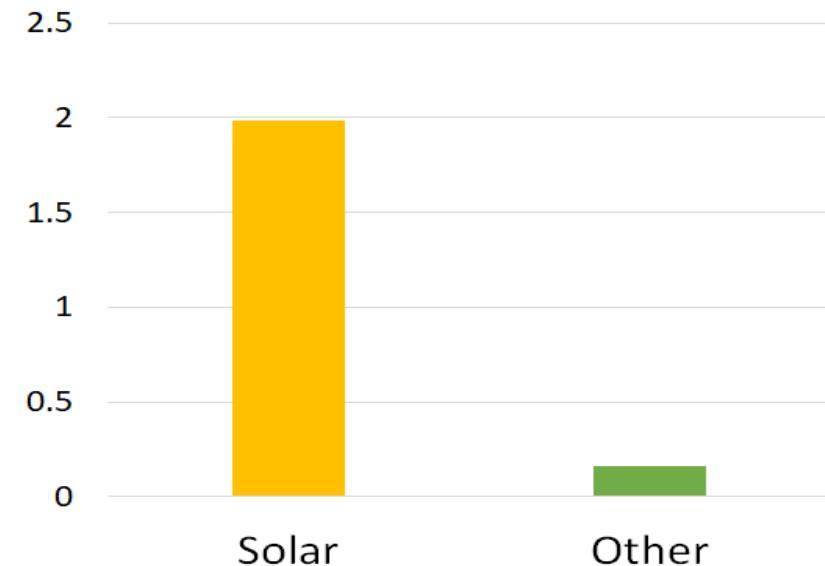
Electric Customers Served
in 2021
73,948



Total Net Metering
Connections* in 2021
140

* distribution-side connections

Approximate Total 2021
Nameplate Clean Energy
MW Approved to Operate



Introduction to RECO

- How many interconnection applications (approximately) were completed, withdrawn, or still pending at the end of 2021, by level and generation type?*

	SOLAR			WIND			CHP			OTHER		
	Completed	Withdrawn	Pending									
Level 1	666	65	168	0	0	0	0	0	1	20	6	19
Level 2	337	18	112	0	0	0	2	0	0	10	1	15
Level 3	4	4	2	0	0	0	0	0	0	0	1	1

* applications may have been initiated prior to 2021

The path to meeting the NJ clean energy goals

What resource gaps and policy changes need to be addressed to interconnect the required clean energy capacity?

- Holistic, technology-neutral approach when reviewing all resources and programs needed to achieve State's clean energy goals
 - Support Environmental Justice communities in the Company's service territory
- Prioritize distribution system needs to deliver safe, reliable, and resilient energy to customers while enabling projects that deliver multiple values and benefits to stakeholders, customers, and the grid
- Minimize customer bill impacts
- Transform the Energy Industry and Evolve the Electric Utility Current Business Model
 - Utility ownership of DER, EV charging infrastructure, clean energy assets, storage
 - Non-Wires Solutions
 - Pilot projects, including Research and Development / testing opportunities
 - Rate Design
- Establish a regulatory structure that enables a clean energy industry, reliability, resiliency, encourages investments, prioritizes safe operations, and smooths customer bill impacts

The path to meeting the NJ clean energy goals

What resource gaps and policy changes need to be addressed to interconnect the required clean energy capacity? (cont'd)

- Valuation and deployment of DERs and Clean Energy Resources managed by Cost Cap
 - Financing options (e.g., Green Bank) instead of incentives to manage and minimize customer bill impacts
 - Enable retail and wholesale market for DERs to earn revenues
- Development of data access mechanisms, data privacy standards, and cyber security protections, as currently under consideration in the BPU's Data Access proceeding, is critical to customer engagement, third-party business models, and achievement of the State's clean energy goals

The path to meeting the NJ clean energy goals

What are possible mitigation plans to address resource gaps starting from the current status quo?

- Support transformation to a modern and resilient grid with focus on reliability
 - Foundational investments in information and grid technology, advanced control and monitoring, and communications infrastructure and customer facing technologies to manage two-way energy delivery infrastructure
- Approval of utility investments through Infrastructure Investment Program (IIP) or other forward-looking mechanisms
- Enhanced and granular forward-looking planning process which includes load modifiers and a 10-year look ahead
 - RECO has implemented this process
- Continue to transform how utilities engage with customers in energy use to meet changing customers' expectations
- Interconnection working groups that include EDCs, industry, and BPU Staff to meet on a regular basis to discuss both policy and technical issues related to the proliferation of the interconnection of clean resources
- Optimize peak demand to balance load and customer needs with availability of resources

