

# A Comprehensive Procurement Framework for Forward Capacity Procurement in California

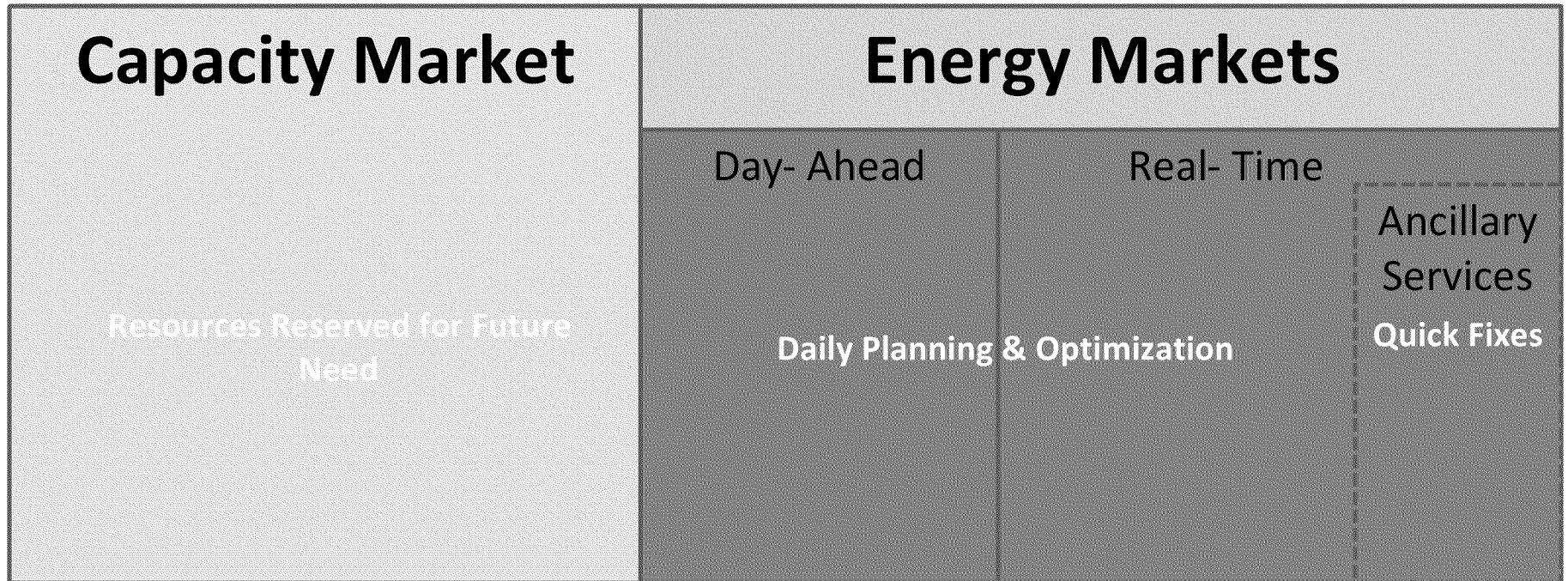
December 20, 2012

# Executive Summary:

## CA Comprehensive Procurement Framework

- **What is a Capacity Market?**
  - Make commitments today to pay generators/resources in the future, to secure capacity that may be needed to ensure reliability in the future
- **Why is a Capacity Market needed now in California?**
  - California has 10 years experience with capacity procurement, but there are new issues
    1. High amount of *intermittent* renewables
    2. Retirement of Once-Through Cooling (OTC) generating units
    3. Insufficient market revenues for flexible resources
- **What is the “Comprehensive Procurement Framework”? How does it help?**
  - Comprehensive Procurement Framework (CPF) has 6 components
    - **Reliability:** High availability of flexible resources, ensuring sufficient system and local reliability
      1. **RA:** Existing year-ahead Resource Adequacy for system and local, and soon-to-be flexible
      2. **LTPP:** CPUC’s existing Long-Term Procurement Plan proceeding and subsequent IOU RFOs and Applications
      3. **CPM:** CAISO’s existing Capacity Procurement Mechanism
      4. **FLRR:** CAISO’s proposed Flexible Capacity and Local Reliability Resource Retention Mechanism
    - **Affordability:** Low cost impact to customers
      5. **Forward Procurement Requirement:** CPUC-directed forward procurement by Investor-owned Utilities (IOUs) and other CPUC-jurisdictional Load-Serving Entities (LSEs)
      6. **CCM:** CAISO-run Centralized Capacity Market (CCM)
  - Each component plays a different role in addressing reliability, cost, resource availability 2

