

Roadmap for Offshore Wind in Integrated Resource Planning

Workshop

December 17, 2021



California Public
Utilities Commission

Logistics & Scope

- Workshop slides are available at the 2022 IRP Cycle Events and Materials web page
- The workshop will be recorded, with the recording posted to the same webpage
- The purpose of this workshop is to further develop understanding of the role of the CPUC's Integrated Resource Planning (IRP) process in relation to California offshore wind development
- Out of scope: deliberative matters discussed in the Preferred System Plan (PSP) Ruling released in August 2021
 - Composition of Transmission Planning Process (TPP) base case portfolio for 2022-23 TPP
 - Transmission deliverability rights associated with Diablo Canyon Power Plant

Comments & Questions

- We invite comments, clarifying questions and suggestions at regular intervals throughout this workshop.
- All attendees have been muted. **To comment or ask questions:**
 - In Webex:
 - Please “raise your hand”
 - Webex host will unmute your microphone and you can proceed to ask your question
 - Please “lower your hand” afterwards
 - For those with phone access only:
 - Dial *3 to “raise your hand”. Once you have raised your hand, you'll hear the prompt, “You have raised your hand to ask a question. Please wait to speak until the host calls on you”
 - WebEx host will unmute your microphone and you can proceed to ask your question
 - Dial *3 to “lower your hand”
- If you are not able to use audio to question or comment, you may type into the “Chat Room” feature of this Webex, though priority will be given to stakeholders who have “raised their hand” and use audio
- Should time not permit attention to every question, stakeholders may also email questions by the end of today (12/17) to Neil.Raffan@cpuc.ca.gov

Agenda

Topic	Timing	Lead
Introduction	5 min	Neil Raffan
Opening remarks <ul style="list-style-type: none">• CPUC & CEC commissioners	10 min	Molly Sterkel
IRP overview	10 min	James McGarry
IRP planning track	5 min	David Withrow
Transmission & interconnection <ul style="list-style-type: none">• Comments & questions	15 min	David Withrow
Siting & permitting Financing Engineering, procurement & construction <ul style="list-style-type: none">• Panel: CEC, BOEM, Offshore Wind CA, ACP-CA• Comments & questions	40 min	Neil Raffan
IRP procurement <ul style="list-style-type: none">• Panel: CEC, BOEM, Offshore Wind CA, ACP-CA• Comments & questions	25 min	Neil Raffan
Next steps <ul style="list-style-type: none">• Comments & questions	10 min	David Withrow

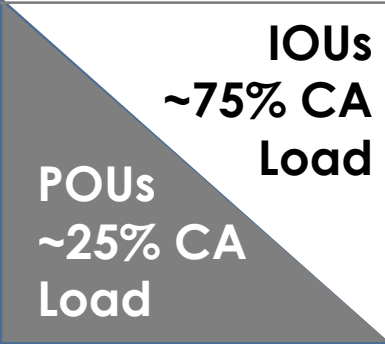
Overview of Integrated Resource Planning

- A key objective of integrated resource planning is to reduce the cost of achieving GHG reductions and other policy goals by looking across individual LSE boundaries and resource types to identify solutions to reliability, cost, or other concerns that might not otherwise be found.
- Goal of 2019-21 IRP cycle is to ensure that the electric sector is on track to help California reduce economy-wide GHG emissions 40% from 1990 levels by 2030, and to explore how achievement of SB 100 2045 goals could inform IRP resource planning in the 2020 to 2030 timeframe.
- In the next IRP cycle, the Commission may seek to ensure that the electric sector maintains a robust decarbonization trajectory and explore process enhancements to improve systemwide modeling and procurement procedures.
- California today is a complex landscape for resource planning:
 - Multiple Load Serving Entities (LSEs) including:
 - Investor-Owned Utilities (IOUs)
 - Community Choice Aggregators (CCAs)
 - Energy Service Providers (ESPs)
 - Multiple state agencies (CPUC, CEC, CARB) and CAISO.

