
TVA Interconnection Customer Meeting

July 25, 2024

Agenda

Time	Topic	Presenter
10:00 - 10:05	Welcome	Heather Smith
10:05 - 10:15	Recent Interconnection Improvements	Jason Smith, Kristin Hensley, Kathy Harper
10:15 - 10:45	Order No. 2023 TVA Implementation Site Control Cluster Details Transition Plan Timeline	Heather Smith, Kristin Hensley, Jason Adams
10:45 – 11:00	Q&A	All
11:00	Closing	Nate Schweighart

Process for meeting

- We will take questions at the end of the presentation, but feel free to use the Q&A feature to enter them along the way.
- Meeting will be recorded.

Recent Interconnection Improvements

Facilities Study Backlog Progress

- 32 solar/battery projects have been scoped since September 2023.
 - Only one project left in pre-2023 backlog.
- Average time for FS deliverables has decreased by ~300 days over the last year.
 - Durations will drop significantly as the backlog is eliminated.
- CY2024-Q2 – Completed a Facilities Study deliverables within 180 days!

*Implementation of Technical Review Meetings and Deliverables Package Review Meetings
have improved the Facilities Study output*

Procurement Assumptions

Activity start

- Breaker procurement will begin 2 months after E&P execution versus after completion of detailed scoping.

Duration

- Progressive schedule – assume favorable scenario (26-months today but will be adjusted based on most up-to-date information) versus 36-month scenario.
- Detailed schedule – will reflect actual procurement order duration.

Note: TVA has added an additional breaker vendor to help with supply issues which has improved some duration assumptions.

Threshold Update

TVA has updated the thermal impact criteria used in the study of Generator Interconnections and Transmission Service Requests. Thermal impacts will be identified based on a **5% threshold** versus a historic 3% threshold.

- The new criteria will apply to projects/requests that have executed an Interconnection Feasibility Study Agreement, Interconnection System Impact Study Agreement, Transmission Service System Impact Study Agreement, or Affected System Study Agreement on or after May 16, 2024.
 - The change is not retroactive.
 - Projects that require restudy that had agreements executed prior to the May 16 date will still use the 3% threshold criteria.

Business practice posted on OASIS

IBR Commissioning Guidelines Update

Includes minimum criteria required to start TVA's performance testing for both solar and BESS. Examples include:

- Inverters/modules installed.
- IC internal testing complete (and any deficiencies corrected).
- PPC and inverters programmed to latest approved model.
- 90% solar inverters or 100% BESS inverters online and communicating with PPC.

Once testing readiness satisfied, a minimum of 60 days will be required to accommodate the performance testing and burn-in period.

Guidelines posted on OASIS

Order No. 2023 – TVA Implementation Overview

Disclaimer

- All information and materials shared in this presentation (verbally or in writing) on TVA's Implementation of Order No. 2023 and the revised Large Generator Interconnection Procedure (LGIP) should be considered preliminary and subject to change.
- Upon TVA's management approval, the revised LGIP will be posted on TVA's OASIS site along with additional comments, agreements, and business practices as may be necessary.

Order No. 2023 Implementation – Hot topics

- Site control requirements
- Annual cluster study
- Resource solicitation cluster
- Transition procedures
- Implementation schedule

Site Control

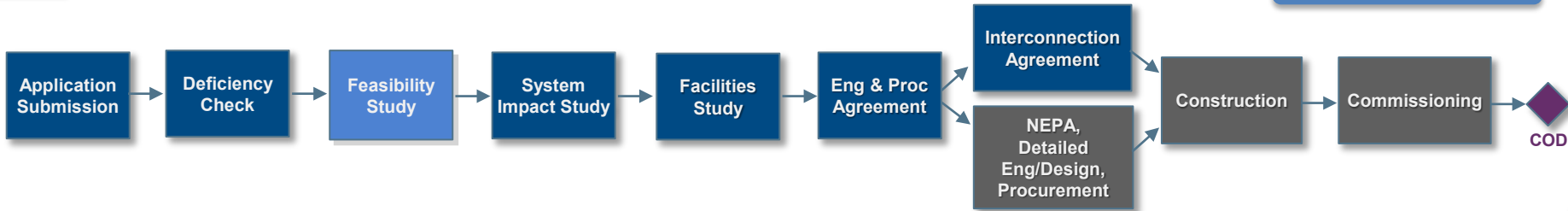
	TVA
Solar	6 acres/MW
Battery Storage	1 acre/MW
Conventional	15 acres
Hydro	1 acre
Wind	75 acres/MW
Hybrid/Co-location	Meet each min

Note that (1) additional acreage may be required based on specific site selection and technology used within these categories and (2) TVA may approve limited exceptions to these requirements when justified.