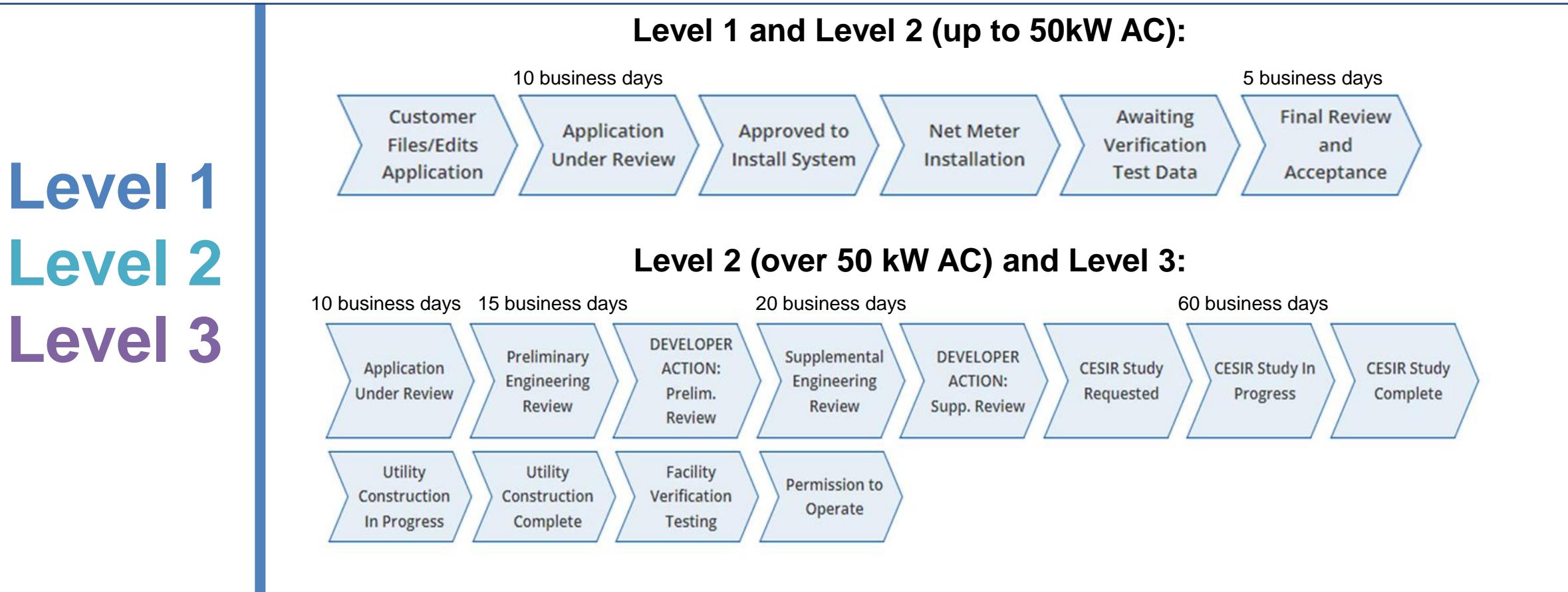
The path to meeting the NJ clean energy goals

How might the mitigation plans change depending on the outcome of rules currently under revision (e.g., PJM, FERC Order 2222)?

- State and EDC programs and policies that are developed using a holistic, flexible, and adaptable approach can evolve more efficiently and effectively in response to changes to statutes, regulations, goals, and other rules
- Establishing annual statewide review process to include goal progress and achievement, monitoring costs and ratepayer impacts, and market and third-party engagement will enable appropriate program and target adjustments
- New and evolving utility business models to facilitate achievement of clean energy goals, such as utility participation of clean energy assets in wholesale markets
 - New York Public Service Commission is encouraging battery storage participation in wholesale markets. RECO can leverage experiences and lessons learned by its New York affiliates
- Development of Data Security Agreements and other customer protections where necessary to protect both customer data and utility systems

Interconnection Application Approach

For Level 1, Level 2 and Level 3



Interconnection Application Approach

For Level 1, Level 2 and Level 3

Level 1
Level 2
Level 3

What is going well?

- RECO's interconnection application approach provides clarity, transparency, and certainty to developers
- RECO has established internal processes - applications complete within 10 business days
- RECO uses an Interconnection Online Application Portal (IOAP) to manage and process applications:
 - IOAP provides amount of fee to customer at time of application
 - IOAP contains application checklist to assist customers with application process (e.g., documents to be submitted)
 - IOAP requires complete application and fee to be submitted prior to acceptance
 - Customer can check on application status at any time – real time document updates
 - IOAP is flexible, configurable to meet changing needs

Interconnection Application Approach

For Level 1, Level 2 and Level 3

Level 1
Level 2
Level 3

What could be improved?

