Reliable & Clean Power Procurement Program Staff Options Paper

Workshop
Energy Division

September 20, 2022

California Public Utilities Commission

Logistics & Scope

- Workshop slides are available on the IRP Procurement Track IRP web page
- The workshop will be recorded, with the recording posted to the same webpage
- The objectives of this workshop are to:
  - Familiarize stakeholders with contents of the Staff Options Paper that was released via the Integrated Resource Planning (IRP) rulemaking (R.20-05-003) Administrative Law Judge's Ruling on September 8, 2022
  - Give opportunity to stakeholders to ask clarifying questions, in order to support preparation of their comments on the Staff Options Paper due in November 2022
- Out of scope:
  - "Potential Near-Term Options to Encourage Procurement" content within the September 8, 2022, Ruling

Questions

- We invite clarifying questions at regular intervals throughout this workshop
- All attendees have been muted. **To 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 ask a question, you may type into the "Q&A" 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 please email your questions to IRPDataRequest@cpuc.ca.gov

Agenda

Timing (PDT)	Topic	Presenter
2:00-2:10 pm	Introduction	Nathan Barcic
2:10-2:20 pm	Background & Objectives	Neil Raffan
2:20-2:30 pm	Designing a Procurement Program	Lauren Reiser
2:30-2:35 pm	Questions	
2:35-3:00 pm	Designing for Reliability	Neil Raffan
3:00-3:10 pm	Questions	
3:10-3:35 pm	Designing for GHG Reduction	James McGarry
3:35-3:40 pm	Questions	
3:40-3:55 pm	Other Design Considerations	Neil Raffan Dina Mackin
3:55-4:15 pm	Straw Options	Neil Raffan James McGarry
4:15-4:20 pm	Next steps	Nathan Barcic
4:20-4:30 pm	Questions	

Background & Objectives

Background

- CPUC regulates California's electricity market via several approaches:
  - Resource Adequacy (RA) program
  - Integrated Resource Planning (IRP) process
  - Renewables Portfolio Standard (RPS) program
  - Demand-side proceedings (e.g., High DER, Demand Flexibility, etc.)
- Recent trends have changed the market fundamentals:
  - **Increased role of community choice aggregators (CCAs)** in a market previously dominated by three large investor-owned utilities (IOUs) and who have different regulatory obligations to CPUC
  - **Increased capacity market tightness** as aging, inefficient powerplants in California and neighboring states retire due to market and regulatory pressures, leading to higher RA capacity prices
  - **Increasingly ambitious GHG-reduction goals**, such as those set forth in SB 350 and SB 100, require significant amounts of new clean energy resources

A new programmatic approach to procurement

- To date, the IRP proceeding has adapted the Long-Term Procurement Plan approach of ordering "new steel in the ground" capacity, via D.19-11-016 and D.21-06-035, requiring LSEs to procure to meet near-term and mid-term reliability needs
- However, there are concerns with this "order by order" approach going forward:
  - It is unpredictable for LSEs
  - It cannot fully address load migration
  - It does not facilitate or reward proactive LSE self-provision of the needed resource attributes
  - It does not expressly address existing resource retention
- In light of these concerns, the CPUC issued a staff proposal in November 2020 outlining a resource procurement framework in IRP and recommending how the main steps should be undertaken
- In Feb. 2022, the Preferred System Plan decision (D.22-02-004) committed to developing a programmatic approach to achieve IRP's goals of reliability, GHG reductions, and least-cost procurement

Program Objectives (abbreviated)

1. Support realization of goals of SB 350 and SB 100
   - **Reliability** and **GHG-reduction**; safely and equitably
2. Achieve economically efficient procurement
3. Incentivize compliance through a predictable and orderly program design…
4. Complement the IRP planning track…
5. Complement the RA program…
6. Complement the RPS program…
7. Ensure LSE procurement responds to evolving demand forecasts…
8. Ensure reasonable competition for both supply- and demand-side procurement…
9. Ensure existing resources persist and new resources get built…
10. Allow for resource-specific procurement action to occur in parallel with the program…
11. Co-optimize transmission planning with procurement
12. Recognize retail choice and allocate requirements and costs fairly
13. Mitigate risks of market power
14. Fulfil relevant objectives of the Environmental and Social Justice Action Plan

Designing a Procurement Program

Fundamental Elements of a Program

- The new program will function as a set of rules and incentives with the following key elements:
  1. **Need determination**: technical analysis to specify quantities and timing of resource attributes needed
  2. **Need allocation**: specify what quantities and timing of required resource attribute each LSE should be required to procure
  3. **Compliance**: approach for collecting information from LSEs to monitor compliance with procurement requirements
  4. **Enforcement**: penalties and/or backstop procurement mechanisms to address an LSE's non-compliance
- The program should be designed to address the main externalities stemming from operation of an unconstrained energy market: reliability, environmental, financial, and market power.
- A comprehensive procurement program would afford LSEs the ability to satisfy both **reliability** and **clean energy needs** simultaneously and with the same compliance filing.

Designing for Reliability

Reliability in IRP's Planning Track

- Filing requirements for LSEs' IRPs due in November 2022[1] may provide a helpful starting point for thinking about potential ways to design for reliability procurement. LSEs need the following to complete their reliability planning:
  - Reliability requirement by year: what is their annual LSE-level MW reliability obligation?
  - Resource counting metrics by year: how each resource type counts towards that MW obligation?

Load and Resource Table by Contract Status[2]

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
LSE reliability need (MW)	-	-	-	-	-	-	-	-	-	-	-	-
ELCC by contract status (effective MW)												
Online	-	-	-	-	-	-	-	-	-	-	-	-
Development	-	-	-	-	-	-	-	-	-	-	-	-
Review	-	-	-	-	-	-	-	-	-	-	-	-
PlannedExisting	-	-	-	-	-	-	-	-	-	-	-	-
PlannedNew	-	-	-	-	-	-	-	-	-	-	-	-
BTM PV	-	-	-	-	-	-	-	-	-	-	-	-
LSE total supply (effective MW)	-	-	-	-	-	-	-	-	-	-	-	-
Net capacity position (+ve = excess, -ve = shortfall) (effective MW)	-	-	-	-	-	-	-	-	-	-	-	-

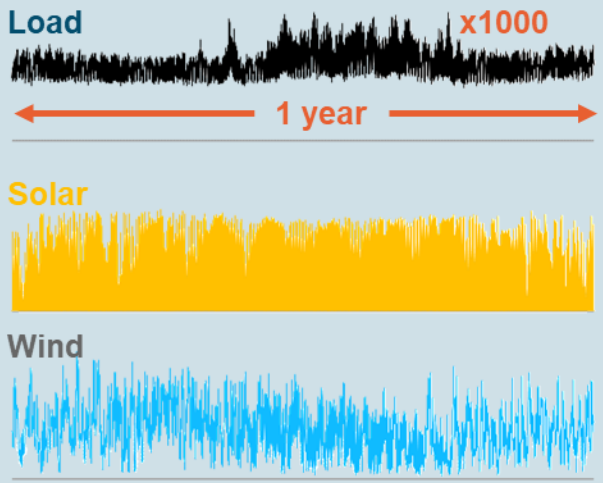
1. Available at https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/2022-irp-cycle-events-and-materials
2. From the Resource Data Template (RDT) v3, available at the above website

Key Steps for Reliability Planning using LOLP Modeling

Step 1: Model + Data Development

Develop a robust dataset of the loads and resources in a loss of load probability (LOLP) model

LOLP modeling evaluates resource adequacy across all hours of the year under a broad range of weather conditions