- Site control will be required at the time an Interconnection Request is submitted:
 - 100% Site Control for the Generating Facility and the Interconnection Customer's Interconnection Facilities.
 - TVA will verify Site Control at the Restudy, Facilities Study, and Interconnection Agreement stages.
 - A deposit in lieu of site control will only be accepted due to regulatory limitations as provided in Order No. 2023.
- Site Control will also be required to participate in transitional options.

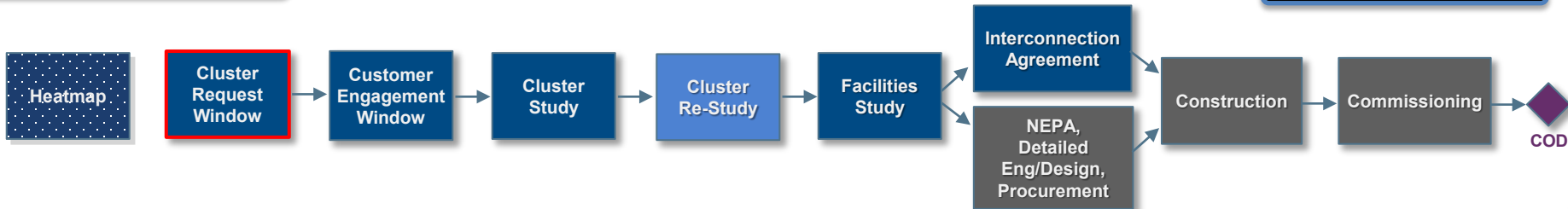
TVA Interconnection Process Comparison

Today



Order No. 2023 makes the study process (Level 1) more efficient, but it does not directly change anything in environmental, design, procurement, construction, or commissioning (Level 2).