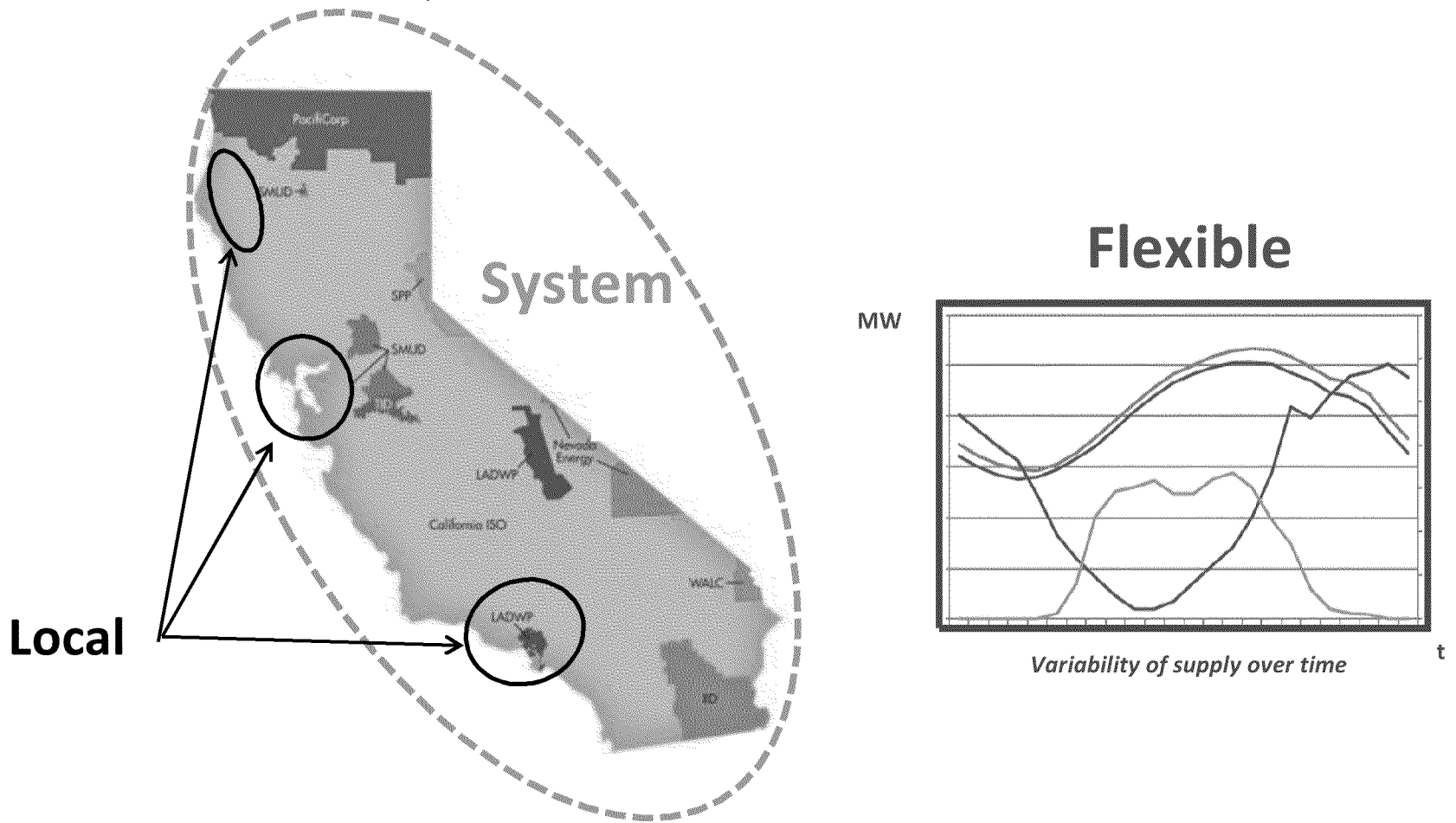
# What is a Capacity Market?



## Marketplace where:

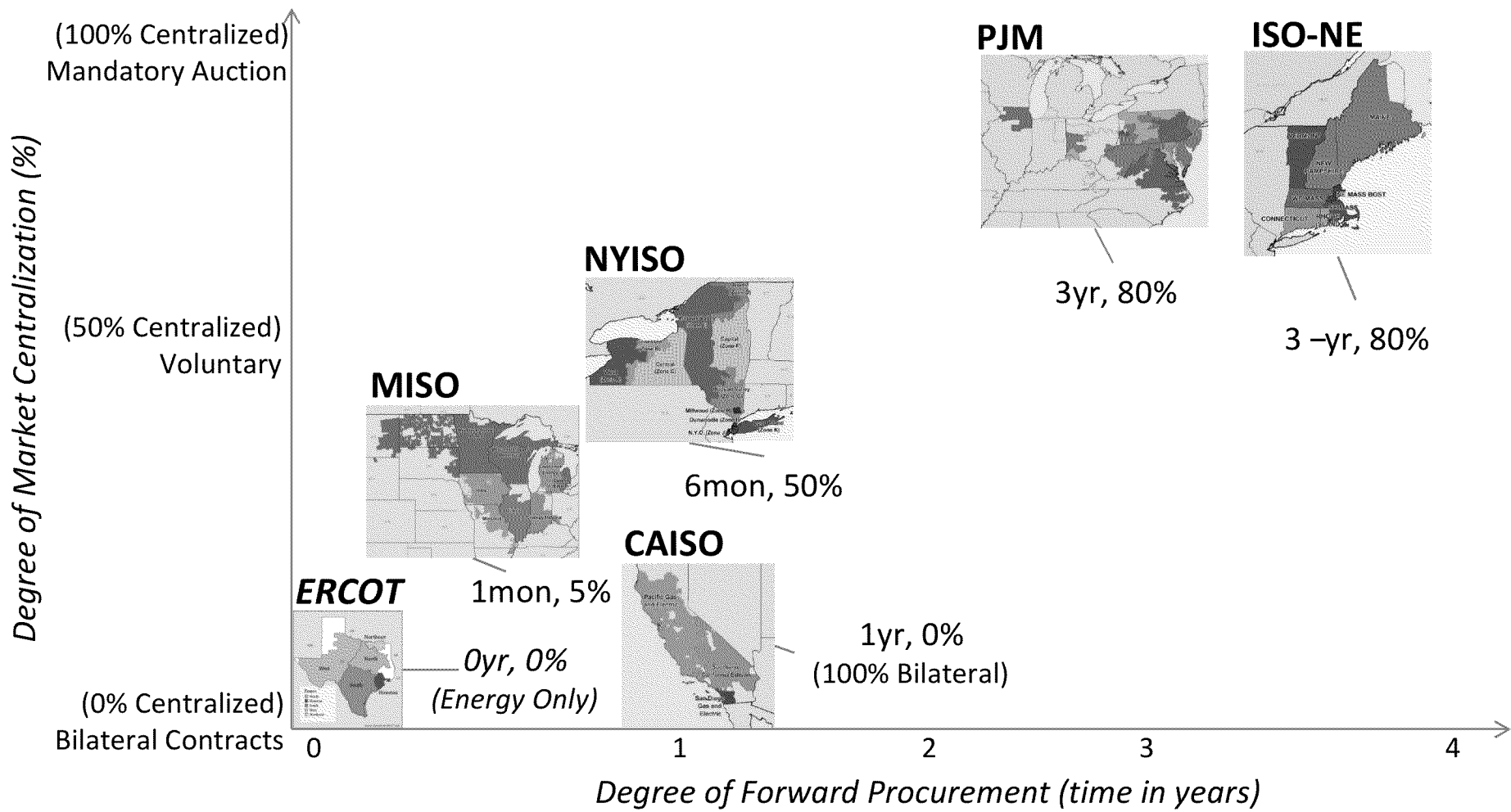
**Suppliers (sellers) receive compensation** for investing in generating capacity and other resources, **load-serving entities (LSEs)** or their representative (buyers) **make capacity payments** to suppliers, to ensure long-term availability of sufficient generating capacity and other resources