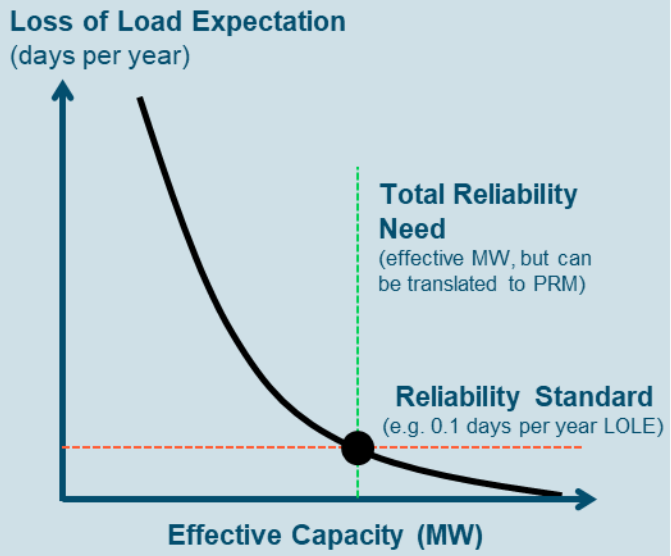


Robust probabilistic models + datasets are the foundation of any resource adequacy analysis

Step 2: Need Determination

Identify the Total Reliability Need to achieve the desired level of reliability

Factors that impact the amount of effective capacity needed include load & weather variability, operating reserve needs

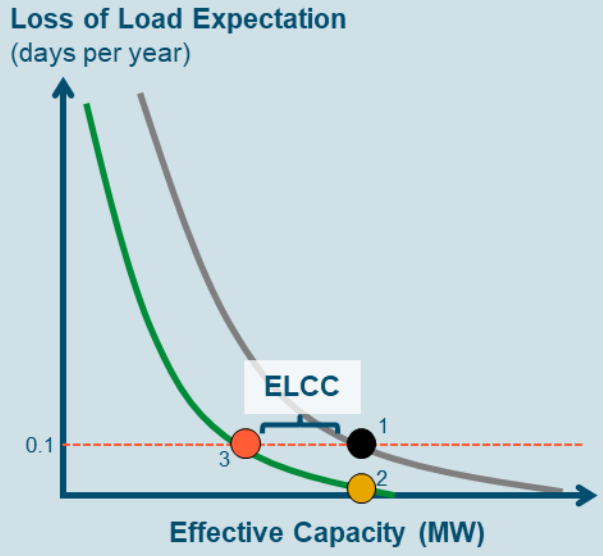


LOLP modeling provides Total Reliability Need in effective capacity MW to meet <0.1 days/yr LOLE, can be converted to a PRM

Step 3: Resource Counting

Calculate resource capacity contributions using effective load carrying capability

ELCC measures a resource's contribution to reliability needs relative to perfect capacity, accounting for performance across all hours



Effective or "perfect" capacity based accounting (UCAP or ELCC) counts all resources on a level playing field against that total reliability need

Reliability – Need Determination

- Three main questions
  1. **Technical method**: method + tools used to define the reliability procurement need; options include:
     - **Loss of load probability (LOLP) modeling based**: Total Reliability Need + Planning Reserve Margin calibration to meet probabilistic reliability standard (e.g., 1 day in 10 year standard in SERVM)
     - **Alternative methods**: other methods may include deterministic analyses (such as extreme event) or hybrid of LOLP modeling + deterministic analysis
  2. **Expression of need**: the units used to define the compliance requirement; LOLP-based options include:
     - An effective capacity-based definition of need (a perfect capacity or "PCAP"-based definition, i.e., total ELCC MW)
     - An installed capacity (ICAP) definition (generally implemented as a combination of ICAP for firm resources and ELCC for non-firm resources)
     - For the Standardized Fixed-Price Forward Energy Contracting (SFPFC) approach, a method would be needed to translate from the effective capacity to define need in firm energy terms
  3. **Scope of need**: the scope of reliability procurement covered by the program; options include:
     - All resources (existing plus new)
     - New resources only
     - New resources + partial coverage of existing

Reliability – Need Allocation

- **Allocation method**: how to determine each LSE's share of the total system need. The appropriate method could depend on what resource counting rule is used for compliance.
  - If average ELCC for resource counting, then could use managed peak share, similar to the current RA program approach, but using a long-term forecast of LSE managed peak share
  - If marginal ELCC for resource counting, then could use LSE load share during the net peak and/or LOLP-weighted scarcity hours
  - Under the RA program's 24-hour slice approach, each LSE must meet their 24-hour gross load forecast plus a reserve margin, for each month
  - If requiring firm energy contracts for compliance (e.g., per the SFPFC approach) a method could allocate the firm MWh need based each LSE's share of peak load or share of energy
- **Frequency of allocation**: how often each LSE's forward procurement allocations would be updated
  - Should align with the frequency of compliance showings e.g., annually
  - Somewhat addresses load migration

Reliability – Compliance

- Resource counting towards compliance:
  - **Effective capacity-based**: Marginal ELCC, Average ELCC, Vintaged Marginal ELCC

ELCC Type	Description	Pros	Cons
Marginal ELCC	• Resources credited at their marginal reliability contributions, which generally aligns with contributions during net peak hours • Procurement need adjusted to the Marginal Reliability Need	• Provides an efficient investment signal for marginal resource decisions (e.g., what is the reliability value of adding another solar plant) • Feasible to implement	• Assigns less credit to specific LSEs for their past procurement
Average ELCC	• Resources credited at their total reliability contributions • Requires allocation of the total portfolio ELCC across resources classes • Procurement need is the Total Reliability Need	• Assigns more credit to specific LSEs for past procurement (e.g., which LSE bought the solar that lowered and shifted the net peak) • Feasible to implement	• Does not provide economically-efficient measurement of the marginal benefit of market entry or exit
Vintaged Marginal ELCC	• Resources credited at their marginal reliability contributions, which is vintaged upon market entry • Requires classification (+ potentially ongoing re-classification) of each resource/contract into ELCC vintages • Procurement need is the Total Reliability Need	• Provides an efficient investment signal for marginal resource decisions	• Complex to implement • Differently credits resources, that are otherwise identical, based on their online date

  - **Slice of day**: 24-hr profiles based on resource availability
  - **Firm energy**: translation of energy contracts into ELCC-equivalent (refer to following slide)

Reliability – Compliance

- **Firm energy:** the SFPFC is one approach to reliability procurement based around a firm energy compliance requirement
- 1 SFPFC contract would be defined as:
  - 1 MWh of energy over the compliance period (e.g., a year)
  - Hourly shape that is retroactively adjusted based on the **realized** system load; example:

MWh	Hour 1	Hour 2	…	Hour 8760	Total
Realized total system load	500	1,000	…	…	1,000,000
1 SFPFC	0.0005	0.00010	…	…	1

  - Realized shape rather than precise quantity known in advance, to reduce incentive for the supplier to offer the portion of their supply that is in excess at significantly higher prices
- Translation of energy contracts into ELCC-equivalent; example:

Description	Value
Resources' nameplate capacity	1 MW
Resource's annual ELCC	10%
Maximum number of SFPFCs eligible to sell	876

