

# Needs Determination Under 24-Hourly Slices Framework

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# Agenda

- Discuss determination of the LSE load requirements within a 24-hourly slice framework
  - Discuss feasibility of “book-end options” and identify pros and cons of each
  - Review potential middle-ground option based on semi-custom LSE shapes

# Objectives and Roles

## Primary Objective

- Ensure the CAISO's systemwide 24-hour profile RA need is met in each month
- Determine a 24-hour load shape for each LSE for each month
  - Methodology should be reasonable, fair, and transparent for all LSEs
- Process must be administratively feasible

## Roles and Responsibilities

- CEC will determine each LSE's 24-hour load shape for each month
  - Continue to rely on CEC to validate LSEs' load forecasts
  - CEC to make adjustments necessary to ensure individual forecasts sum up to the CAISO system demand

# Option 1 (Top-Down): Allocation of CAISO-shape

- **Description:** No custom load shapes; LSEs' 24-hour requirements will all be shaped like CAISO's load on the "worst day"
- **Mechanics:**
  - Identify the CAISO 24-hour load profile on the worst day
  - Utilize existing process to identify each LSE's share of gross peak load
  - Allocate requirement in each hour to all LSEs based on their share of gross peak load
- **Additional information and verification needed:** None
- **Pros:**
  - Administratively simple
  - Ensures CAISO's load 24-hour load shape has sufficient RA
- **Cons:**
  - Does not recognize that LSEs may have very different load shapes; simply scaling the CAISO shape will benefit some LSEs and harm others

## Option 2 (Bottoms-Up): Fully custom LSE shapes

- **Description:** Each LSE's requirements will reflect their individual 24-hour load profile on the CAISO's worst day
- **Mechanics:**
  - Confirm each LSE's 24-hour load profile on the worst day
  - Make any adjustments necessary to ensure the sum of the LSEs' load in each hour is equal to the CAISO load in that hour
- **Additional information and verification necessary:**
  - Verify that sum of the hourly 8,760 profiles for each LSE (including any monthly load-migration adjustments) are equal to the hourly system load
  - Ensure any short-falls or excess are equitably allocated to all LSEs
- **Pros:**
  - Ensures that each LSE has an RA requirement specific to its unique load shape (e.g., fair among all LSEs)
- **Cons:**
  - Administratively complex, likely contentions and possibly unworkable
  - Does not ensure the sum of the LSE's unique load shapes total the CAISO's actual 24-hour RA needs

# Potential Middle Ground: Semi-custom LSE shapes

- **Description:** Each LSE's requirements based on the make up of their customer classes using generic customer class 24-hour profiles
- **Mechanics:**
  - Develop representative shapes for each customer class at the CAISO level
  - "Shape" each LSE's requirements based on their customer make-up (*see example*)
    - Each LSEs' share of gross peak load requirement will be based on their forecast demand (**i.e., same as existing process**) as well as the contribution of each of their customer classes during this peak
    - Requirements for all other hours will be determined formulaically based on their customer class make-up
    - Final requirements will be adjusted to ensure sum of individual LSE requirements are equal to total system requirement
- **Additional information and verification necessary:**
  - System-level shapes for each customer class – Provided by CEC
  - Customer class make-up for each LSE – Provided by LSEs
- **Pros:**
  - Administratively feasible
  - Recognizes differences among LSE load shapes and ensures all LSEs have a reasonable 24-hour load shape and RA requirement
  - Ensures the CAISO's total 24-hour load shape has sufficient capacity
- **Cons:**
  - Requires the determination and the creation of generic shapes for customer classes
  - Requires LSEs to report both their gross peak as well as the contribution of their customer classes to this peak
  - May be difficult for the CEC to verify the information submitted by LSEs

# Semi-custom LSE shapes: Inputs Needed

- Existing

- System hourly demand for compliance period
- LSEs' load during compliance period's gross peak