# California Has Three Types of Capacity Products: System, Local, and Flexible



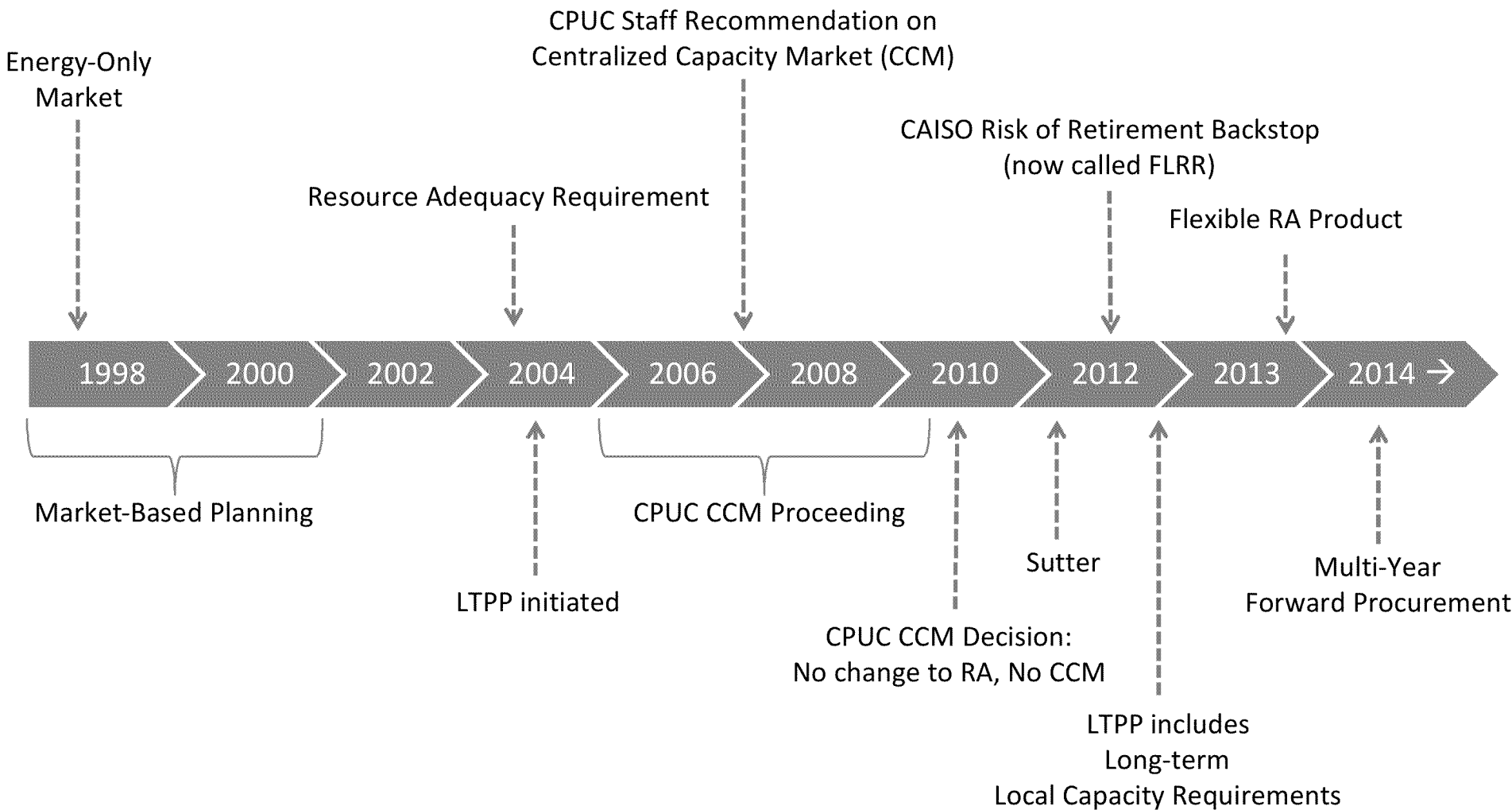
**California requires system and flexible capacity overall,  
along with specific local capacity to address regional needs**

# There are Various Ways to Procure Capacity



**Possible is a hybrid market design with bilateral contracts and a central auction**

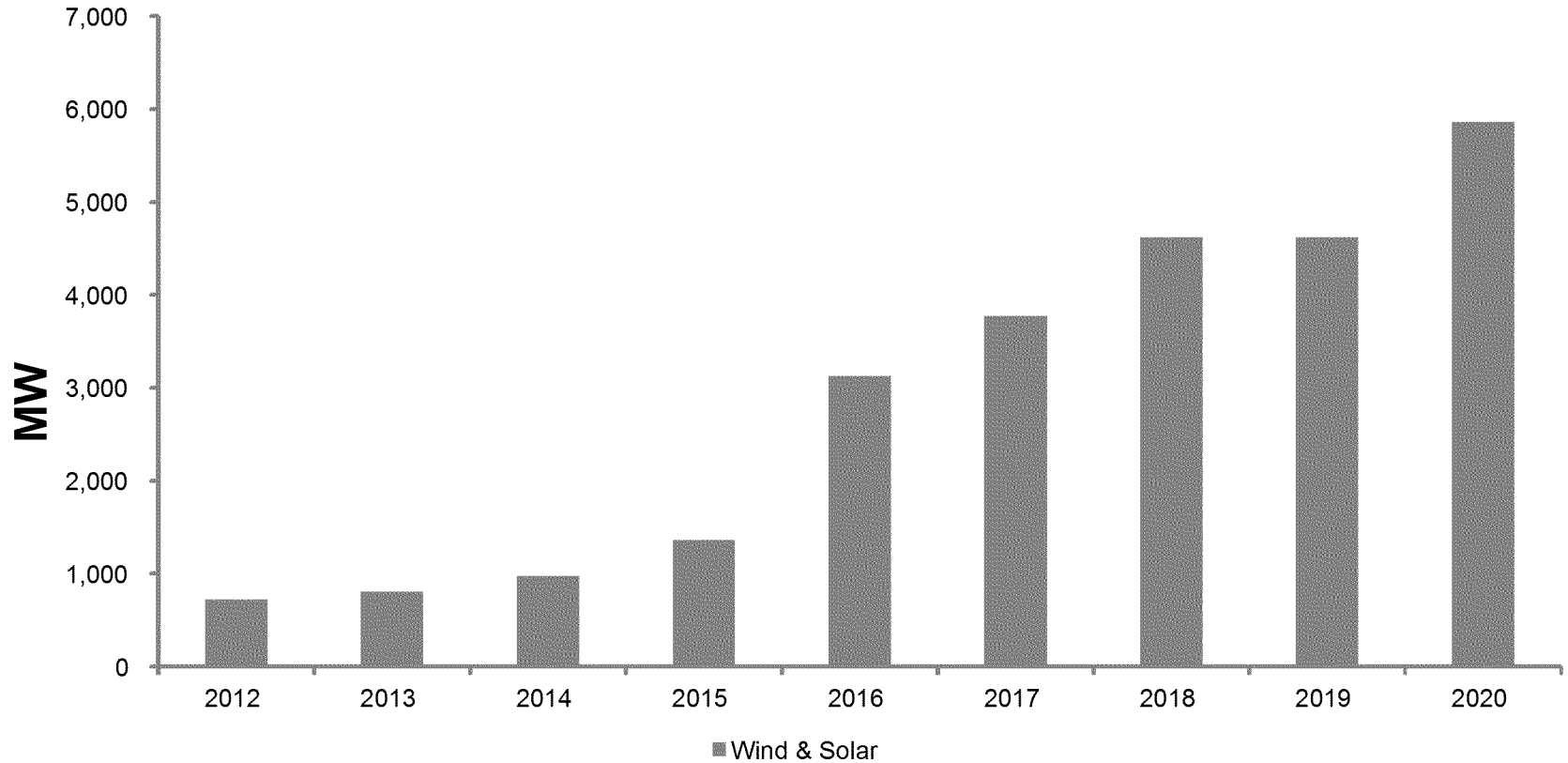
# Forward Capacity Procurement: California's History