Reliability – Compliance

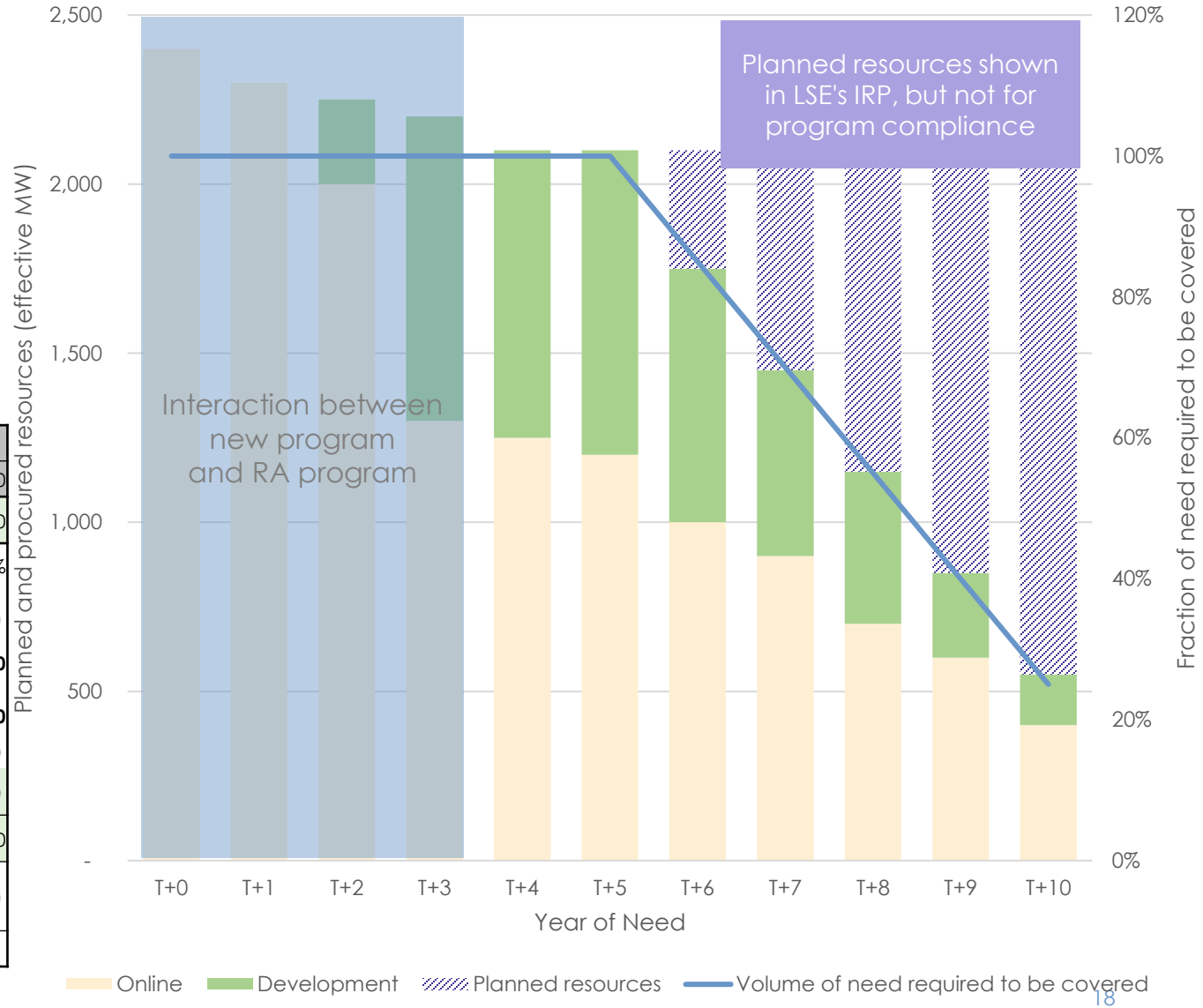
- Forward compliance requirement
  - Years covered
  - Volume of need covered in each year
  - Proof of contracting
  - Persistence of the attributes
  - Frequency of compliance filings

Example LSE's Load and Resource Table to meet Reliability Procurement Need

	Year of Need ("T+0" refers to current year)										
	T+0	T+1	T+2	T+3	T+4	T+5	T+6	T+7	T+8	T+9	T+10
LSE total reliability need (effective MW)	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Volume of need required to be covered	100%	100%	100%	100%	100%	100%	85%	70%	55%	40%	25%
Volume of need required to be covered (effective MW)	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**2,000**	**1,700**	**1,400**	**1,100**	**800**	**500**
Online	**2,400**	**2,300**	**2,000**	**1,300**	**1,250**	**1,200**	**1,000**	**900**	**700**	**600**	**400**
Development	**-**	**-**	**250**	**900**	**850**	**900**	**750**	**550**	**450**	**250**	**150**
Planned resources	-	-	-	-	-	-	350	650	950	1,250	1,550
LSE total supply (effective MW)	2,400	2,300	2,250	2,200	2,100	2,100	2,100	2,100	2,100	2,100	2,100
Net capacity position (effective MW)*	400	300	250	200	100	100	100	100	100	100	100
Net capacity position for program compliance (MW)*	**400**	**300**	**250**	**200**	**100**	**100**	**50**	**50**	**50**	**50**	**50**

* (+ve = excess, -ve = shortfall)

Example LSE's Resources Relative to Procurement Need



Reliability – Enforcement

- Enforcement **triggers**: various stages when enforcement may become necessary
- **Financial penalties**
  - To promote compliance the penalty should be higher than the cost of compliance
    - e.g., net cost of new entry (net CONE) with a multiplier. Multiplier could increase or decrease based on by how much the amount of procured resources exceeds the total reliability need.
  - Under the SFPFC approach, direct penalties would be reserved for acts of complete noncompliance or negligence by LSEs. Suppliers not passing the feasibility checks on their contracts would be required to sell down their firm energy obligations, with market dynamics determining what reduction in price they receive relative to their originally awarded price.
- **Non-financial enforcement** action may also be appropriate
- **Backstop procurement**
  - While penalties should drive compliance, backstop procurement may be necessary
  - Program design will need to strike balance between ordering backstop procurement soon enough, and allowing non-compliant LSEs to come back into compliance (while paying penalties)
  - Backstop procurement entity or entities would need to be identified
  - Costs would be assigned to the deficient LSEs. Consider suitability of modified cost allocation method (MCAM), which does not address the possibility of load migration after backstop is triggered.

Designing for GHG Reduction

GHG Emissions in IRP's Planning Track

- At the start of each IRP cycle, the Commission provides LSEs with **GHG targets, or "GHG benchmarks,"** to plan for in their individual IRPs based on their share of the electric sector GHG target
  - In the current IRP cycle, LSEs were instructed to file two plans based on two sets electric sector GHG targets: (1) 38 MMT by 2030 and 30 MMT by 2035; and (2) 30 MMT by 2030 and 25 MMT by 2035
  - These targets are roughly equivalent to 90% clean energy or above by 2035
- IRP staff also provides LSEs with a **Clean System Power (CSP) calculator** to estimate the GHG and criteria pollutant emissions of their portfolios and verify that LSE portfolios achieve assigned GHG planning benchmarks
  - Under the CSP methodology, LSEs enter their annual portfolio of planned and contracted renewable and clean energy resources, and the calculator assigns annual emissions to that portfolio based on how an LSE plans to rely on CAISO system power to meet its load on an hourly basis
- LSE plans are aggregated and used to adopt a **Preferred System Plan (PSP)**, however each LSE's individual plan is **indicative**, and LSEs retain discretion in their actual procurement
  - While an LSE must submit a portfolio of contracted and planned resources sufficient to achieve its GHG targets, this is not equivalent to a direct procurement requirement on the LSE
  - The PSP represents the CPUC's preferred portfolio for achieving electric sector GHG and reliability goals, and is used in the CAISO's Transmission Planning Process to identify grid upgrades needed to address reliability, meet state policy goals, and provide economic benefits.

