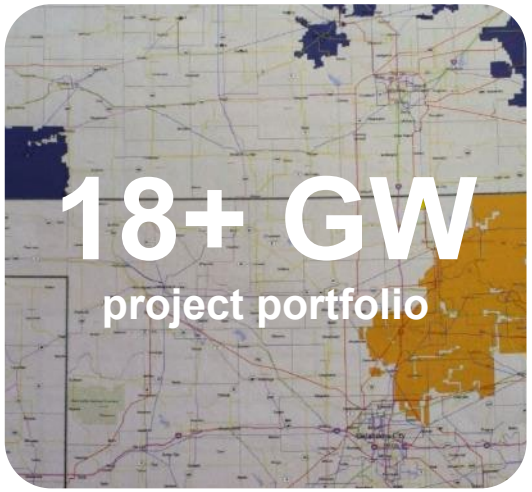
APEX CLEAN ENERGY

PJM Interconnection Workshop 2

December 11, 2020

Presenters:
Richard Seide & Deepesh Rana

Apex by the Numbers



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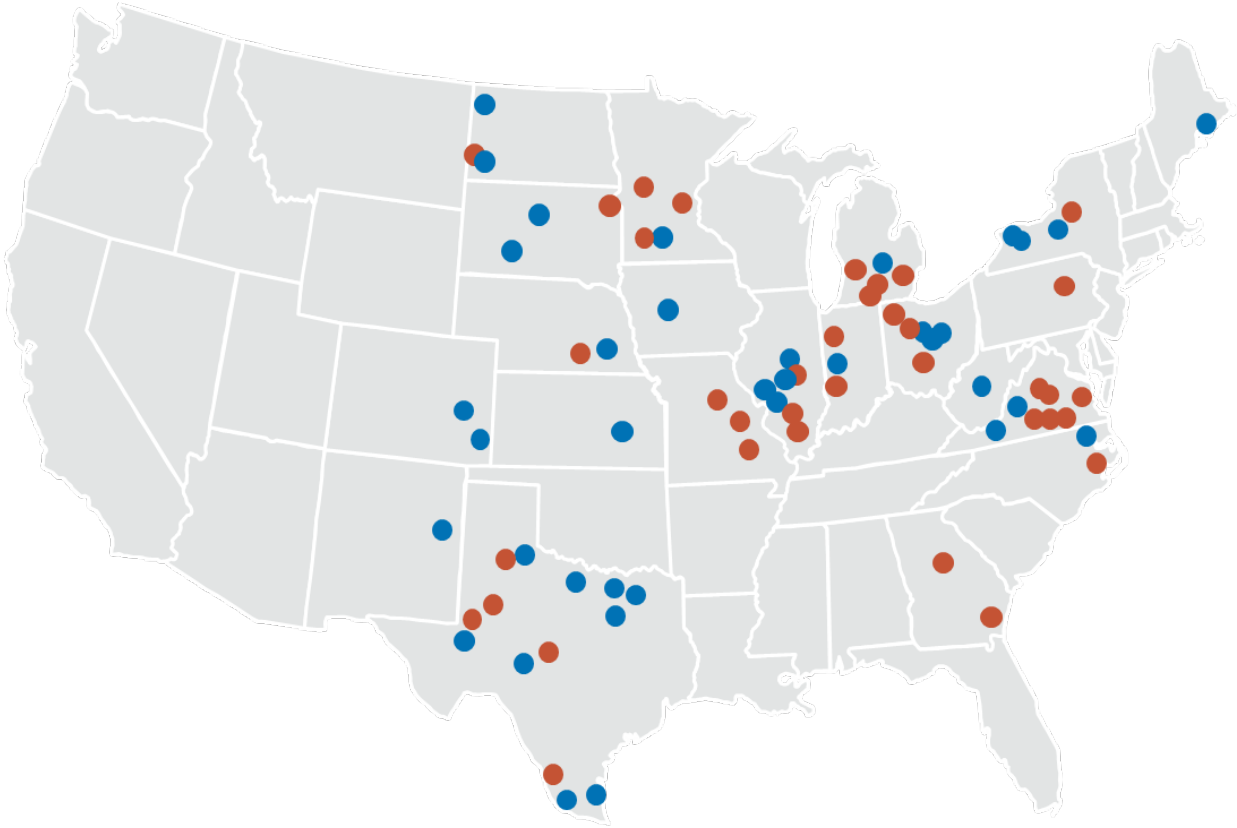
Diversified Project Portfolio