**California has been considering forward capacity procurement since 2004**

# New Issue 1: High Amount of Intermittent Renewables

## Wind and Solar RA Capacity



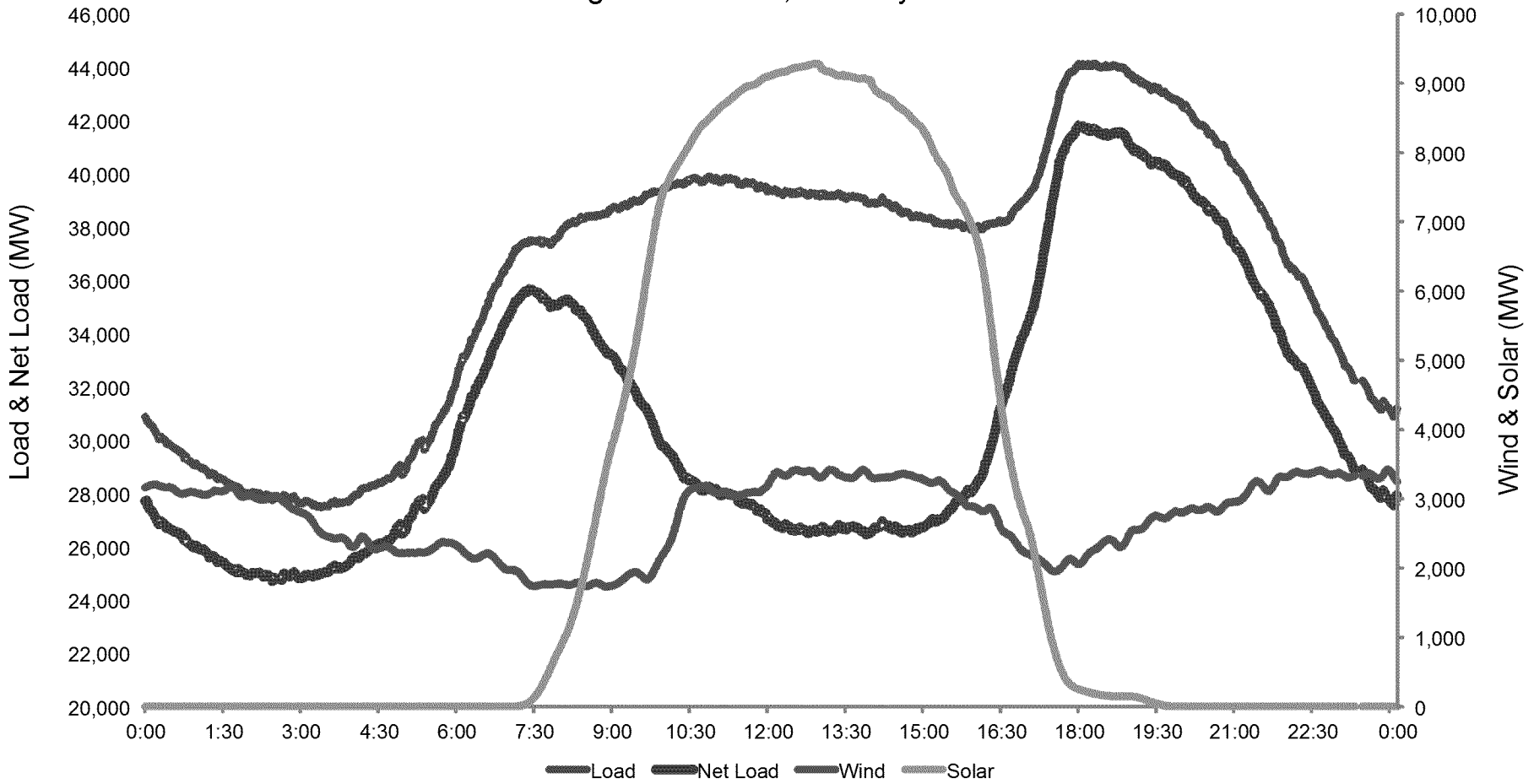
**As high amounts of intermittent renewables come on line, the need for flexible resources increases**