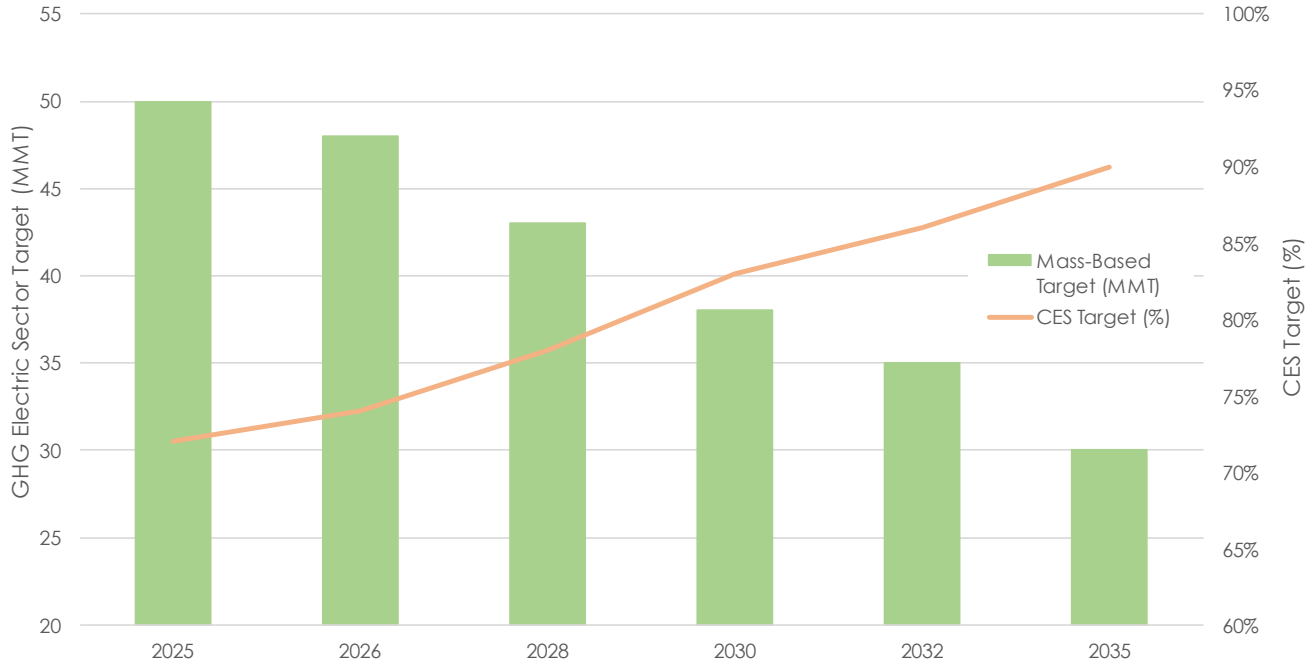
Broad Options for GHG Programmatic Procurement

- Mass-Based GHG Target
  - Establish a **mass-based GHG emissions target** that LSEs need to collectively achieve through clean energy procurement
  - Similar to the IRP planning track, LSEs would be assigned **individual GHG targets** and demonstrate that their resource portfolios achieve those targets using a **CSP calculator**
  - Annual LSE emissions would be determined based on a calculation of the **hourly emissions from the hourly energy dispatch** of an LSE's portfolio of contracted and online resources
- Clean Energy Standard
  - Establish an **annual clean energy as a percent of retail sales target** for LSEs
  - Similar to the RPS program, LSEs would need to demonstrate that they contracted for a steadily increasing **quantity of clean energy (MWh)** sufficient to meet their percentage target
  - LSEs would need to contract with **eligible resources**, which could include RPS-eligible resources plus a broader set of GHG-free resources
- GHG program design should seek to create an SB 100 regulatory framework and ultimately be used to help ensure that all CPUC-jurisdictional LSEs comply with the 100 percent renewable and zero carbon resource requirement of SB 100.

GHG – Need Determination

- Need determination in the new program would be the mechanism for translating IRP planning track GHG targets into an actionable metric for LSEs
- **Mass-Based GHG Target**
  - Need could be based directly on the GHG target set in the IRP planning track
    - For example, if the planning track sets electric sector GHG targets of 38 MMT in 2030 and 30 MMT in 2035, the procurement program need determination would be 38 MMT in 2030 and 30 MMT in 2035
- **Clean Energy Standard**
  - Need could be based on the amount of clean energy generation projected to be needed to achieve the GHG target set in the IRP planning track
    - For example, if the planning track sets electric sector GHG targets of 38 MMT in 2030 and 30 MMT in 2035, and IRP modeling shows that those targets would require clean energy generation to equal 83% and 90% as share of retail load respectively, the procurement program need determination would be set at 83% clean energy in 2030 and 90% clean energy in 2035

Illustrative Electric Sector GHG Targets Expressed as Mass-Based and Clean Energy Percentage Targets



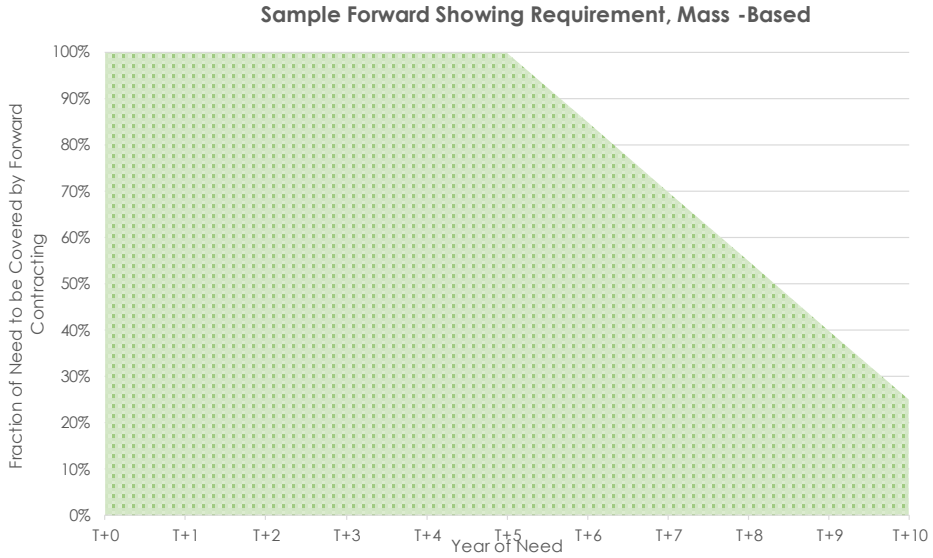
GHG – Need Allocation

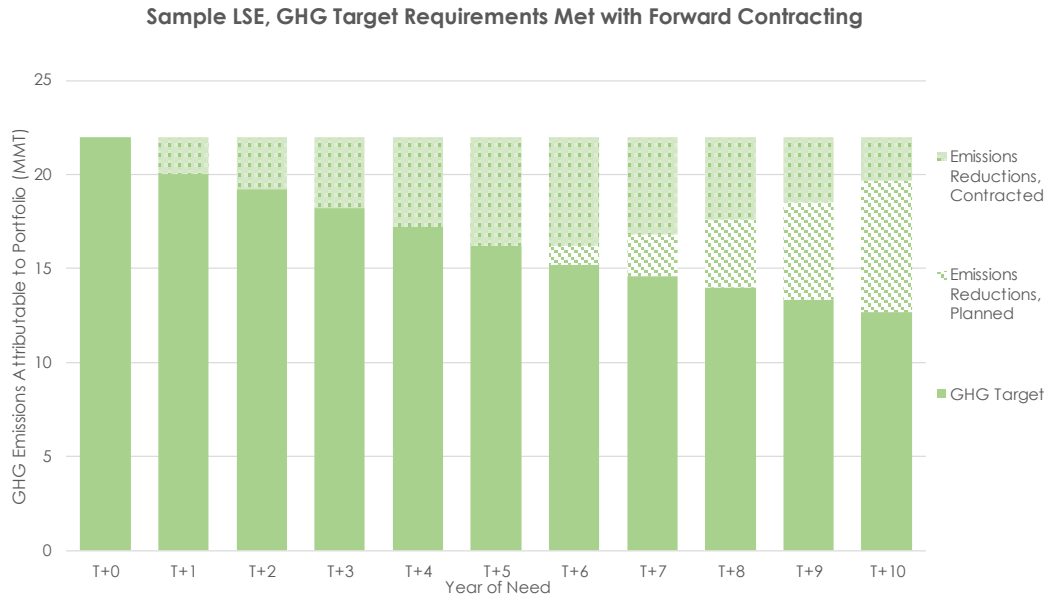
- **Mass-Based GHG Target**
  - Same allocation methodology as currently used in the planning track to set GHG benchmarks
  - Individual GHG targets based on the LSE energy load share within each IOU service territory and the share of electric sector GHG emissions ascribed to each service territory
  - LSE need metric is a mass-based GHG target (tons CO2-equivalent)
- **Clean Energy Standard**
  - Same allocation methodology as currently used in the RPS program to set RPS targets
  - Each LSE's CES target would be the same as the percentage target set at the Need Determination stage, with each LSE's need being defined as its annual energy sales multiplied by the CES percentage
  - LSE need metric is an annual percentage target of CES-eligible generation as a share of retail sales