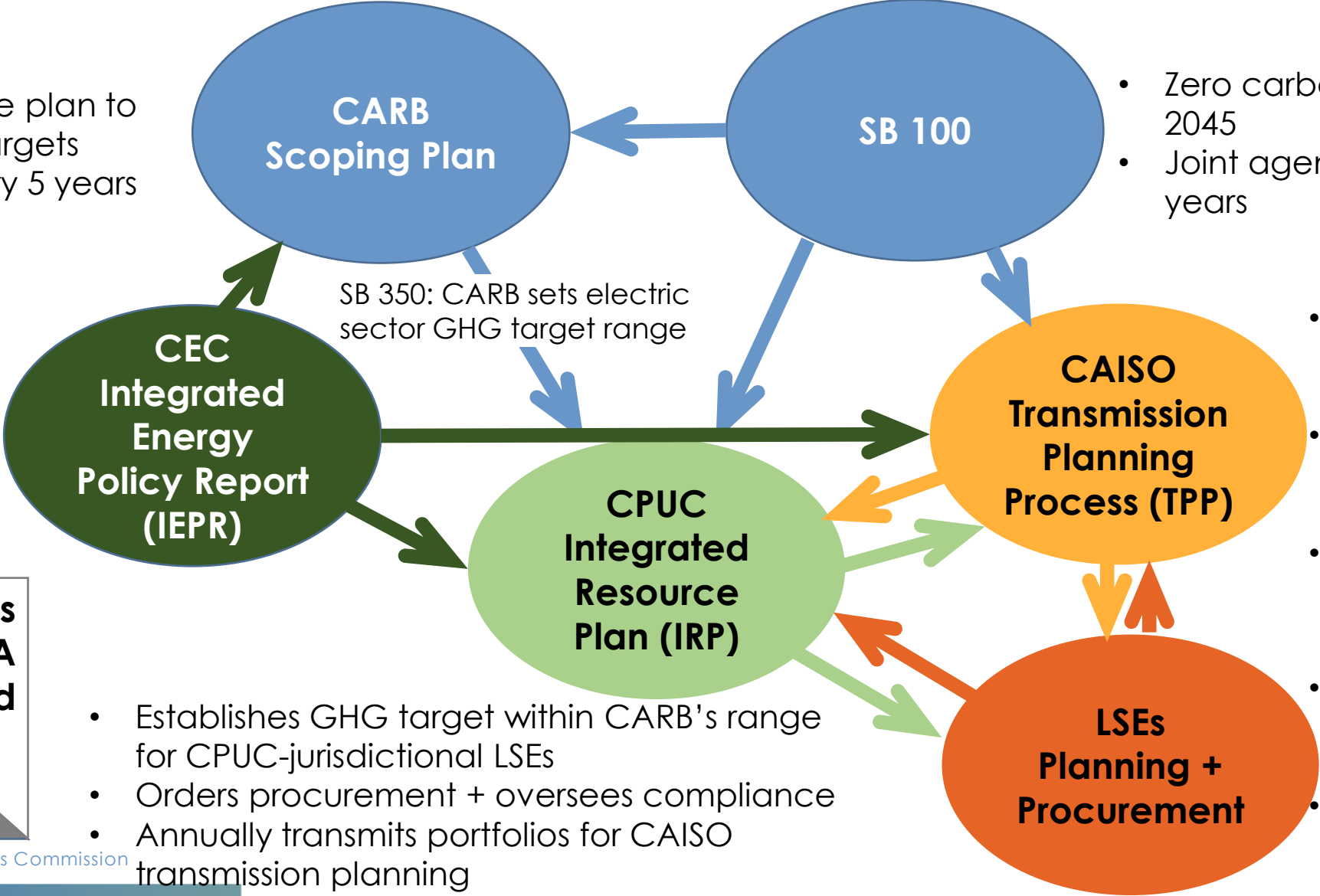
California's Electricity Planning Ecosystem

- Economy-wide plan to reach GHG targets
- Updated every 5 years

- Demand forecast for infrastructure planning
- Updated annually



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- Zero carbon electricity by 2045
- Joint agency report, every 4 years

- Assess transmission needs
- Conceptually approves new projects
- Updated annually