# New Issue 1: High Amount of Intermittent Renewables

## Changes in Net Load Shape

### Load, Wind and Solar Profiles

High Load Case, January 2020

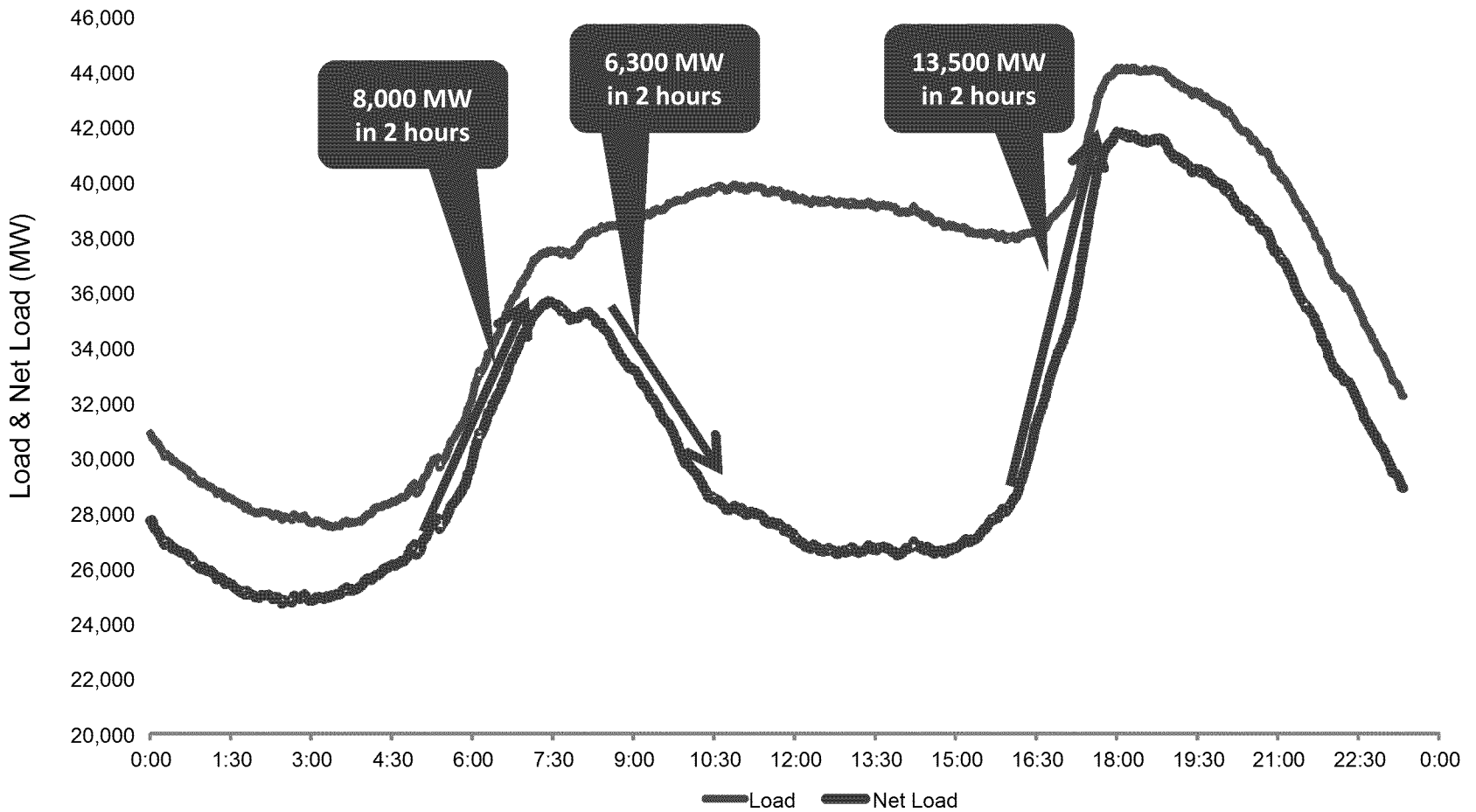


**Increased renewables changes load shape to dual peak**



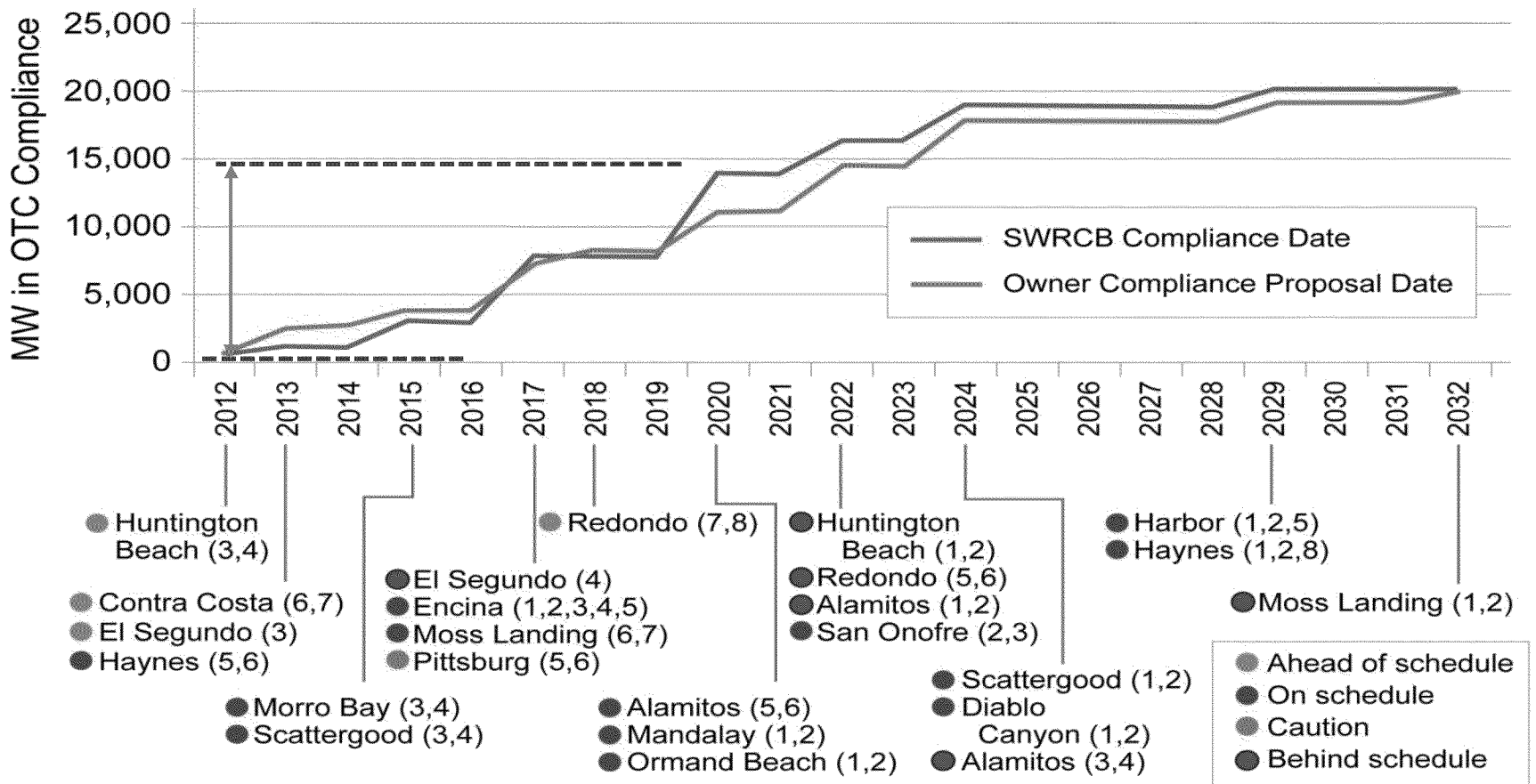
# New Issue 1: High Amount of Intermittent Renewables