Apex's projects represent gigawatts of near-term clean energy opportunity

10+ GW
Wind Portfolio

Wind
Solar

8.5+ GW Solar
Portfolio



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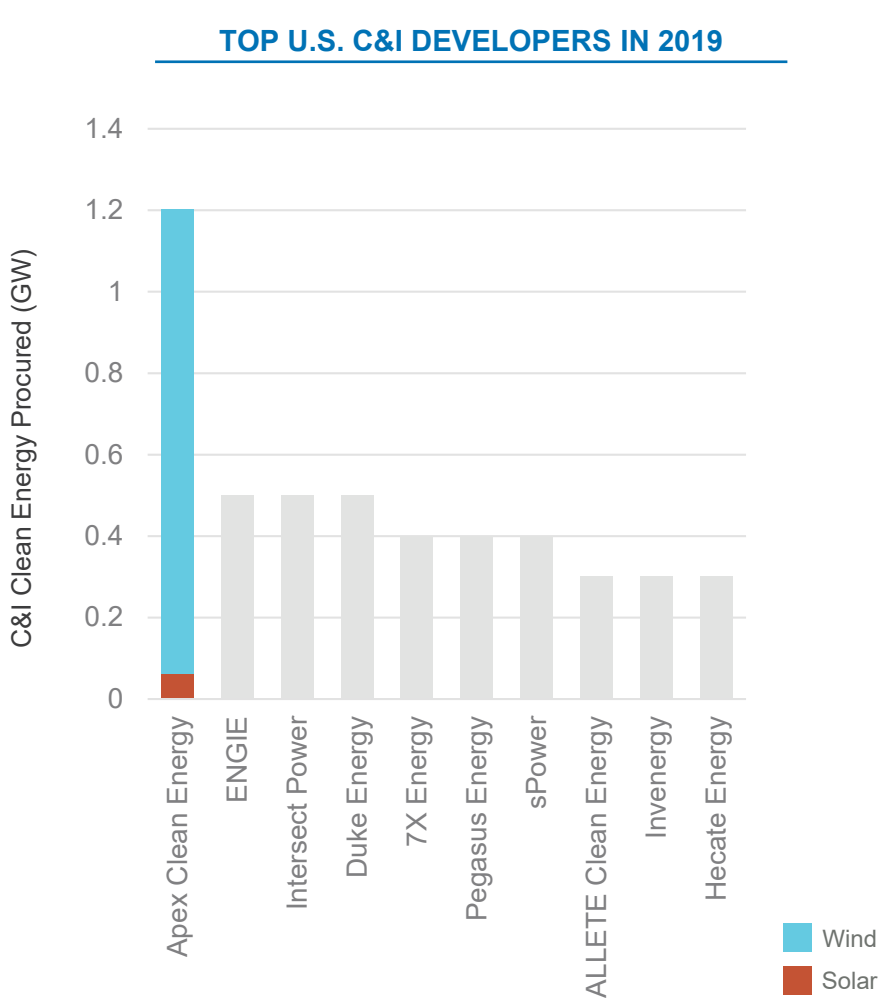
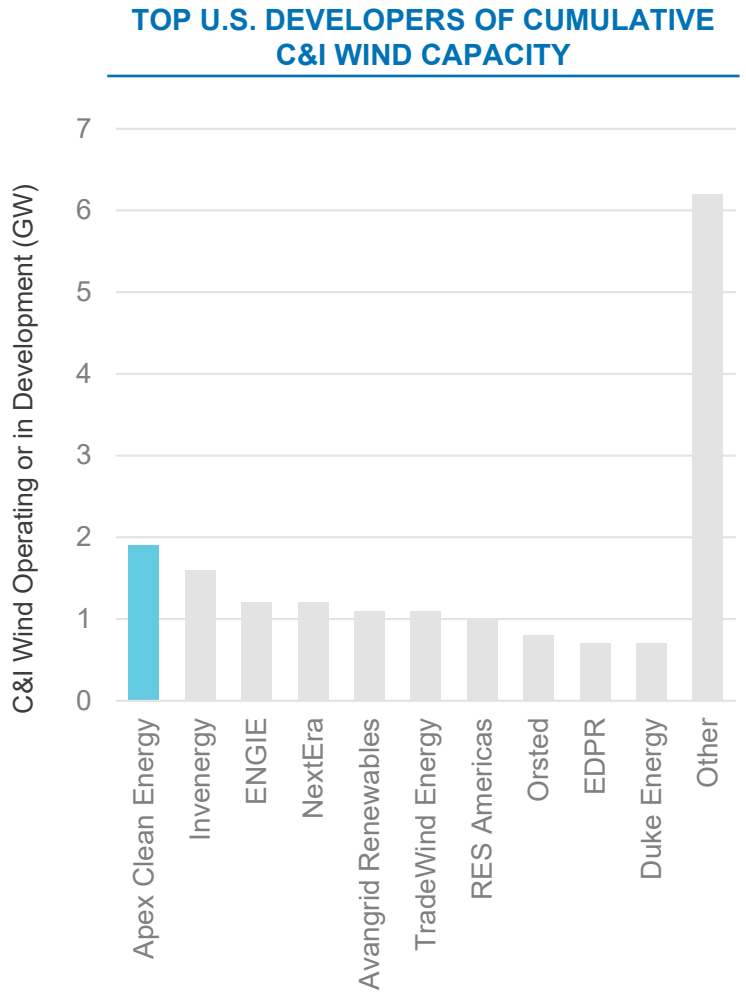
Leading the Commercial & Industrial Market