Sample LSEs		Sample Input Data for Mass-Based GHG Target Setting				Sample Mass-Based GHG Targets			Sample CES Targets		
Utility	LSEs within Host Utility Territory	Proportion of Total Emissions	Proportion of 2026 Load within EDU	Proportion of 2030 Load within EDU	Proportion of 2035 Load within EDU	2026 GHG Emissions Benchmark (MMT)	2030 GHG Emissions Benchmark (MMT)	2035 GHG Emissions Benchmark (MMT)	2026 CES Target (%)	2030 CES Target (%)	2035 CES Target (%)
IOU Service Territory	IOU	25%	57%	55%	47%	6.629	4.984	3.346	74%	83%	90%
	IOU (Direct Access)		19%	17%	16%	2.210	1.574	1.115	74%	83%	90%
	CCA 1		13%	17%	26%	1.473	1.574	1.859	74%	83%	90%
	CCA 2		2%	2%	3%	0.221	0.184	0.186	74%	83%	90%
	CCA 3		9%	9%	8%	1.105	0.787	0.558	74%	83%	90%

GHG – Compliance – Mass-Based GHG Target

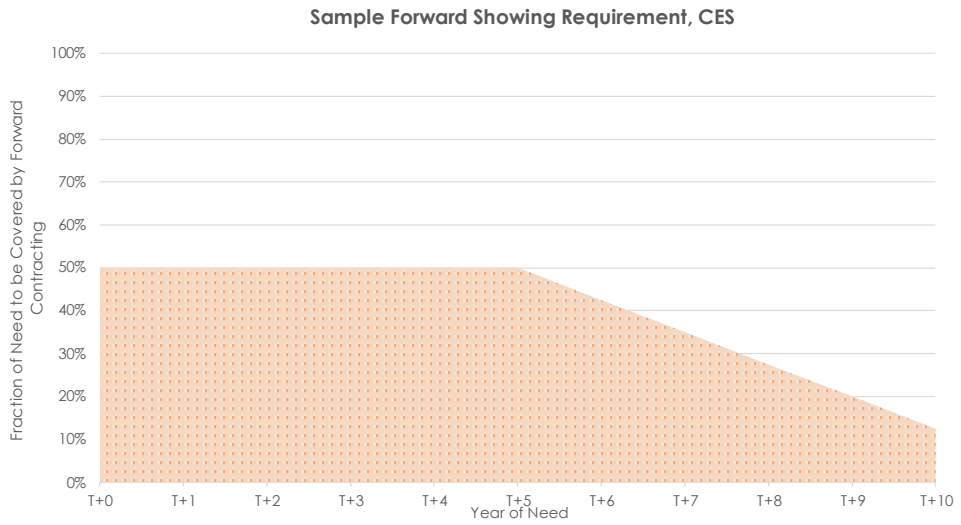
- Either GHG approach would likely need a mix of forward-contracting and backwards-looking compliance mechanisms
- Mass-Based GHG Target
  - **Forward Contracting**
    - LSEs submit CSP calculators showing that they have sufficient resources under contract, either online or in development to achieve their GHG target
    - Amount of forward contracting required would need to be determined
      - For example, 100 percent of the 5-year-ahead LSE need could be required to be under contract, declining to 25 percent of LSE need 10 years ahead
  - **Backwards-Looking**
    - Some check would be needed to ensure that LSEs met their GHG targets with online resources
    - Options for backwards-looking compliance include:
      - Use of a backward-looking CSP calculator configured with actual historical loads, resource availability, and thermal dispatch to measure whether LSEs met their GHG target based on actual system conditions
      - Integration with the CEC's Power Content Label to match the historical emissions content for each LSE against their GHG targets
      - An assessment of whether LSEs brought online all the resources that they included as contracted resources in their forward-showing CSP calculators

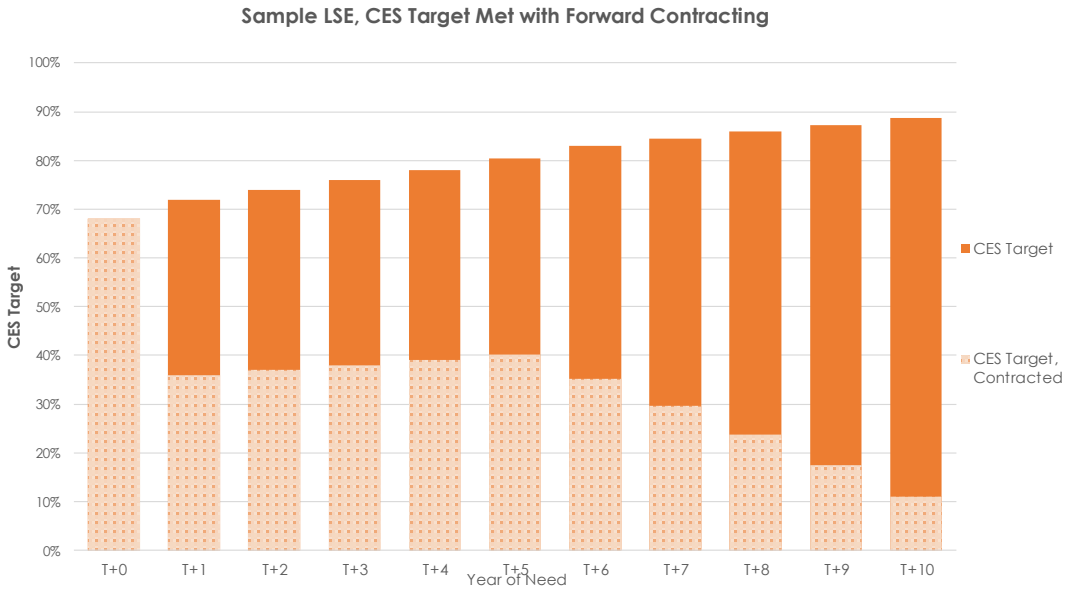




GHG – Compliance – Clean Energy Standard

- Clean Energy Standard
  - **Forward Contracting**
    - LSEs submit filings to show how they plan to meet their procurement requirements, demonstrating that they have a certain portion of their program procurement obligation under contract
    - Amount of forward contracting required would need to be determined
      - For example, 50 percent of the 5- year- ahead LSE clean energy could be required to be under contract, declining to 12.5 percent of LSE need 10 years ahead
  - **Backwards-Looking**
    - Some check would be needed to ensure that LSE-procured resources generated the required quantity of clean energy
    - Similar to the RPS program, compliance could be assessed after a multi-year compliance period using a compliance instrument akin to a Renewable Energy Credit (REC)
    - This compliance structure could include:
      - **Compliance Periods** to allow for inter-annual variability in loads and resources
      - **WREGIS-based certification** of generated MWh (I.e., Zero Emissions Credits)
      - **REC eligibility rules** defining which Product Content Category (PCC) buckets qualify as GHG-free generation for compliance use in the CES
      - **Banking** of GHG-free energy
      - **Resource eligibility rules** defining which technologies, beyond those already RPS-eligible, would qualify as GHG-free