- After certain period of inactivity, projects should be removed from the EDC's queue to allow viable projects to use hosting capacity
- Continue training and updates for Customer Service Representatives for an enhanced customer experience

Interconnection Staffing for RECO

Were present staffing levels sufficient to meet company internal and/or N.J.A.C. application timelines for each stage of the interconnection application process in 2021?*

Stage	Sufficient / Not sufficient
Initial Application / Intake	
Level 1 Application Screening	Sufficient
Level 2:	
Application Technical Review Staff	Sufficient
Load Study Engineer	Sufficient
Inspection Engineer	Sufficient
Level 3:	
Application Technical Review Staff	Sufficient
Load Study Engineer	Sufficient
Inspection Engineer	Sufficient

* i.e., were there difficulties meeting internal or N.J.A.C. target timelines that were considered by the EDC to be attributable to not enough staff to perform the required tasks in the target timeframe

N.J.A.C = New Jersey Administrative Code

Forward-looking Priorities for RECO

What would be the expected impact on the EDC's ability to meet current N.J.A.C. or internal company timelines if there were a substantial (e.g., more than 25%) increase in interconnection applications without an increase in staffing or other resources?

Level 1	Depending on the actual increase in the number of solar projects requesting PTO, without additional staffing, RECO's response/processing time may increase for Level 1, Level 2, and Level 3 applications.
Level 2	Please see response to Level 1 above. In addition, any required studies could take longer to complete without additional staffing. A large increase in the number of required studies may require the use of consultants which cost more than internal resources.
Level 3	Please see response to Level 1 above. In addition, any required studies could take longer to complete without additional staffing. A large increase in the number of required studies may require the use of consultants which cost more than internal resources.

Interconnection Timeline Delays for RECO

What were the most frequently missed milestones by the customer in 2021? Add/Remove “X” to all that apply.

Applications

- Level 1: Incomplete or inaccurate application documents
- Level 2: Incomplete or inaccurate application documents including missing application fees
- Level 3: Incomplete or inaccurate application documents including missing application fees

Funding
Permitting
Third party delays



- RECO does not track data on developer delays and therefore cannot speak to funding, permitting, or third-party delay issues

RECO works with developers and guides them through each step of the application process. The Interconnection Online Application Portal supports successful management of the application process and customer interactions.

Interconnection Timeline Delays for RECO

Were there common delays that impacted the actual date of operations permission to operate (PTO) in 2021?

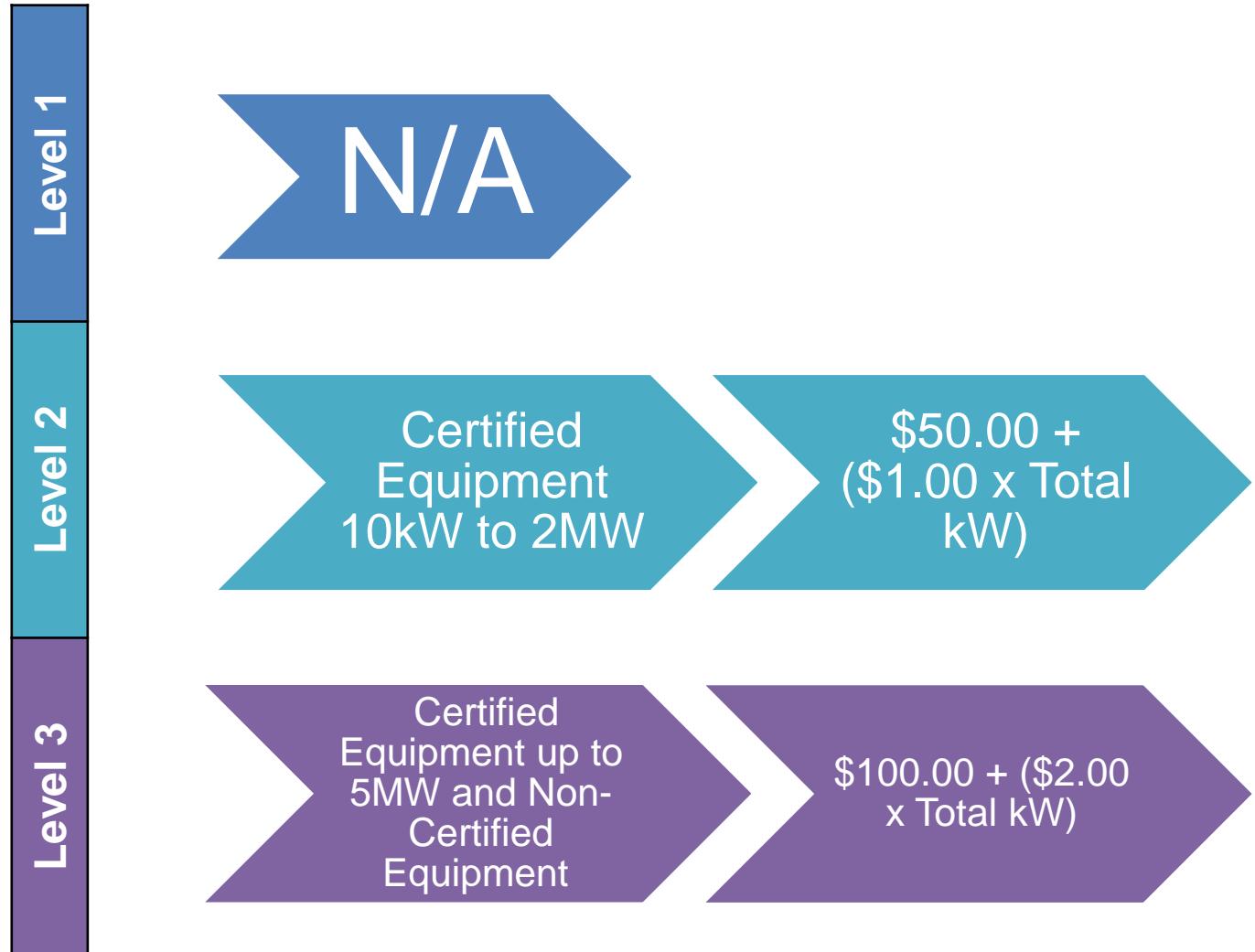
Incomplete paperwork for Part 2 of application.
Weather delays for scheduling verification tests.