Apex ranked first in the industry in 2019 for C&I clean energy procurement and for cumulative C&I wind capacity





Source: Wood Mackenzie

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PJM Queue Process: Challenges with Status Quo

- **First in, First Out process not working**
  - Order 2003 focus on queue order/priority is an impediment
  - Serial processing is unworkable; protracted delays and single trigger project cause uncertainty on what network upgrades will be constructed and/or shifted through queues
- **Multi-year delays to receive Facilities Studies**
  - Feasibility and SIS studies are timely but have limited value
  - Facilities Study is ultimately required to “finance” project
  - Translates to more work by PJM for studies providing limited actionable and dependable information with inevitable future retools
- **Provisional ISA and Interim Deliverability Process do not meet intention of FERC Order 845**
  - Interconnection Customer not allowed to influence commercial probability of higher queued projects for interim deliverability
  - Tender of Final ISA with Provisional Service subject to completion of final Facilities Study

PJM Queue Process: Proposed Enhancements

- **Dedicated stakeholder process for interconnection process matters**
- **Adoption of First Ready, First Served policy for queue progression**
  - FERC approved similar reforms in MISO, SPP, PSCo, and Tri-State (on-going)
  - Focus on customer and system readiness drives progress + certainty
- **Parallel Queue Processing**
  - Parallel “clustering” process from application onset is a FERC accepted rule/practice
  - Joint and common upgrades are assigned based on project contribution to constraint/overload; guessing game is eliminated
  - Projects need to have "skin in the game" from onset with both refund policies & appropriate “exit ramps”
- **Studies need to be timely, reliable, and "bankable”**
  - Remove Feasibility studies and replace with System Impact Study at the onset
  - First study can be SIS Phase 1, future retool can be SIS Phase 2
- **Align Provisional ISA and Interim Deliverability to meet intention of Order 845**