- New

- System-level shapes for each customer class – To be provided by CEC (new)
  - Update frequency can range from monthly, seasonally, or annually
- LSEs' customer class make-up during the compliance period's gross peak (new)
  - Proxy can be developed using seasonal or annual peak load share or simple load share
  - LSEs provide customer class load forecast to CEC
  - CEC validate and return adjusted values that match compliance period's gross peak (similar to existing process but at the customer class-level)

# Process for determining LSEs' 24-hour requirements

1

LSE 1 Customer Class Makeup Based on Load at HE18 (Input) - MW		LSE 2 Customer Class Makeup Based on Load at HE18 (Input) - MW		LSE 3 Customer Class Makeup Based on Load at HE18 (Input) - MW	
Residential	3,600	Residential	259	Residential	7,929
Commercial	4,950	Commercial	1,037	Commercial	5,766
Industrial	4,950	Industrial	3,888	Industrial	4,097
Other	1,500	Other	-	Other	7,208
<b>Total</b>	<b>15,000</b>	<b>Total</b>	<b>5,184</b>	<b>Total</b>	<b>25,000</b>

2

	HE1	HE2	HE3	...	HE16	HE17	HE18	...
<b>System Demand (Input) -- MW</b>	27,695	26,321	25,605	...	44,469	45,149	45,184	...

## System Customer Class Shape (Relative to Load at Gross Peak) -- Ratio

Residential	0.60	0.60	0.60	...	0.80	0.90	1.00	...
Commercial	0.10	0.10	0.10	...	1.20	1.10	1.00	...
Industrial	1.00	1.00	1.00	...	1.00	1.00	1.00	...
Other	0.85	0.85	0.85	...	0.80	0.85	1.00	...

3

## LSE Unadjusted Requirements Based on Customer Class Makeup -- MW

LSE 1	8,880	8,880	8,880	...	14,970	14,910	15,000	...
LSE 2	4,147	4,147	4,147	...	5,340	5,262	5,184	...
LSE 3	15,558	15,558	15,558	...	23,126	23,703	25,000	...
<b>Total Unadjusted</b>	<b>28,585</b>	<b>28,585</b>	<b>28,585</b>	...	<b>43,435</b>	<b>43,874</b>	<b>45,184</b>	...