- Establishes GHG target within CARB's range for CPUC-jurisdictional LSEs
- Orders procurement + oversees compliance
- Annually transmits portfolios for CAISO transmission planning

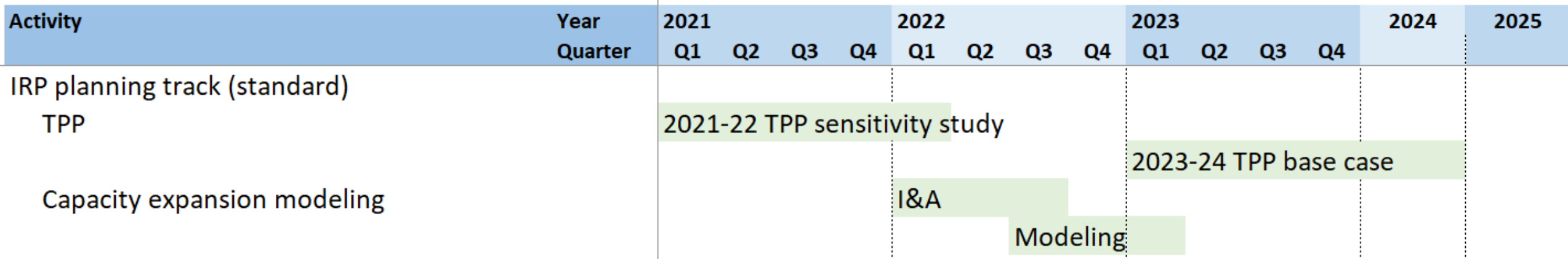
- Plans filed per SB 350 + CPUC guidance
- Procurement in compliance w/ CPUC directives

IRP planning track

Key

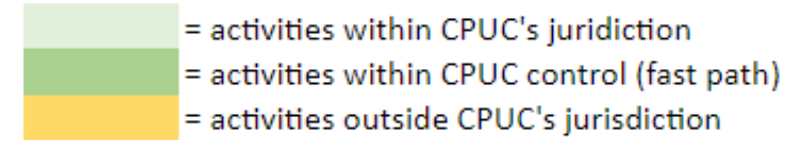
- = activities within CPUC's jurisdiction
- = activities outside CPUC's jurisdiction

- 2019-2020 Reference System Plan (RSP) made offshore wind available for selection for the first time, but in sensitivities only; require more certain assumptions to be a default candidate resource
- 2020 efforts to improve assumptions for offshore wind:
 - Collaboration with BOEM to engage NREL's CA floating offshore wind cost and resource study
 - Transmittal of TPP sensitivity case for study by CAISO in 2021-22 TPP
- These enable update of Inputs & Assumptions (I&A) for modeling in next IRP cycle