GHG – Enforcement

- Enforcement triggers could include an LSE failing to meet its minimum forward-contract or backwards-looking requirements
- Either approach could assess penalties on a specified schedule where the size of the penalty increases when the shortfall is greater
  - A cap on total penalties may be warranted
- Under a mass-based approach, penalties could be assessed on a $/ton basis for GHG emissions in excess of the LSE's requirements
- Under a Clean Energy Standard approach, penalties could be assessed on a $/MWh basis for each MWh shortfall to the LSE's requirements
- Program design should consider whether and how penalty structures might differ if an LSE has met its forward-contracting requirements, but fails its backwards-looking compliance check
  - Should penalties be reduced or waived if LSEs can show good cause for missing its GHG target (e.g., project development delays beyond the LSE's control, operational issues that cause projects to not perform as expected, etc...)?

Other Program Design Considerations

Financial Risk and Risk of LSE Market Exit

- The CPUC has adopted and implemented a process to return customers to the IOU in the event of a CCA failure, designating the IOU as the Provider of Last Resort (POLR)
- The CPUC has an open proceeding (R.21-03-011) to consider new rules that might be needed to ensure that state reliability and GHG compliance programs are maintained and on track and that the POLR can recover its costs to avoid shifting new costs onto bundled customers
- Most issues related to this program that would emerge in the event of LSE bankruptcy would be within scope of the POLR proceeding. Some bankruptcy-related issues however may be within scope of this program design. For example:
  - How will the POLR meet the reliability and GHG reduction targets for the load of the returning customers that it might assume, and how would the associated costs be recovered?
- Another consideration for this procurement program is whether the CPUC can and should regulate the financial risks being taken on by LSEs within the context of their retail load service to mitigate any risks of stranded costs being shifted onto bundled customers

Risk of Market Power

- When a market participant is able unilaterally to impact the market price of a product, by manipulating the level of supply and/or demand, that market participant has market power
- Potential market power in a bilateral retail energy market context, absent sufficient regulation:
  - Generators may have market power over LSEs
  - Certain LSEs could also have market power over other LSEs
- Features of SFPFC approach relevant to market power
  - Requirement to enter firm energy contracts should place strong incentives on generators to provide energy when it is needed, rather than bid or take other actions that result in their capacity being withheld
  - Centralized auctions, including use of clearinghouse to pool counterparty risk, could enable all LSEs, regardless of size, to have similar access to contracts

Past and Centralized Procurement

- When one LSE procures on behalf of the customers of other LSEs (I.e., load departure and centralized procurement), the CPUC seeks to follow the cost causation principle where costs are borne by, and benefits are credited to, the customers on behalf of whom they were procured
- Under the Cost Allocation Mechanism (CAM), the attributes and cost of centrally procured resources count toward LSE RA obligations
  - LSEs might be similarly able to claim the capacity and renewable/GHG-free attributes of resources subject to CAM in the new procurement program
- Under the PCIA, the allocation of attributes was addressed in D.21-05-030, a CPUC decision that considered the use of a Voluntary Allocation and Market Offer (VAMO) mechanism for RPS, GHG-free, and RA attributes of IOU procurement subject to the PCIA
  - For RPS attributes, D.21-05-030 approved and established a process for VAMO for the current RPS compliance period, which will be re-evaluated in advance of future compliance periods
  - For non-RPS GHG attributes, D.21-05-030 rejected VAMO citing a lack of sufficient record
    - The CPUC has approved interim allocations of PG&E's and SCE's nuclear and large hydro GHG-attributes
  - For RA attributes, D.21-05-030 rejected VAMO citing several reasons specific to the application of the specific VAMO proposal to the RA program
- D.21-05-030, and any future decisions affecting resource attributes, will be relevant to how past and centralized procurement would be treated for compliance with the new program.

Additional Design Features

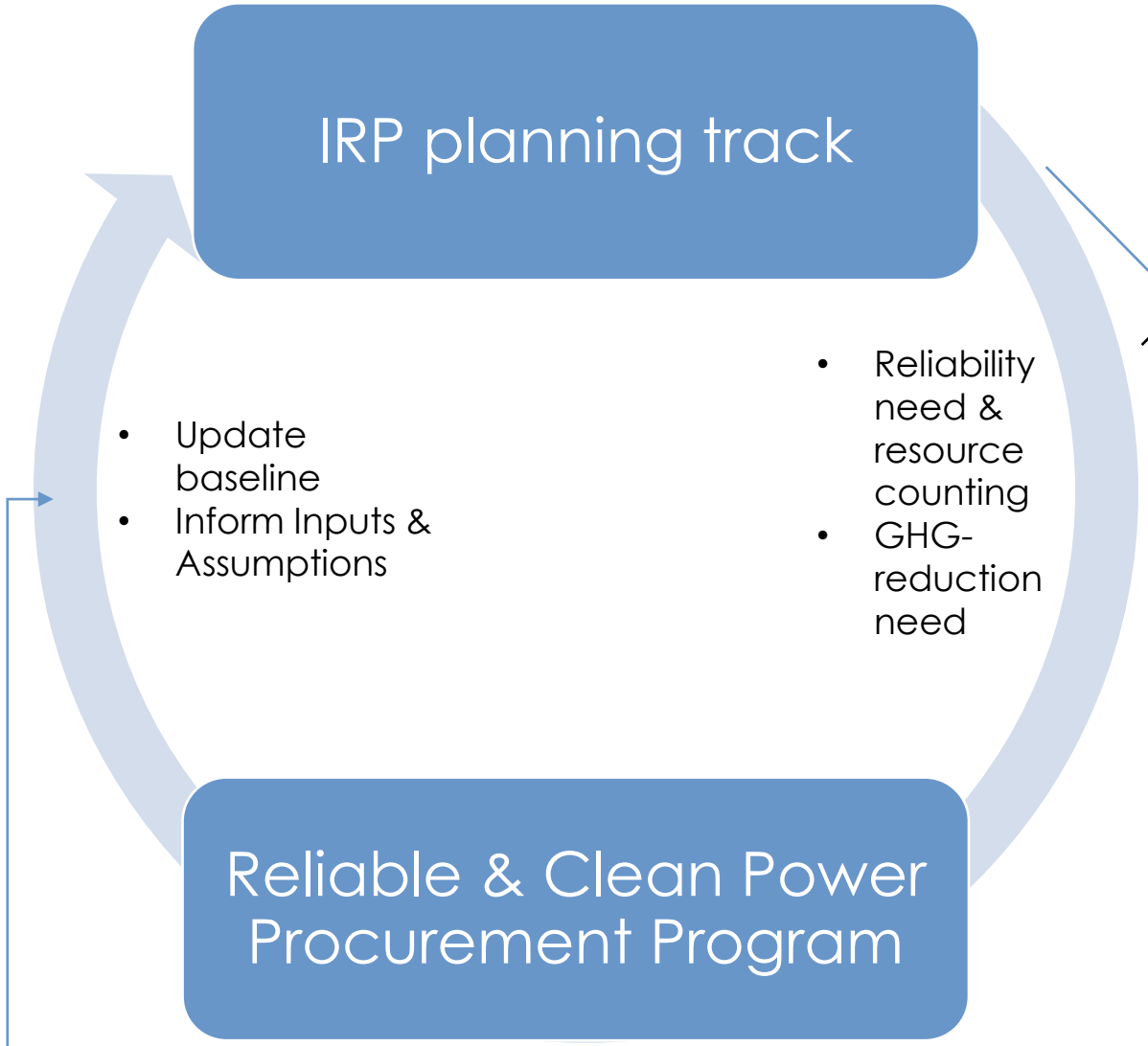
- Adjustments to the "fundamental design elements" discussed earlier will be warranted to ensure the new program considers the unique regulatory environment in California. Additional design features may include:
  - Defining procurement subcategories as part of need determination
  - Managing changes over time between the program's need determination and the real-time energy market
  - Requiring that procurement is conducted via centralized or standard offer processes
  - Ensuring need allocation and compliance flexibility to address future load migration between LSEs or market exit
  - Risk mitigation strategies to account for inaccuracies or errors in need determination, allocation, compliance, and enforcement