Sum  
Product  
1 x 3

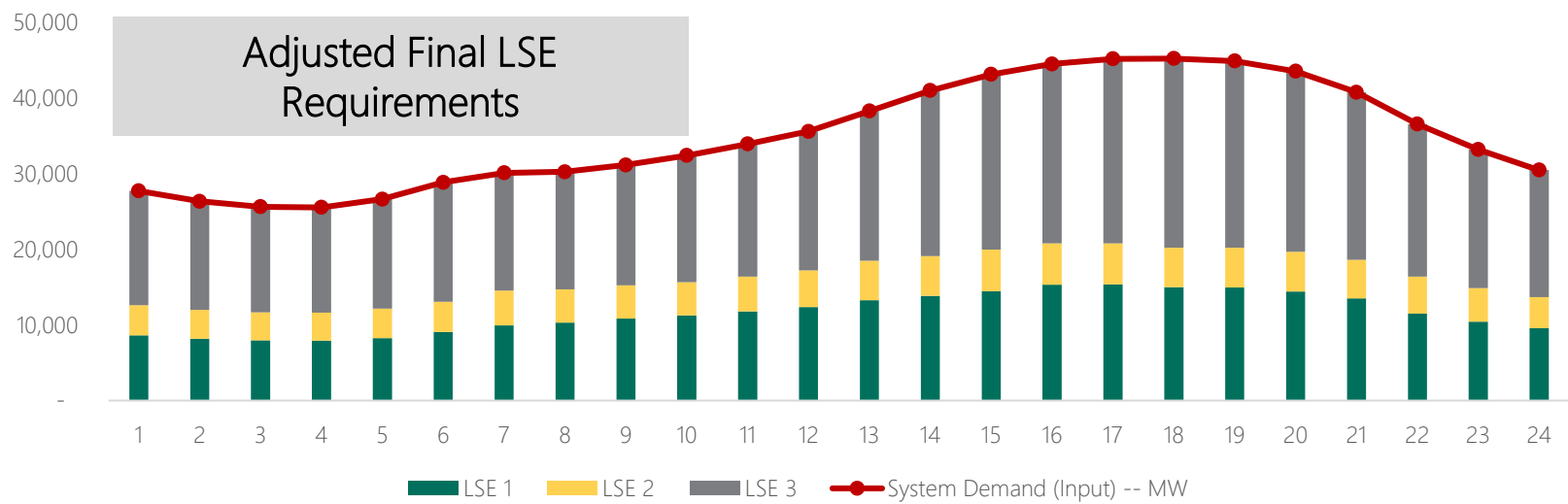
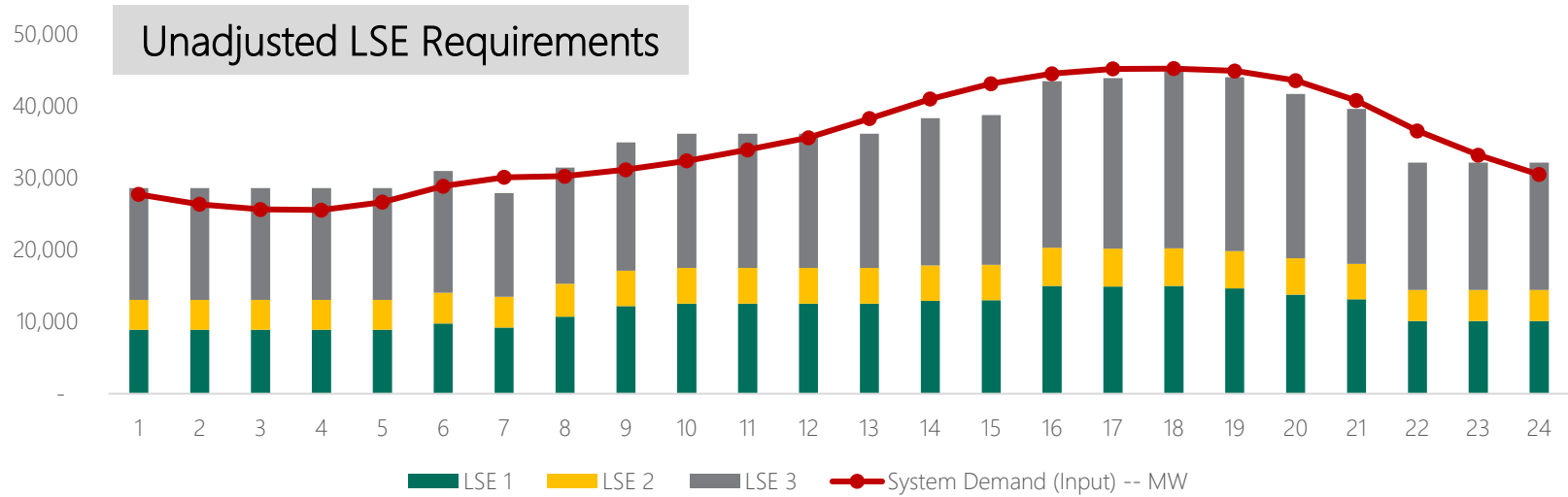
## LSE Final Requirements Based on Customer Class Makeup -- MW

LSE 1	8,604	8,177	7,954	...	15,326	15,343	15,000	...
LSE 2	4,018	3,819	3,715	...	5,467	5,415	5,184	...
LSE 3	15,073	14,326	13,936	...	23,676	24,391	25,000	...
<b>Total Adjusted</b>	<b>27,695</b>	<b>26,321</b>	<b>25,605</b>	...	<b>44,469</b>	<b>45,149</b>	<b>45,184</b>	...

Normal  
-ized to  
2



# Comparison of unadjusted and adjusted requirements



## Next steps to implementing semi-custom shapes

- Work with the CEC and LSEs to determine the appropriate (number of) customer classes and their associated load shapes
  - Determine if monthly or seasonal customer class load shapes are appropriate
- Work with LSEs to ensure they can divide their gross peak into these customer classes
  - Ensure the CEC has some way of verifying the division into customer classes is reasonable