In 2021, what were common reasons each of these delays?

See above

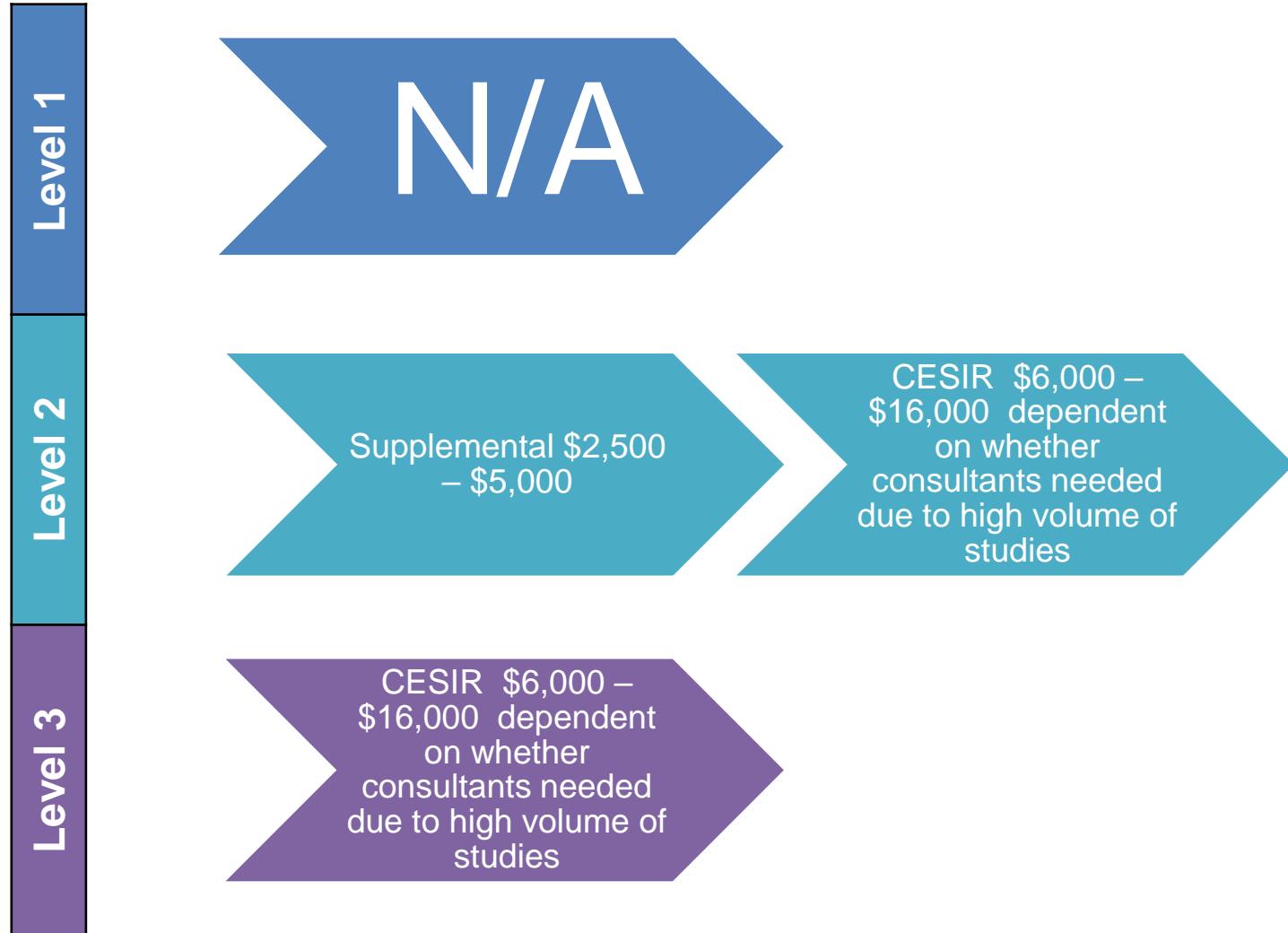
Application Fees for RECO

How are application fees assessed, where applicable?



Load Study Fees for RECO

How are application fees assessed, where applicable?



Cost Responsibility for System Upgrades for RECO

In 2021, what were the primary drivers considered to be for upgrading the system?

Level 1	<ol style="list-style-type: none">1. Transformer upgrade due to load beyond rating (safety)
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Level 2	<ol style="list-style-type: none">1. Transformer upgrade due to load beyond rating (safety)2. Distribution or transmission upgrades due to load
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Level 3	<ol style="list-style-type: none">1. Distribution or transmission upgrades due to load
---------	--

How was the cost allocation primarily determined for upgrades?

Level 1	<ol style="list-style-type: none">1. Customer is responsible for full cost of upgrade
---------	---

Level 2	<ol style="list-style-type: none">1. Customer is responsible for full cost of upgrade as determined by engineering study results
---------	--

Level 3	<ol style="list-style-type: none">1. Customer is responsible for full cost of upgrade as determined by engineering study results
---------	--

Drivers and mitigation strategies for projects that exceeded the cost envelope in 2021 for RECO



Clustering

How many projects were interconnected using a clustering approach in 2021?

- Projects in queue are studied in the order in which they are received
- Exception possible for multiple projects from the same developer on a particular circuit

Interconnection Fees for RECO

What were the approximate average fees paid by interconnection customers in 2021 for each stage of the interconnection application process?

Stage	Average Fees (Approximate)
Initial Application Screening	N/A
Level 1 Application	
Level 2:	
Application Technical Review	\$50.00 + (\$1.00 x Total kW)