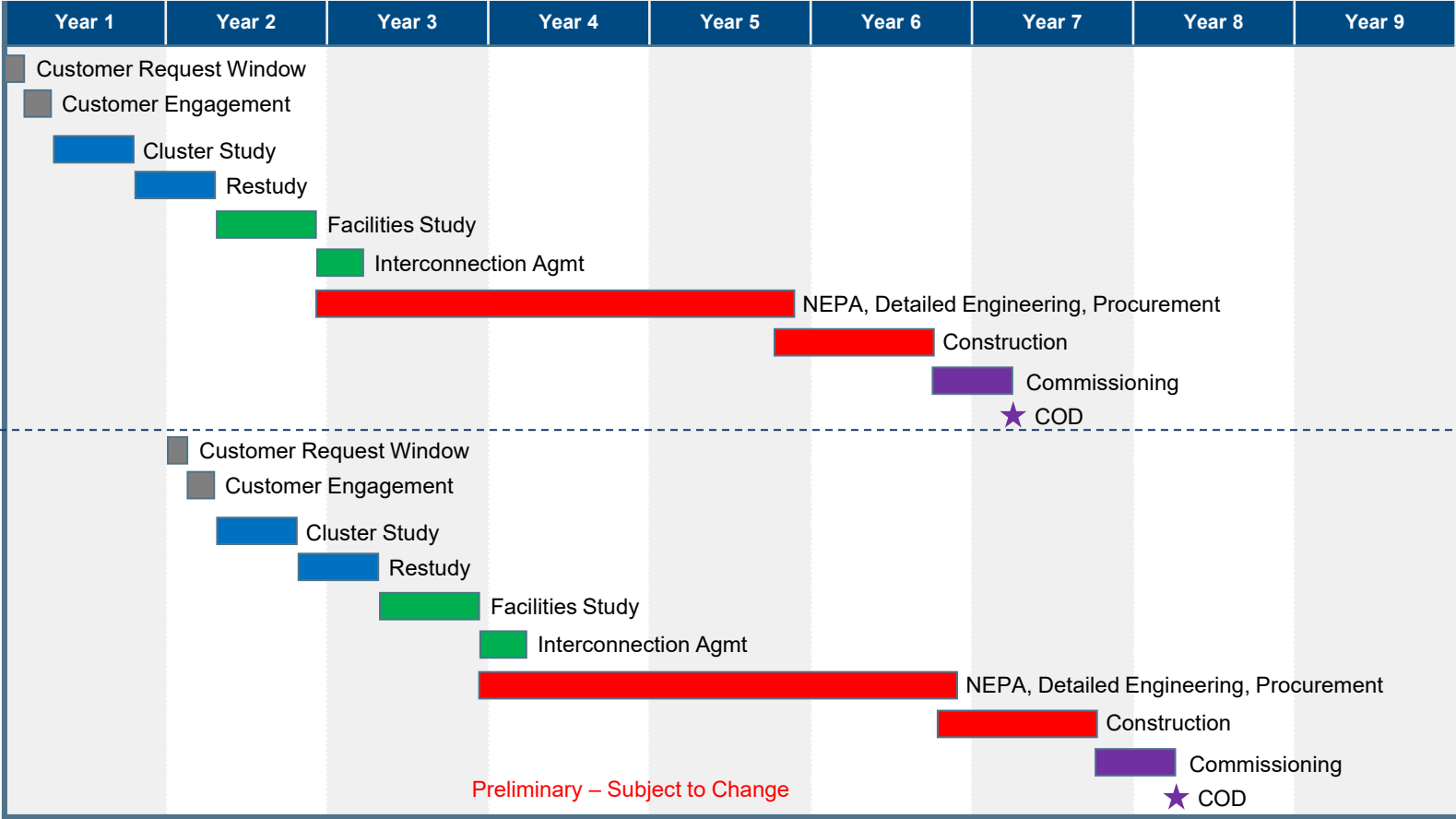
Post 2023 Implementation



Cluster Study - Basics

- Single annual cluster study:
 - Customers will have a 45-day window to submit projects (i.e., queue closed for 10.5 months each year).
 - All projects will have same priority within the cluster.
 - Cluster study (i.e., system impact study) results will be provided in 150 days.
 - Customers will be subject to higher financial requirements and penalties.
 - Shared cost allocation (e.g., proportional impact on network upgrades).
 - Assume one standard re-study (150 days) in the process.
 - Customers must request to be studied for ERIS or NRIS.

Cluster Study – Timeline



Cluster Study – Alternative Technologies

- TVA will evaluate the following technologies in each cluster and document the results of the analysis in the study report:
 - Static synchronous compensators
 - Static VAR compensators
 - Advanced power flow control devices
 - Transmission switching
 - Synchronous condensers
 - Voltage source converters
 - Advanced conductors
 - Tower lifting

Note: Additional Grid-Enhancing Technologies are being considered under separate FERC Orders.

Cluster Financial Requirements and Penalties

Generator Size	Interconnection Request Study Deposit
All (Application Fee)	\$25,000*
< 75 MW	\$150,000
≥ 75 MW < 200 MW	\$200,000
≥ 200 MW	\$300,000

Phase	Readiness Deposit and potential Withdrawal Penalty
Interconnection Request	2x study deposit
Cluster Restudy	5% of estimated Network Upgrade costs
Facilities Study	10% of estimated Network Upgrade costs
Interconnection Agmt	20% of estimated Network Upgrade costs

Note: TVA will revise upgrade definitions to align to FERC, however we will continue to utilize existing cost recovery mechanism for various categories.

Resource Solicitation Cluster (RSC)

TVA is in the process of developing the RSC but is not yet ready to discuss details.

In general:

- The RSC will be tied to an RFP and studied separately from the annual cluster process.
- The RFP will set the parameters: resource type, MW amount, location, pricing, developer risk, etc.
- Projects not selected in the RFP must exit the RSC.
- The same basic steps for annual cluster apply (cluster study, restudy, etc.).
- TVA will plan for an RSC to begin approximately 6 months apart from the annual cluster.
- LGIP requirements for annual clusters (deposits, cost allocation, readiness, etc.) would also apply to the RSC.

Transition Process

- Eligibility will be determined approximately 30 days after the revised LGIP is posted.
- Existing Interconnection Customers will have 3 options for transition:
 1. Projects with assigned queue number are eligible for the transitional cluster study.
 2. Projects tendered a facilities study agreement are eligible for the transitional serial study.
 3. Projects with facilities study results may complete the existing LGIP/LGIA process.
- Interconnection Customers must satisfy transition requirements and execute transition agreements within 60 days of the revised LGIP effective date.
- No exceptions to withdrawal penalties as provided in Order No. 2023.