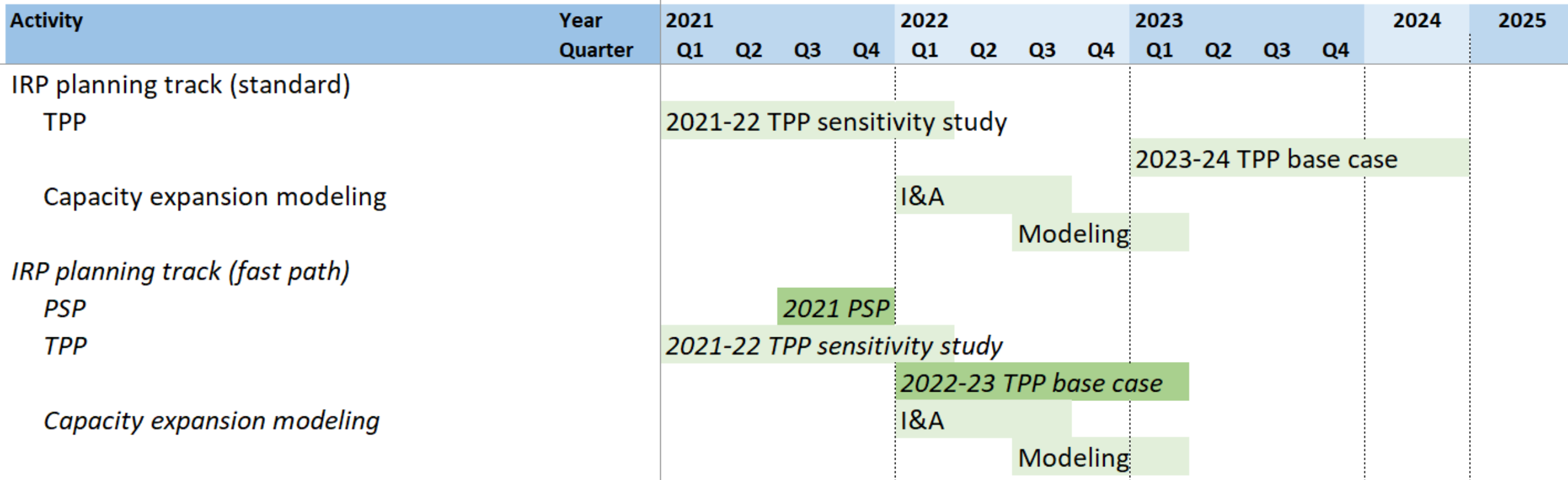


IRP planning track (cont'd)

Key

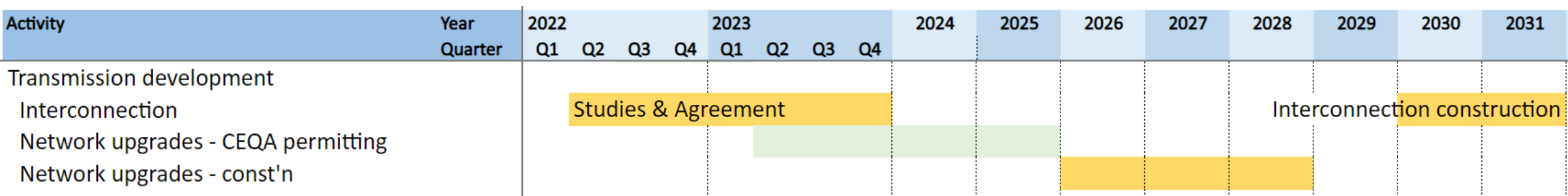


- Preferred System Plan: August 2021 Ruling proposes 1.7 GW of offshore wind is included, which represents a 'fast path' vs. standard IRP
 - Question directed to parties in Ruling: should a certain amount of offshore wind be included in the 2022-23 TPP base case?