Straw Options

Straw options - introduction

- Purpose is to illustrate more clearly the meaning of the design concepts discussed earlier
- Particular reliability and GHG-reduction design elements and features have been grouped together into 4 options to convey that the new program will need to design for both
  - Staff does not expect the choice of reliability design necessitates particular GHG-reduction designs, and vice versa
- Staff expects there may well be other options that could be just as, or possibly more likely, to achieve the program's objectives

IRP Planning Track & Procurement Program Interaction

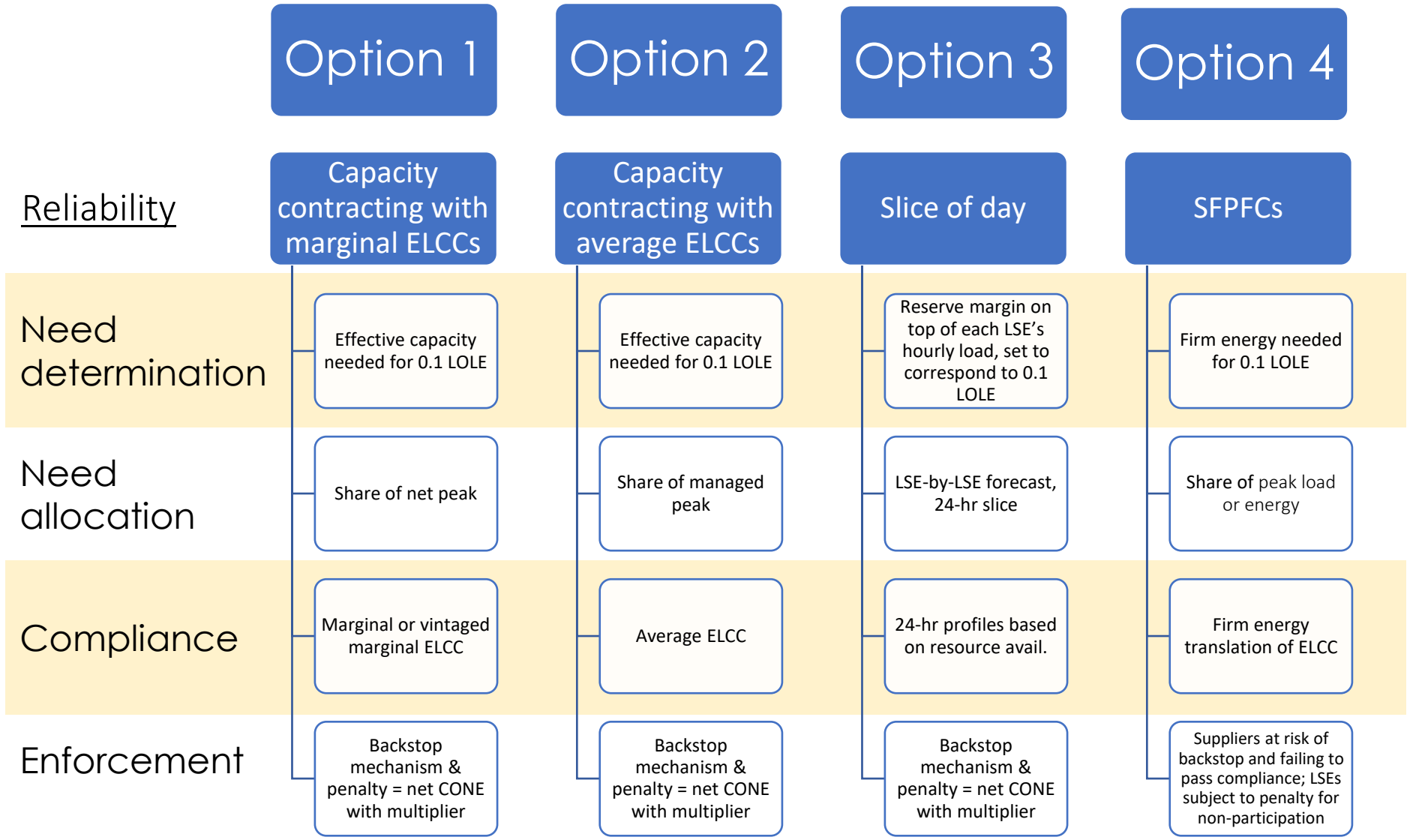


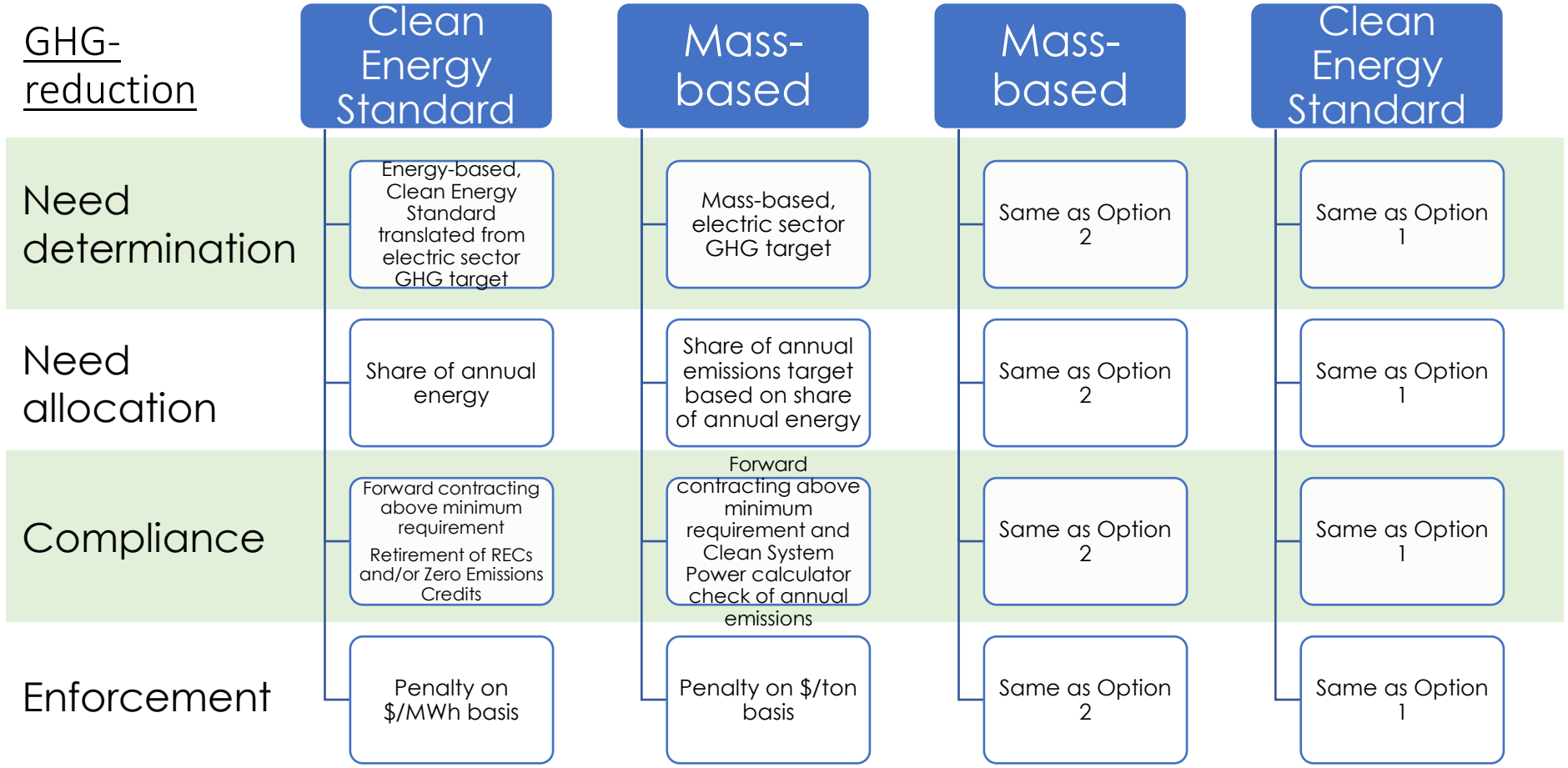
If resource-specific need found

Procurement Orders[1] (as needed)

- New program would draw from reliability and GHG findings in the IRP planning on a regular basis
- Procurement orders[1] may also be needed to meet SB 100 objectives

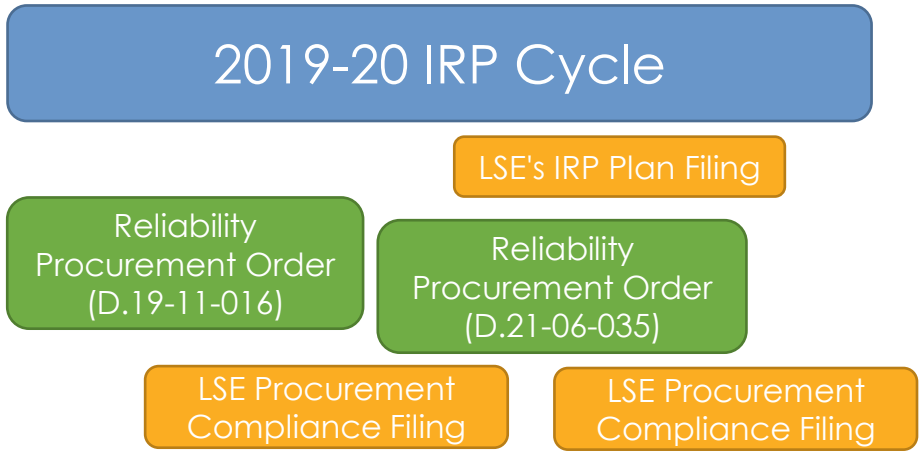
1. Procurement orders are "point-in-time" procurement actions by the CPUC (e.g., D.19-11-016 and D.21-06-035), as opposed to a programmatic approach, which sets ongoing, rolling procurement requirements for LSEs


Reliability
Option 1
Option 2
Option 3
Option 4
Capacity contracting with marginal ELCCs
Capacity contracting with average ELCCs
Slice of day
SFPFCs
Need determination
Effective capacity needed for 0.1 LOLE
Effective capacity needed for 0.1 LOLE
Reserve margin on top of each LSE's hourly load, set to correspond to 0.1 LOLE
Firm energy needed for 0.1 LOLE
Need allocation
Share of net peak
Share of managed peak
LSE-by-LSE forecast, 24-hr slice
Share of peak load or energy
Compliance
Marginal or vintaged marginal ELCC
Average ELCC
24-hr profiles based on resource avail.
Firm energy translation of ELCC
Enforcement
Backstop mechanism & penalty = net CONE with multiplier
Backstop mechanism & penalty = net CONE with multiplier
Backstop mechanism & penalty = net CONE with multiplier
Suppliers at risk of backstop and failing to pass compliance; LSEs subject to penalty for non-participation


GHG-reduction
Clean Energy Standard
Mass-based
Mass-based
Clean Energy Standard
Need determination
Energy-based, Clean Energy Standard translated from electric sector GHG target
Mass-based, electric sector GHG target
Same as Option 2
Same as Option 1
Need allocation
Share of annual energy
Share of annual emissions target based on share of annual energy
Same as Option 2
