



Capacity Interconnection Rights (CIR) Education

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Resource Adequacy Planning

PC Special Session - CIR for ELCC
Resources

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- The rights to input generation as a capacity resource – as defined in the Reliability Assurance Agreement (RAA) – into the transmission system at the point of interconnection where the facility connects to the PJM transmission system. [OATT Part VI, §230]
- Reflects generating unit net capability at expected summer peak [Manual 21, §1.1]
- PJM as transmission provider plans system, per OA Schedule 6, such that CIR holder can integrate its capacity resources comparable to that which TO integrates its capacity resources to serve native load. [OATT Part VI, §230.1]

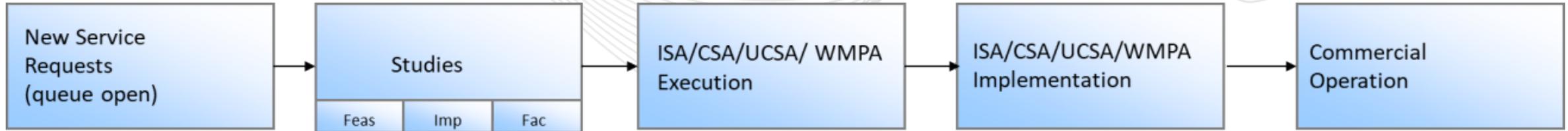
1. Net capacity from existing or planned generation that meets requirements of RAA Schedules 9 and 10:
 - Owned or will be owned by or contracted by a Party,
...and...
 - Is or will be committed to satisfy a party's RAA obligations or to satisfy PJM reliability requirements for a Delivery Year. [RAA §1]
2. Net capacity from existing or planned generation not owned or contracted by a Party but which is accredited to the PJM Region per procedures in RAA Schedules 9 and 10. [RAA §1]
3. Demand Resources or Energy Efficiency Resources accredited to the PJM Region per procedures in RAA, Schedule 6. [RAA §1]

- CIRs provide eligibility for capacity resource to participate in RPM auctions. [OATT Part VI, Attachment DD, §5.5]
- A Capacity Market Seller may submit a Sell Offer for a Capacity Resource in a Base Residual Auction, Incremental Auction, or Capacity Performance Transition Incremental Auction. [OATT Part VI, Attachment DD, §5.5; PJM Manual 18]

- Granted as a function of a control area integration, or the execution of an ISA or WMPA [Manual 21]
 - Prior to the original effective date of Part IV, generators accredited under the RAA as a capacity resource, have CIRs equal to MW of accredited generation [OATT, Part VI, §230.2]
 - Once a generation interconnection customer's generation is accredited as deliverable through the applicable procedures in OATT Part VI, the customer receives CIRs commensurate with MW identified in its ISA. [OATT, Part VI, §230.2]
- Capacity resources must be deliverable to total system load [RAA Schedule 10]

What does it mean for a Generator to be deliverable?

- Test to determine if transmission limits exist that prevent the output of a generator to be exported to the rest of PJM under summer peak, winter peak, and light load conditions. [PJM Manual 14B, Attachment C]
- Ensure that bottled capacity conditions will not exist that would limit the availability and usefulness of certified Capacity Resources to system operators. [Manual 14B, Attachment C]
- Failure of deliverability test for a new Capacity Resource results in denial of full capacity rights for the generator until such generator deliverability deficiencies are corrected. [Manual 14B, Attachment C]



- Enter PJM New Services Queue via Queue Point with Attachment N
- Two queue windows per calendar year
 - April 1st – September 30th
 - October 1st – March 31st
- Feasibility Study and System Impact Study identify required transmission enhancements
- ISA or WMPA execution

- PJM develops and maintains rules and procedures to determine and demonstrate the Capacity Resource capacity. [OATT Part VI, §230.3; RAA Schedule 9, Manual 21]
 - Uniformity for planning, operating, accounting and reporting purposes.
 - Recognize different attributes of different types of units
- PJM tracks CIRs with an internal tool.
- Generator must prove its CIR level during a PJM Summer Capability Verification Test once in the most recent consecutive three year period. [OATT Part VI, §230.3; Manual 21, §1.1.2]

- CIRs are lost when a generator fails to prove its CIR level in the PJM Summer Capability Verification Test once in the most recent consecutive three year period. [OATT Part VI, §230.3; Manual 21, §1.1.3]
- CIRs lost are the difference between current CIR level and highest Net Corrected Test Capability proven in the most recent three consecutive years' PJM Summer Capability Verification Test. [OATT Part VI, §230.3; Manual 21, §1.1.3]

What is Generator Verification Testing?