Load Study	varies
Inspection	N/A
Level 3:	
Application Technical Review	\$100.00 + (\$2.00 x Total kW)
Load Study	varies
Inspection	N/A

Are load study fees due 100% up front for work to proceed, or is a deposit (e.g., 10%) sufficient for work to go ahead?

Stage	% Upfront Load and Cost Study Fees
Level 2	100%
Level 3	100%

Telemetry for RECO

What are the telemetry (revenue grade metering) requirement thresholds for your EDC?

Area	Requirement Threshold
Project Capacity	500 kW or greater must be primary metered for solar
Serial Versus Parallel Circuits	RECO/O&R is a radial system, not a network system
Other Requirements (Please Specify)	Other technologies may have other requirements All solar receive AMI meters

Renewables Integration for RECO

Hosting Capacity

Question	Response
What percent of total circuit miles are closed to new distributed energy resources (DER)?	0 percent
Were hosting capacity maps available in your utility jurisdiction in 2021?	Yes, RECO's Hosting Capacity Maps went live in March 2019
When was the last update?	October 1, 2021
What is the targeted update frequency for hosting capacity maps?	RECO's Hosting Capacity Maps are updated every six months

Renewables Integration for RECO

The Company has leveraged or plans to leverage the following renewable resources integration strategies in its service territory. *Add/Remove “X” to all that apply.*



Inverter-based Controls

- Developing Smart Inverter requirements for Volt-Watt, Volt-VAR, Ride-Through, etc.
- Partnered with the New York State Energy Research and Development Authority (NYSERDA) to study Smart Inverter functionality and interoperability



Volt-Var Controls

- Supported BPU study on VVO benefits/costs
- Partnered with NYSERDA to study VVO implementation



ADMS

- Deploying new DSCADA and ADMS with advanced situational awareness capabilities, integration of field devices, and granular analytics. Implementation of advanced applications for FLISR, VVO, State Estimator, and DERMS are planned for future phases.