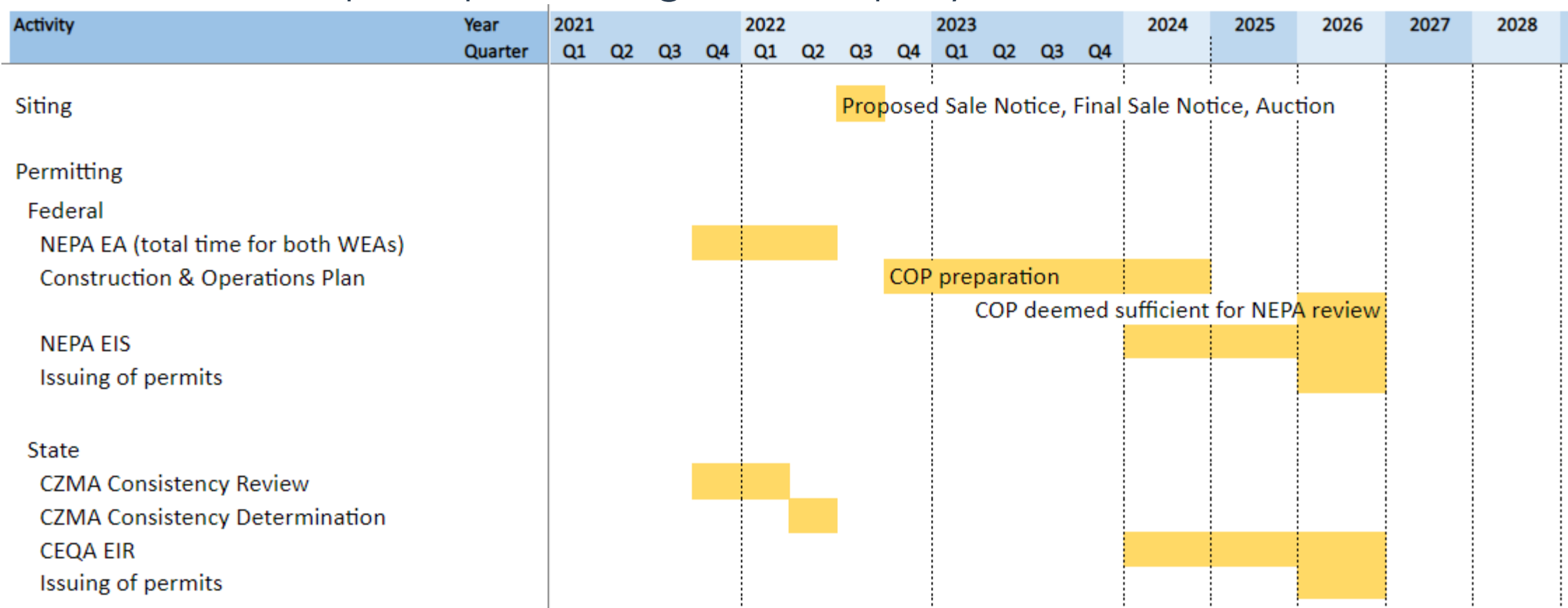
Interconnection | Transmission planning

- Generator Interconnection Development Application Process (GIDAP) includes various offshore wind projects
 - Cluster 11: one 156 MW project; Cluster 13: one 1,000 MW project; Cluster 14: 6 projects totaling 6,650 MW
 - 2023 is the next opportunity for new projects to enter the queue
- Network upgrades
 - Type, cost and timing not known until 2021-22 TPP offshore wind sensitivity study is completed (draft 2021-2022 Transmission Plan to be posted end of January 2022)
 - Need must be shown in TPP base case to receive CAISO Board of Governors' approval



Siting & permitting

- Timeline estimates below assume permitting activities occur concurrently for all projects in the Morro Bay and Humboldt leased areas
- AB 525 requires permitting roadmap by December 31, 2022