- It is an exercise to prove the capability of a generating unit that holds CIRs.
 - 2 hour test for all steam based units; 1 hour for others (excluding wind and solar)
- The capability must be proven once a year in the summer testing period
 - Winter tests are still required but they can be summer tests adjusted to winter conditions
- Failure to prove a generator's capability is remedied by a mandatory forced derate for the test shortfall
 - A forced derate increases EFORd
- PJM Manual 21 is the generator testing manual

- Based on the summer peak hour capacity factor of each wind/solar resource. [Manual 21, §1.1.7]
- CIRs are retained when unit's highest summer capacity factor of the most recent three summer periods meets or exceeds the capacity factor associated with its CIRs. [Manual 21, §1.1.7]
- If unit's highest capacity factor of the most recent three summers does not meet or exceed the capacity factor associated with its CIRs, the unit loses CIRs equal to difference between highest capacity factor of the most recent three years and the capacity factor associated with its CIRs. [Manual 21, §1.1.7]

How are CIRs transferred prior to commercial operation?

- CIRs under study or from an ISA for unit that is not commercial are non-transferrable.
- Queue position owner can sell or assign the queue project to another entity. [Manual 14G, §4.4.1.1]

How are CIRs transferred after commercial operation?

- **First:**
 - Must have constructed all necessary system upgrades identified in the ISA or WMPA. [Manual 14G, §4.4.1]
 - Must have maintained rights as required by OATT. [Manual 14G, §4.4.1]
- **Also:**
 - Letter to PJM indicating CIR transfer amount and to whom the rights are transferring. [Manual 14G, §4.4.1.2]
 - If CIRs are not being transferred at same Point of Interconnection, PJM will determine the total CIRs available at new location. [Manual 14G, §4.4.1.2]
 - A new queue position is required. [Manual 14G, §4.4.1.2]

How are CIRs transferred from a deactivated unit?

- **First:**
 - Must have constructed all necessary system upgrades identified in the ISA or WMPA. [Manual 14G, §4.4.1]
 - Must have maintained rights as required by OATT. [Manual 14G, §4.4.1]
- **Also:**
 - CIRs terminate one year from deactivation date unless holder has submitted a new interconnection request under a new queue position during that year to use same CIRs by another unit. The new queue position cannot have an executed System Impact Study Agreement [OATT Part VI, §230.3.3; Manual 14G, §4.4.1.3]
 - If not transferred at same POI, PJM will determine CIRs available at new location. [Manual 14G, §4.4.1.3]

How does PJM evaluate CIRs to be transferred?

- Must enter New Services Queue with an Interconnection Request. [Manual 14G, §4.4.2]
- CIRs to be transferred from an existing operational generator to an existing or new one in order to increase or provide CIRs to it. [Manual 14G, §4.4.2]
- PJM Studies: [Manual 14G, §4.4.2]
 - Thermal
 - Short Circuit
 - Stability

What if a unit changes ownership or seeks unit output increase?

- *New Ownership Requirements:* For unit acquired by a new owner, then transfer of responsibilities and rights in the PJM market for the transferred facility will be conveyed to the new owner following notification to PJM by the selling and purchasing entities. [Manual 14G, §4.5]
 - Transfer of ownership of existing generating units is not subject to the interconnection queuing process unless pre-existing capacity interconnection rights for the unit are *not* transferred with the change in ownership. [Manual 14G, §4.5.1]
- *Unit Output Increases:* Request for additional CIRs are treated as a new generation Interconnection Request subject to Manual 14A procedures. [Manual 14G, §4.5]

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