Renewables Integration for RECO

N.J.A.C. § 14:8-5.4 3(c) Level 1 interconnection review

Question	Response
What percentage of Level 1 applications in 2021 required revision due to N.J.A.C. §14:8-5.4 3 (c)?	0 percent

N.J.A.C. §14:8-5.4 3 (c) The aggregate generation capacity on the line section to which the customer-generator facility will interconnect, including the capacity of the customer-generator facility, shall not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the high voltage (primary) level that is nearest the proposed point of common coupling.

Renewables Integration for RECO

N.J.A.C. § 14:8-5.4 3(e) Level 1 interconnection review

Question	Response
What percentage of Level 1 applications in 2021 required revision due to N.J.A.C. §14:8-5.4 3 (e)?	0 percent

N.J.A.C. §14:8-5.4 3 (e) If a customer-generator facility is to be connected to a radial line section, the aggregate generation capacity connected to the circuit, including that of the customer-generator facility, shall not exceed 10 percent (15 percent for solar electric generation) of the circuit's total annual peak load, as most recently measured at the substation.

Customer Satisfaction for RECO

Do you solicit customer satisfaction feedback on the following that you are willing to share? If so, please share the results.

Area	Top Level Customer Survey Results
Application Process Overall	
Application Process to Approval to Install (ATI)	RECO does not offer a customer satisfaction survey. The Company is currently evaluating a customer satisfaction survey process.
Application Process between ATI and Permission to Operate (PTO)	
Load Study Process (where applicable)	

Does your website have a frequently asked questions (FAQ) specifically for issues with interconnection requests?

- The Company's website has FAQs about billing and crediting and plans to add additional FAQs about interconnection requests

Have questions or need to contact us?