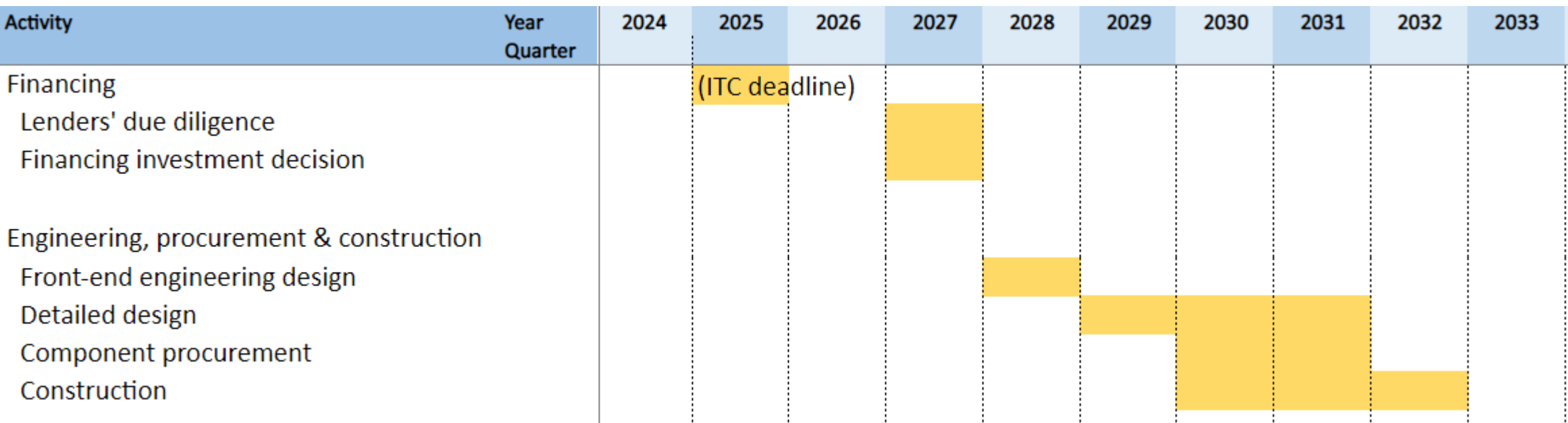


Financing

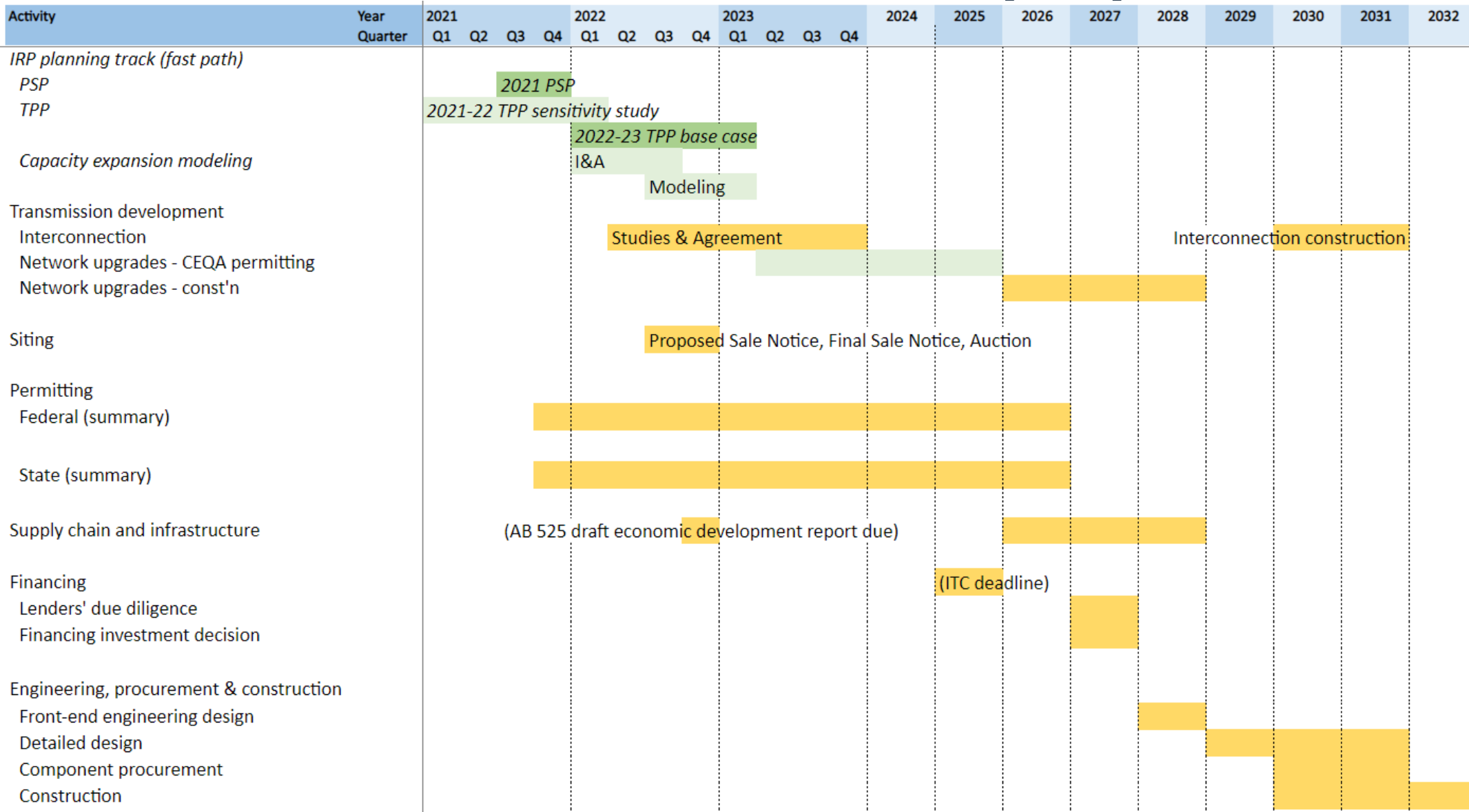
- Staff expect that to secure financing, a project will need:
 - Site control - BOEM lease
 - Long-term power purchase agreement or other form of long-term offtake contract providing fixed, long-term cashflows
 - All federal, state, and local permits acquired and access to all necessary rights of way
 - Generator Interconnection Agreement (and substation property site control)
 - All major construction contracts signed for supply, transport, installation of project components
 - e.g., wind turbine generators, foundations, electric service platform, array cables, offshore export cables, onshore substation, onshore export cables, onshore civil works
 - Service and maintenance agreement for turbines and balance of plant
 - Several other legal documents demonstrating ability to construct and operate the project
 - e.g., lease agreement for turbine marshalling port, lease agreement for operations and maintenance port/facilities
 - Insurance
 - Lender's technical advisor reports