## Changing Load Shape Drives Flexible Resource Need



**Load's dual peak and greater variability drives changing utilization of resources**

# New Issue 2: OTC Retirements



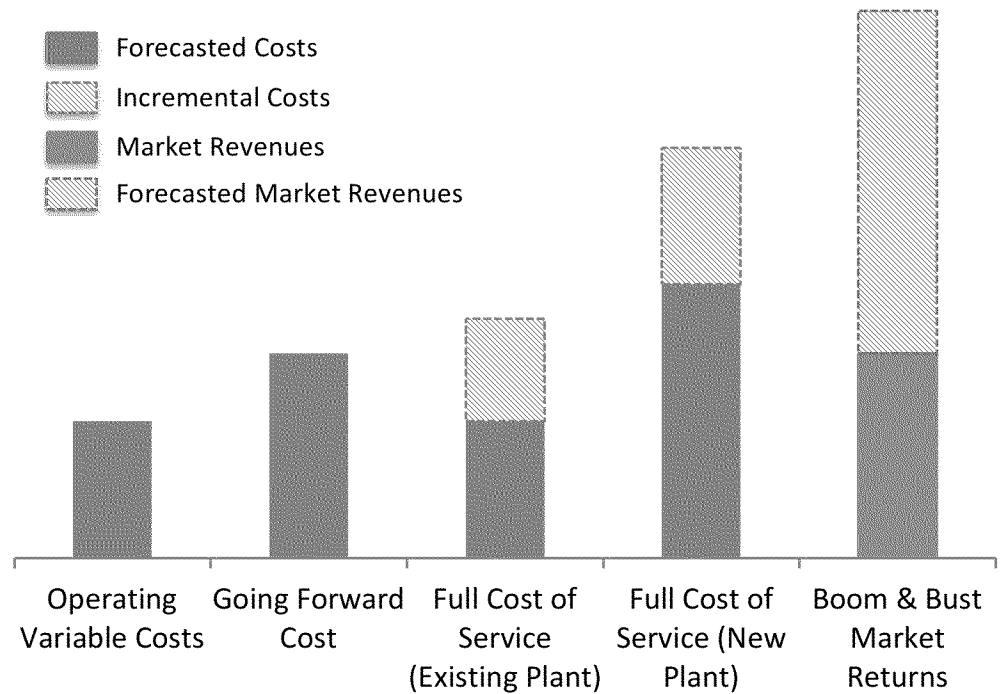
Source: California Clean Energy Future, Dec. 23, 2011

**To comply with water regulations, 15,000 MW of OTC retirement by 2020, including many existing flexible resources**

# New Issue 3: Insufficient Market Revenues for Flexible Resources

**Illustrative Representation of Insufficient Revenues**

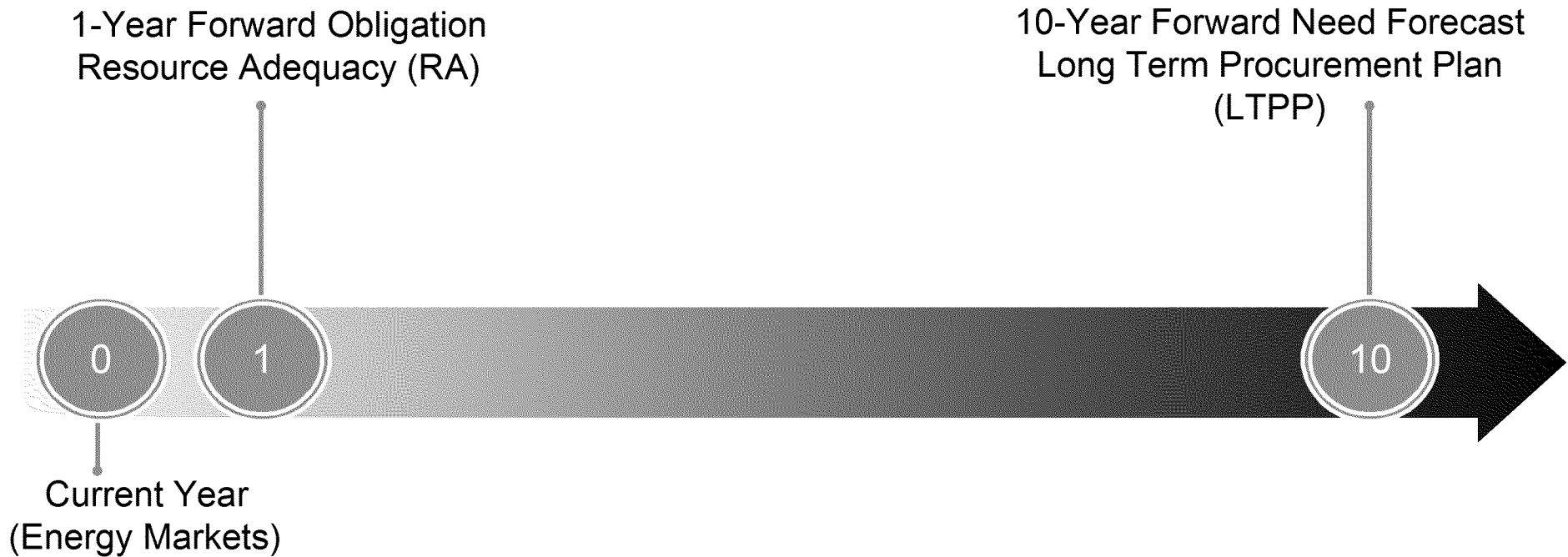
| Cause   | Effect   |
|---|--|
| ↑ Renewables  | ↓ Spot Energy Market Revenues<br>↓ RA Revenues |
| ↑ Cycling of Flexible Resources leading to<br>↑ Wear and Tear | ↑ O&M cost<br>↑ Capital cost for overhauls     |