Reach out to us at

ORU_DG@oru.com

or

845-577-3683

Thank you



NJBPU Grid Modernization

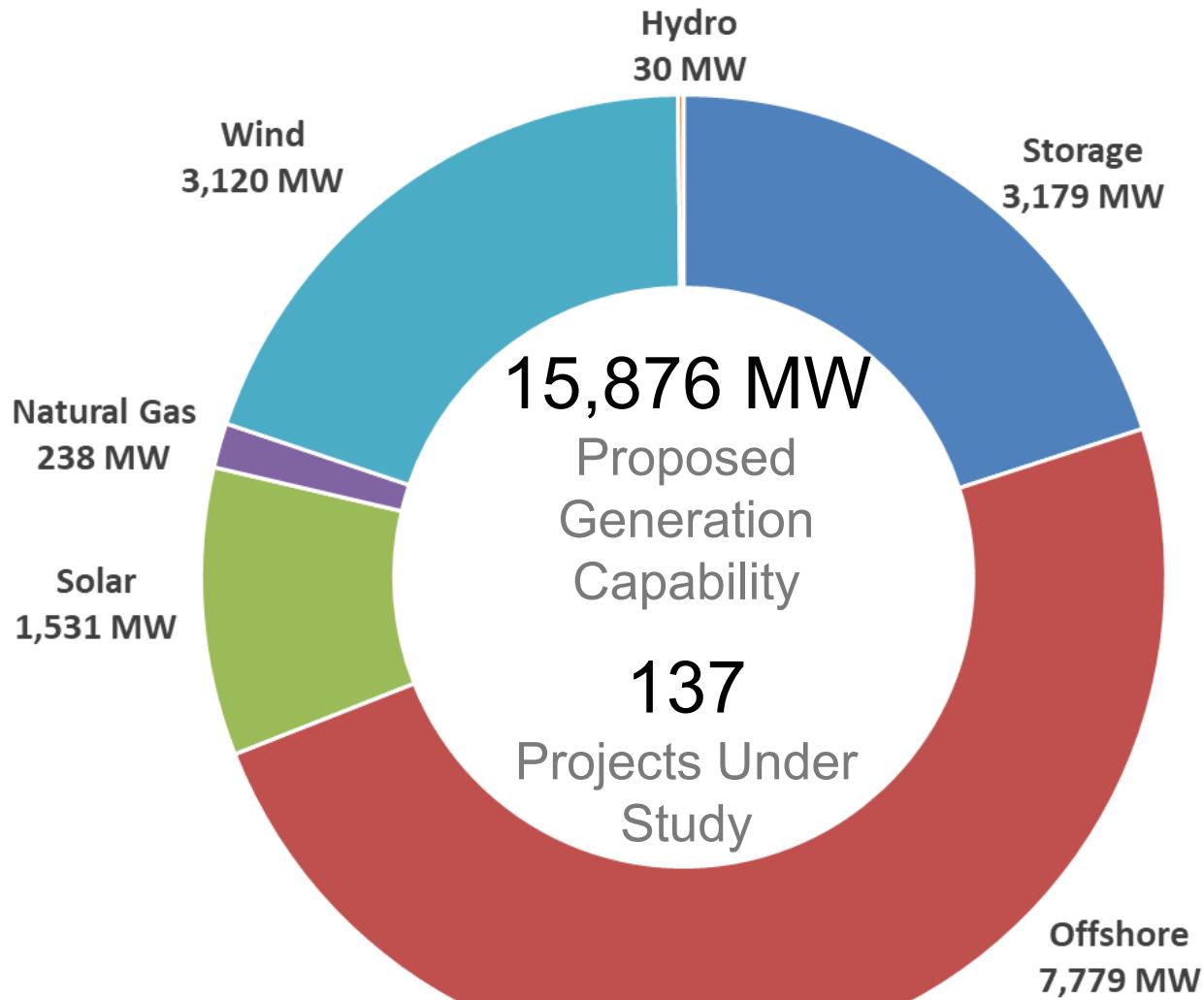
Stakeholder Meeting #3

PJM



January 14, 2022

New Jersey Proposed Generation Under Study



What Projects Need To Enter the PJM Interconnection Queue?

- PJM studies the impacts a proposed project will have on the transmission system
- Which projects need to be studied by PJM?
 - Projects interconnecting to the transmission system
 - Projects interconnecting to the distribution system and participating in PJM markets

Guiding Principles for PJM's Proposed Solution

- Ideal timing not to exceed two years
- Cost and study construct should be cluster/cycle based and convert from first-in/first-out processing to first-ready/first-out processing
 - Readiness demonstrated by site control and financial milestone deposits
- Subsequent cycle management should be assessed based on completion of a certain point in the prior cycle to minimize backlog
- Provide customers with more actionable information, earlier in the process
- State jurisdictional projects should have appropriate milestones to enter into an interconnection agreement from the transmission owner/distribution provider prior to receiving a Wholesale Market Participation Agreement
- Make project changes predictable from a process viewpoint and automatic to provide certainty to customers
- Allow off-ramps for generators proceeding through the process at various decision points

Next Steps

- Seek stakeholder approval on a package in January and February
- Work the package through the PJM stakeholder process and draft Tariff changes through Q1 2022
- File changes with the Commission in Q2 2022

Resources and References

- New Services Queue page on PJM.com
 - Provides a snapshot of the current state of the queue
 - <https://www.pjm.com/planning/services-requests/interconnection-queues.aspx>
- Interconnection Process Reform Task Force
 - <https://www.pjm.com/committees-and-groups/task-forces/iptf>
- Planning Committee
 - <https://www.pjm.com/committees-and-groups/committees/pc>