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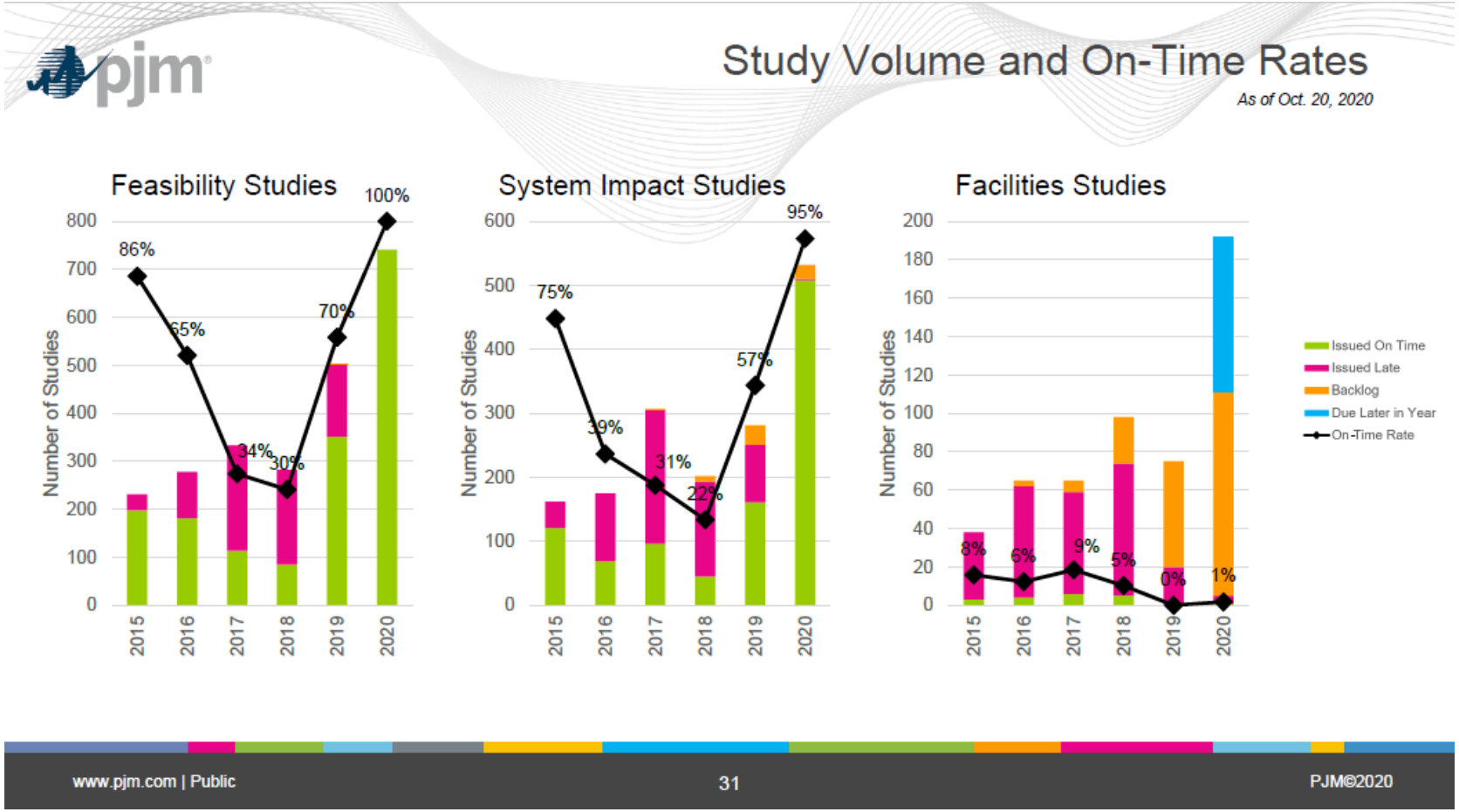
Milestone Based Queue Process: Customer Readiness

- **Incorporate customer readiness determinations**
- **Financial Milestones for definitive processing: $/MW to enter & proceed to next step**
  - "Dollars at-risk" paradigm in order to proceed
  - Milestones tie to % of upgrade costs between Phases
  - Alternatives to readiness milestones: PPAs, state procurement commitments
- **Other Features**
  - Decision points in process; proceed/withdraw determinations
  - Scheduled restudies
  - Defined withdrawal points + "at-risk" dollars
- **Project commitment increases through time**
  - Ensures "ready" projects more likely to proceed

Milestone Based Queue Process: System Readiness

- Customer readiness cannot work without PJM and TO readiness
- Requires commitment to solve Facility Study backlog



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Elimination of Single Project Driver

- **Current cost allocation structure**
  - 100% of upgrade security assigned to single project instead of multiple projects causing the upgrade
  - Places inordinate risk on single trigger project and deters ISA execution
  - “Game of Chicken” ensues preventing needed transmission from being built
- **Proposed enhancement**
  - Allocate cost burdens to all projects benefiting from the upgrade within a cluster and projects subsequently queued
  - Prevents “Free Riders”; enables higher cost facilities to be built with cost sharing
  - This works under First Ready, First Served because no single project is accorded priority within a cluster
  - A Multi-Party Facility Construction Agreement (MPFCA) can enable common and shared network upgrades to be financed and built

Provisional Interconnection & Interim Deliverability

- **Project acceleration is addressed in Order 845**
  - Enables “ready” and financeable projects to achieve COD subject to appropriate interim study (if required) and higher queued assumptions
  - Projects remain provisional until “normal” study process concludes
  - Provisional service contingent on higher queued project status as studied for interim deliverability

- **Provisional interconnection is meant to be a stop gap measure that is useful until PJM queue process catches up**
  - Should maintain same methodology as “normal” study process except for commercial probabilities/status of higher queued projects

Contacts

Richard Seide
richard.seide@apexcleanenergy.com

Deepesh Rana
deepesh.rana@apexcleanenergy.com