Engineering, procurement & construction

- Estimated timeline for “just in time” online date for 2032 per proposed Preferred System Plan
- Investment Tax Credit (ITC) safe harbor deadline
 - Deadline refers to the requirement to start construction by end-2025, for projects online by 2035 to capture the credit of 30% of capital expenditure



Overview – timeline to meet proposed PSP

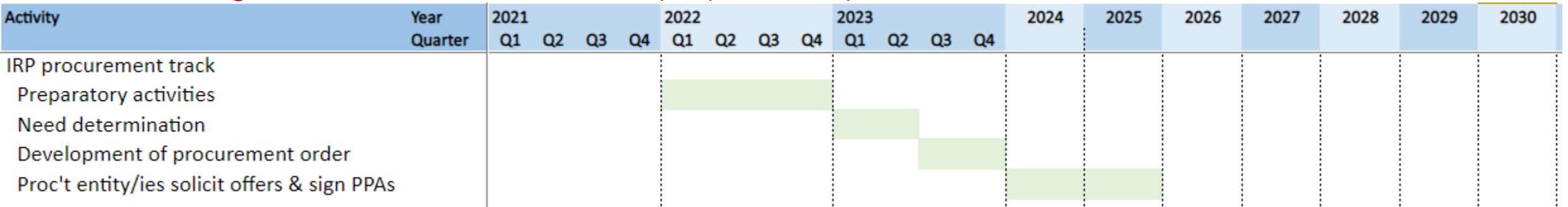


IRP procurement track

- Current relevant procurement programs and orders:
 - Renewable portfolio standard (RPS) and system resource adequacy (RA) programs
 - Offshore wind can count towards Mid-Term Reliability procurement (D.21-06-035) if online by 2026; staff have published effective load carrying capabilities, with updated values to be provided in 2022
- Beyond D.21-06-035, possible offshore wind-focused procurement would likely involve 3 key steps by the Commission
 - Preparatory activities would include: identifying and preparing potential central procurement entities, conducting market tests if needed, exploring procurement strategies (e.g., reverse auction, open book)
 - Need determination: quantify attributes needed by offshore wind and/or competing resource types
 - Development of procurement order and/or interaction w/ future IRP procurement program: need allocation to load serving entities, cost allocation arrangements, and compliance, monitoring & enforcement