DER Participation in PJM Under FERC Order 2222

Jill Gates
State Policy Solutions

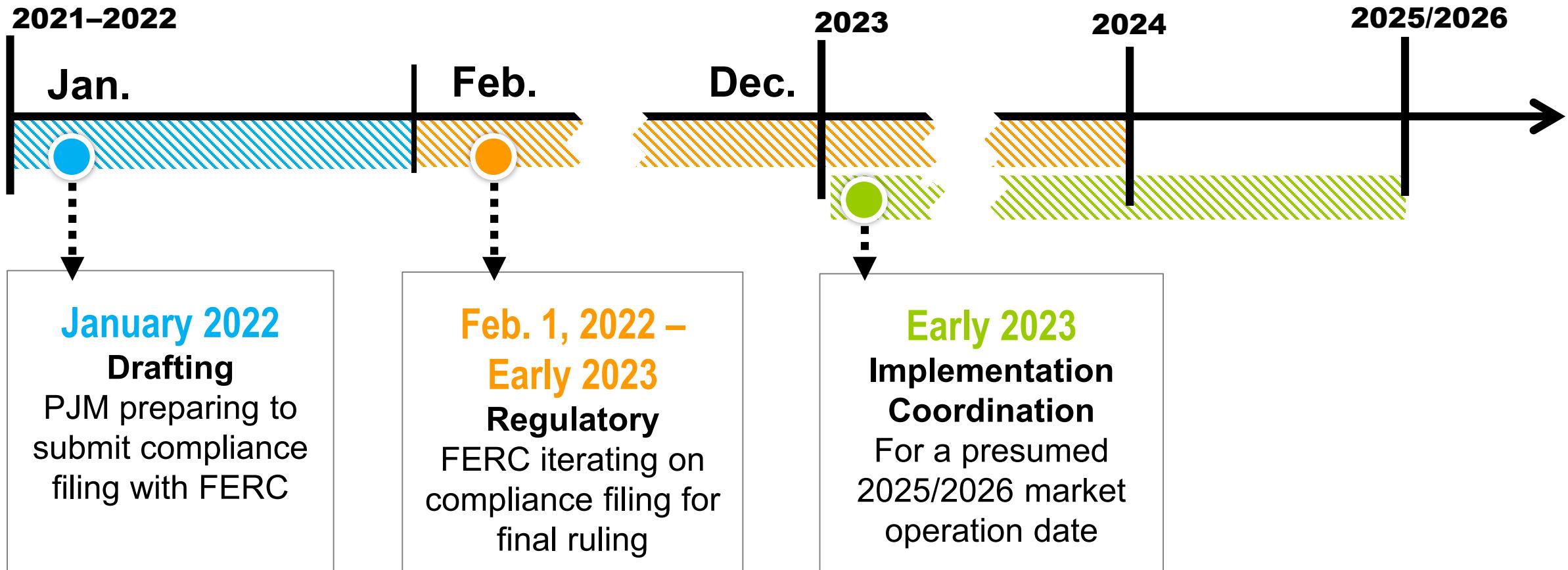
January 14, 2022

PJM Market Registration Under Order 2222

**How will the present application process change under FERC Order 2222?
Are there projections for PJM NJ projects?**

- Under our current FERC proposal, DER up to 5 MW will have the option to register with PJM markets after interconnecting through the state
- DER will still have the option to go through the queue
- PJM does not have projections for aggregator application growth in New Jersey

PJM's Final Process Under Order 2222 Will Depend on FERC's Final Ruling and Subsequent Coordination

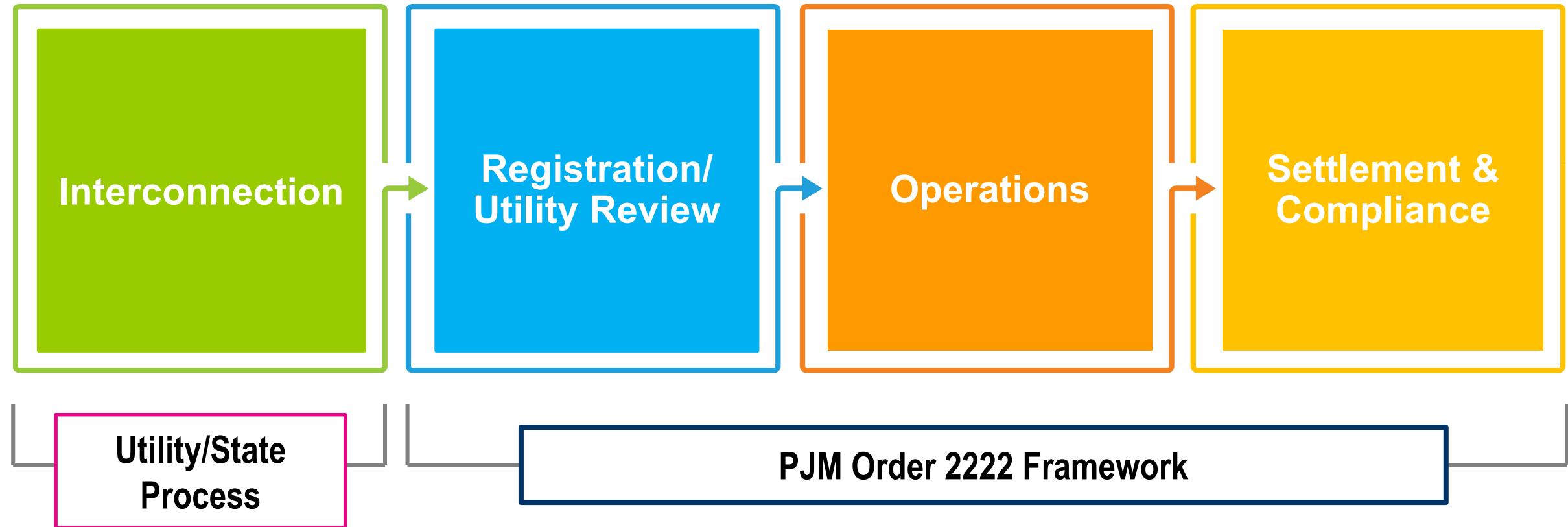


PJM Market Registration Under Order 2222

What are the expectations for the EDCs and developers with respect to the implementation of FERC Order 2222?

- Satisfy state interconnection requirements
- Register with PJM markets, satisfy PJM requirements, EDC review
- PJM to issue final approval before market operations commence

Process Flow for PJM Participation Under Order 2222



PJM Market Registration Under Order 2222

What additional coordination will be evaluated between the state process and PJM process?

- Following FERC's final order, PJM will work with EDCs, RERRAs and aggregators
- Together, stakeholders will spell out more detail for PJM operating manuals
- Register/follow updates at: <https://www.pjm.com/committees-and-groups/subcommittees/dirs>