Same as Option 1
Compliance
Forward contracting above minimum requirement
Retirement of RECs and/or Zero Emissions Credits
Forward contracting above minimum requirement and Clean System Power calculator check of annual emissions
Same as Option 2
Same as Option 1
Enforcement
Penalty on $/MWh basis
Penalty on $/ton basis
Same as Option 2
Same as Option 1

Opportunities to Streamline Filings within IRP

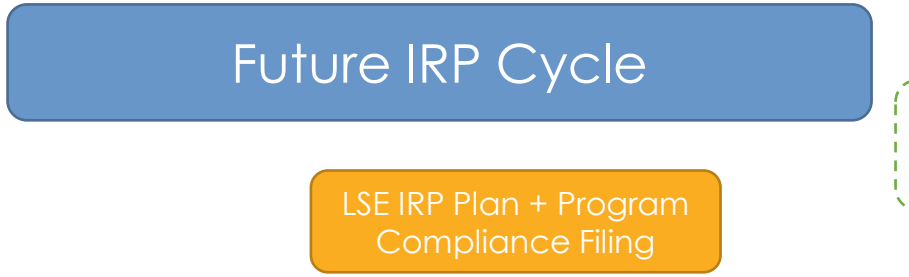
Past Approach



One-off reliability procurement orders were not aligned with planning track processes; required separate/additional compliance filings to track progress

No GHG-focused procurement orders have occurred to date (though D.21-06-035 did include GHG-reducing procurement)

Potential Future Approach



Procurement Orders in PSP (as needed)

On an as needed basis, the PSP decision could include large-scale and/or centralized, resource-specific procurement (e.g., for long lead time resources)

Plan and program compliance filings can be integrated, whereby:

- **Online + development resources**: shown for reliability + GHG compliance program
- **Planned resources**: incorporated into long-term Preferred System Plan (PSP)

Next steps

Next Steps

- ALJ Ruling releasing the Staff Options Paper on September 8, 2022 posed questions to stakeholders regarding:
  1. Objectives
  2. Fundamental program elements and additional design features
  3. November 2020 Staff Proposal for Procurement Framework in IRP
  4. Reliability (Section 5) – range of options for each of the four fundamental program elements
  5. GHG-reduction (Section 6) - range of options for each of the four fundamental program elements
  6. Other program design considerations (Section 7)
  7. Assess the straw options against the objectives
  8. Recommend an option from Section 8, or another option not described
  9. Compliance showings – combining with current annual RPS compliance reports, LSEs' IRPs, and/or other planning and procurement filings
  10. Local reliability procurement
  11. Location-specific procurement to minimize local air pollutants and other emissions in disadvantaged communities
  12. Procuring to mitigate transmission needs

- The Ruling also asks for comments on the potential need to develop interim approaches (Questions 13-15)
- Stakeholders' comments on the paper are due by November 7 and replies by November 28, 2022
- Feedback will help staff to develop and recommend a more specific proposal