**Current situation is unsustainable:**

- 1) Gross margins are becoming insufficient for existing flexible resources
- 2) Looming early retirement of needed existing flexible resources

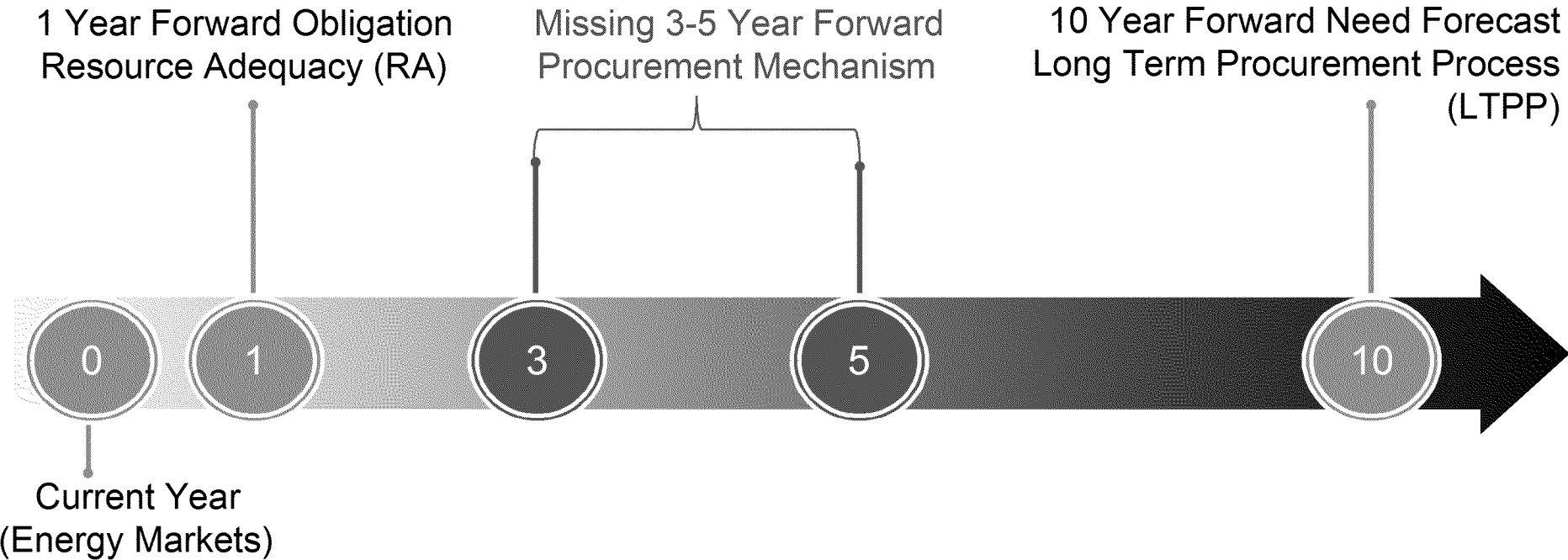
# Currently, California Has 2-Part Regime for Capacity



## Current Procurement Process works for:

1. Procuring year-ahead system and local resource adequacy
2. Procuring new generation through IOUs' commitments via LTPP