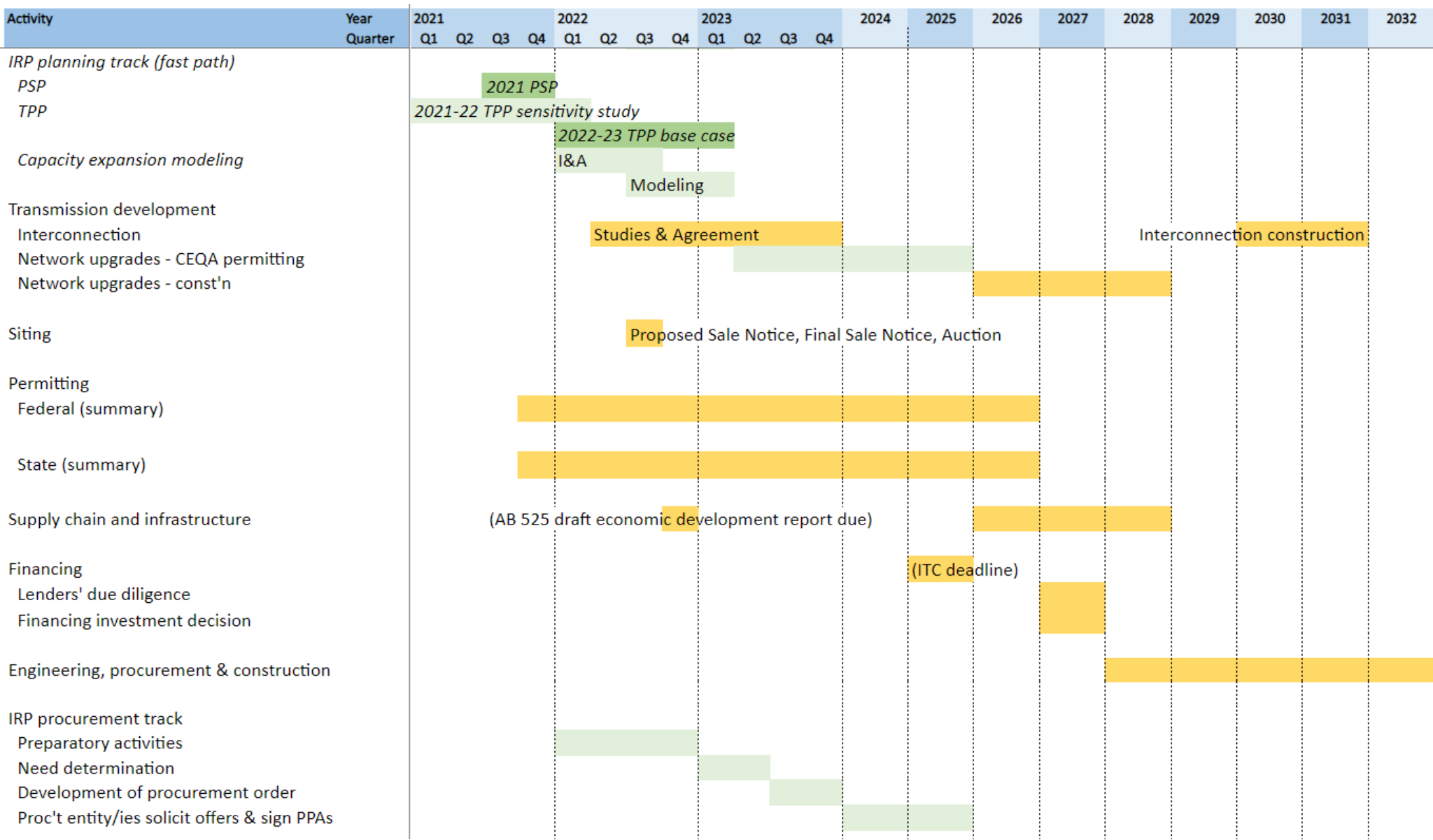
IRP procurement track (cont'd)

Indicative timing shown below for discussion purposes only:



- Under this indicative timing, power purchase agreements (PPA) or alternative applicable form of offtake contract, would be signed:
 - In advance of the ITC safe harbor deadline (end 2025)
 - 2 years in advance of the financing investment decision (2027) necessary to meet the proposed PSP online year of 2032

Overview – incl. indicative procurement track timeline to meet proposed PSP



Next steps

- In the near future:
 - Proposed Decision on 2021 Preferred System Plan and Portfolios for use in CAISO 2022-23 TPP (R. 20-05-003)
 - Party comment period
 - Update to Roadmap timelines based on workshop discussion
 - CPUC contributing to AB 525 implementation led by CEC
 - Update of Inputs & Assumptions (I&A) for modeling in next IRP cycle, for possible use in developing portfolios for 2023-24 TPP
 - Use current offshore wind TPP sensitivity study results when available
 - Review cost assumptions, including ITC impacts
- Informal feedback:
 - Nathan.Barctic@cpuc.ca.gov
 - Neil.Raffan@cpuc.ca.gov
 - David.Withrow@cpuc.ca.gov