FERC Order No. 2023 – Transition Options

E&P Executed
FS Results Provided

Complete Current LGIP

- Existing SIS & FS results
- Deposit and penalty = \$0
(current LGIA requirements)

Progressive FS
Detailed FS
FSA tendered

Transitional Serial

- Existing SIS results
- Deposit = 100% upgrades
- Penalty = 9x study costs

System Impact / Results
Feasibility / Results
Scoping Call
Queue # Assigned

Transitional Cluster

- New cluster study results
 - Deposit = \$5M
- Penalty = 9x study costs

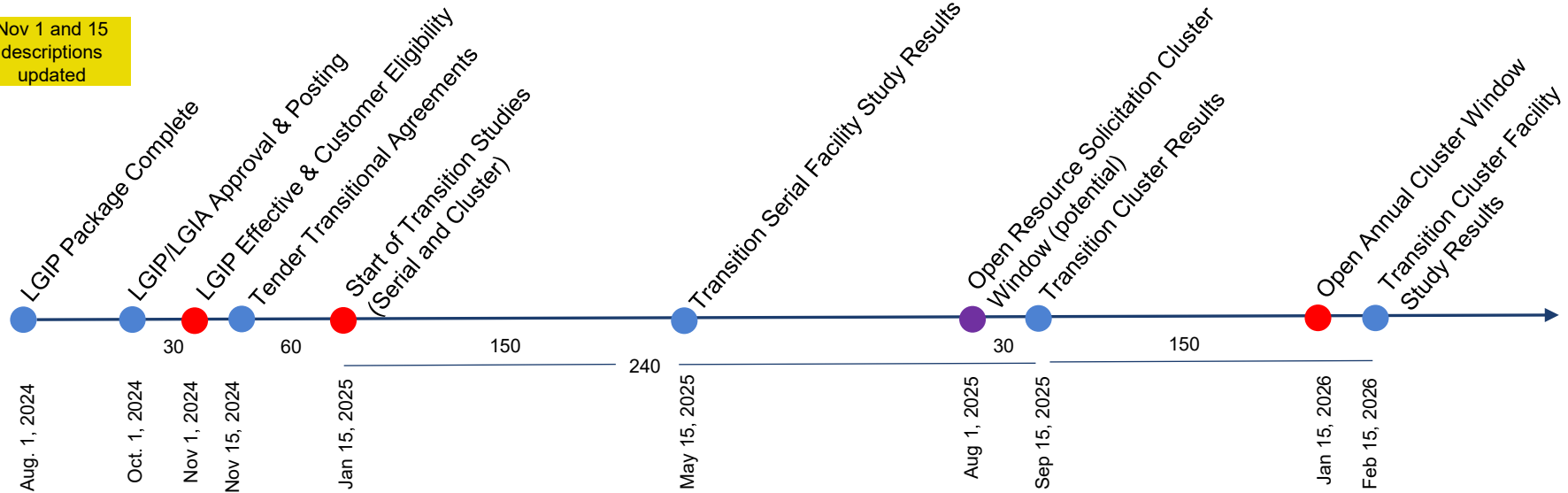
All
Withdrawn
Deficiency Check
No Queue #

Annual Cluster

- Order No. 2023 Process

TVA - Proposed Order No. 2023 Implementation Schedule

Nov 1 and 15
descriptions
updated



Key Dates/Issues

- October 1, 2024 – Revised TVA interconnection agreements and procedures are posted to OASIS
- November 1, 2024-January 15, 2026 – **Queue Closed** (potential to open for Resource Solicitation Cluster in August 2025)
- November 1, 2024 – Customer Transition Eligibility Determined
- January 15, 2025 – Start of Transition Studies (Customer must execute transitional agreements and provide security)
- January 15, 2026 – Open First Annual Cluster

Preliminary – Subject to Change

Potential Estimated Timelines per Specific Study/Cluster

	Start	FS results	COD
Existing LGIA	Complete	Complete	2024-2029
Transitional Serial	November 2024*	May 2025	2030 or sooner
Transitional Cluster	November 2024*	February 2026	2030-2031
RSC (<i>potential</i>)	August 2025	July 2027	2031-2032
Annual Cluster 2026	January 2026	December 2027	2032
Annual Cluster 2027	January 2027	December 2028	2033

This should be used as an estimate only. Every project is unique, and changes will continue to be made that could impact schedules.

+ Current estimate is about 4.5 years on average between FS complete and COD. Transmission is working to bring that closer to 3.5 years.

* Projects must have appropriate queue status by November 2024. Customer deadline to meet agreement requirements is January 2025.

Questions: Use Q&A feature





TENNESSEE
VALLEY
AUTHORITY