# Gap in Intermediate Term

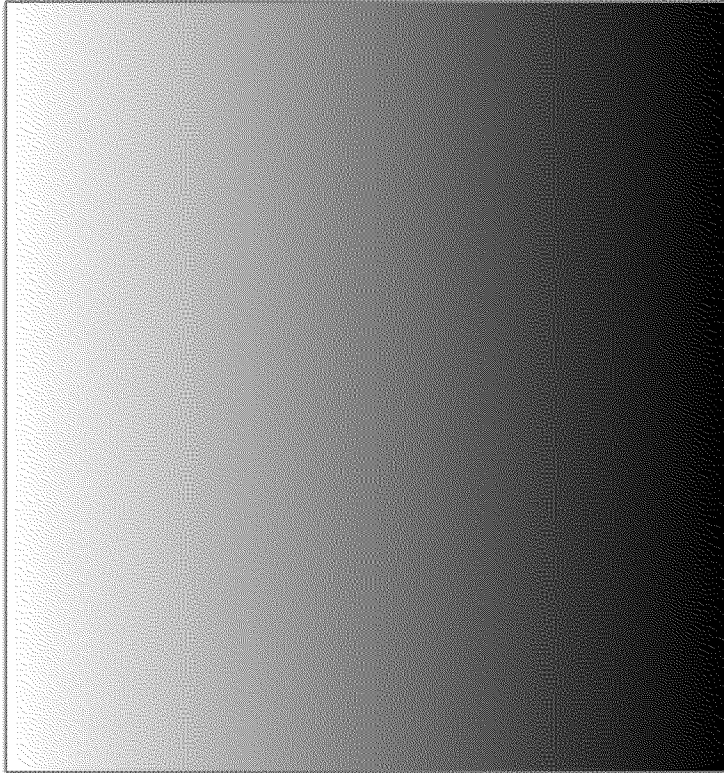


**Missing Intermediate-Term Procurement Mechanism addresses new issues:**

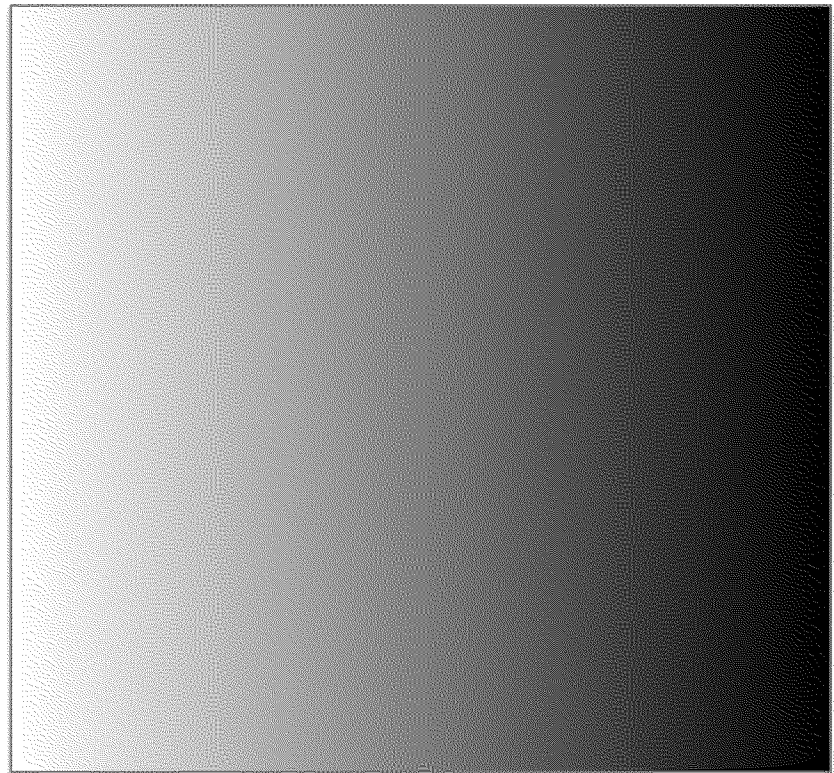
- 1) Providing needed revenues to existing flexible resources to assure that they remain online
- 2) Addressing additional need for flexible resources caused by high amount of intermittent renewables

# Comprehensive Procurement Framework Consists of the Current Regime + Future Components

1-Year Forward



Multi-Year Forward

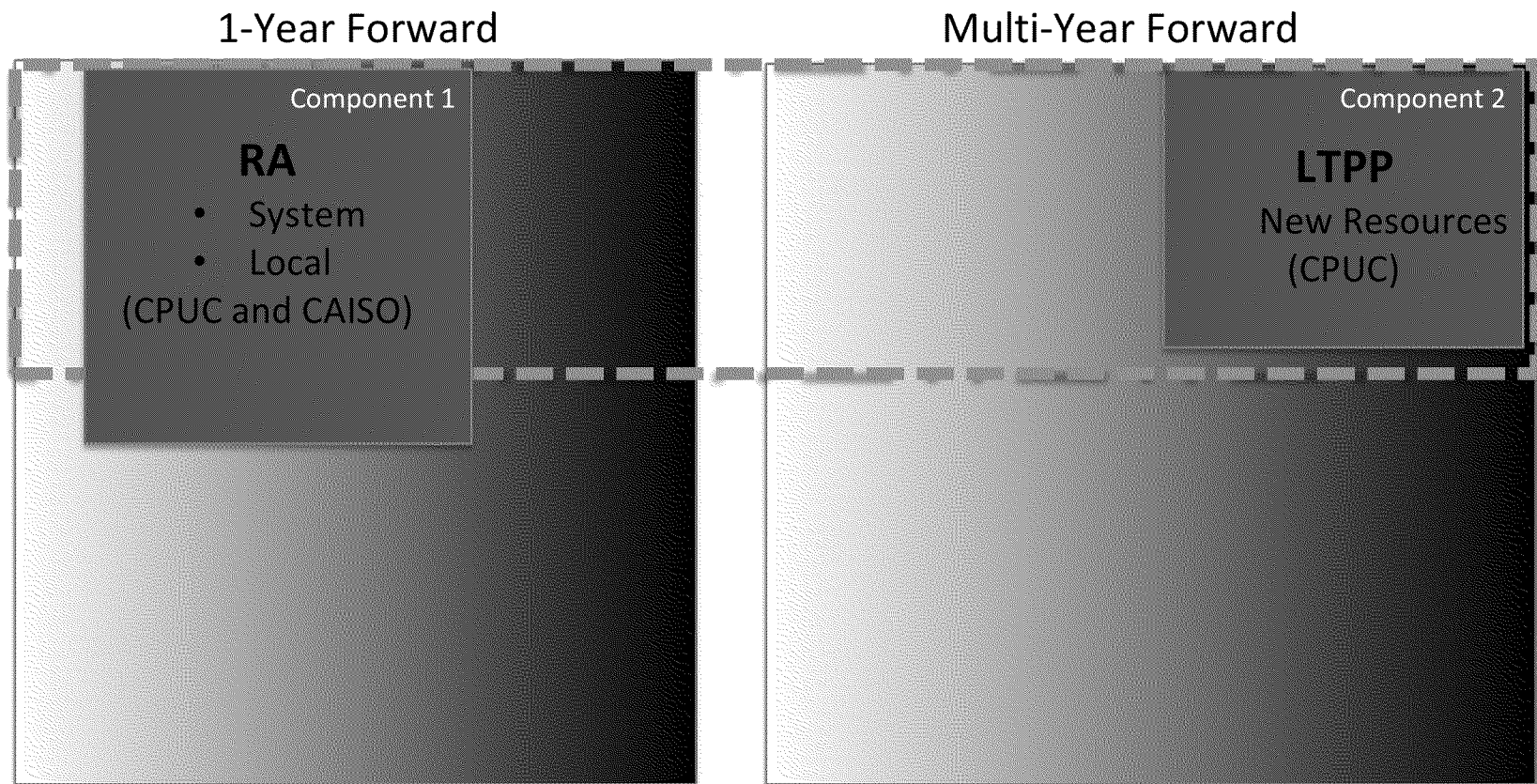


**Procurement can be divided into 2 boxes:**

- Near-term 1-year forward procurement
- Longer-term multi-year forward (3-10 years)

# Comprehensive Procurement Framework

## The Existing 2-Part Regime



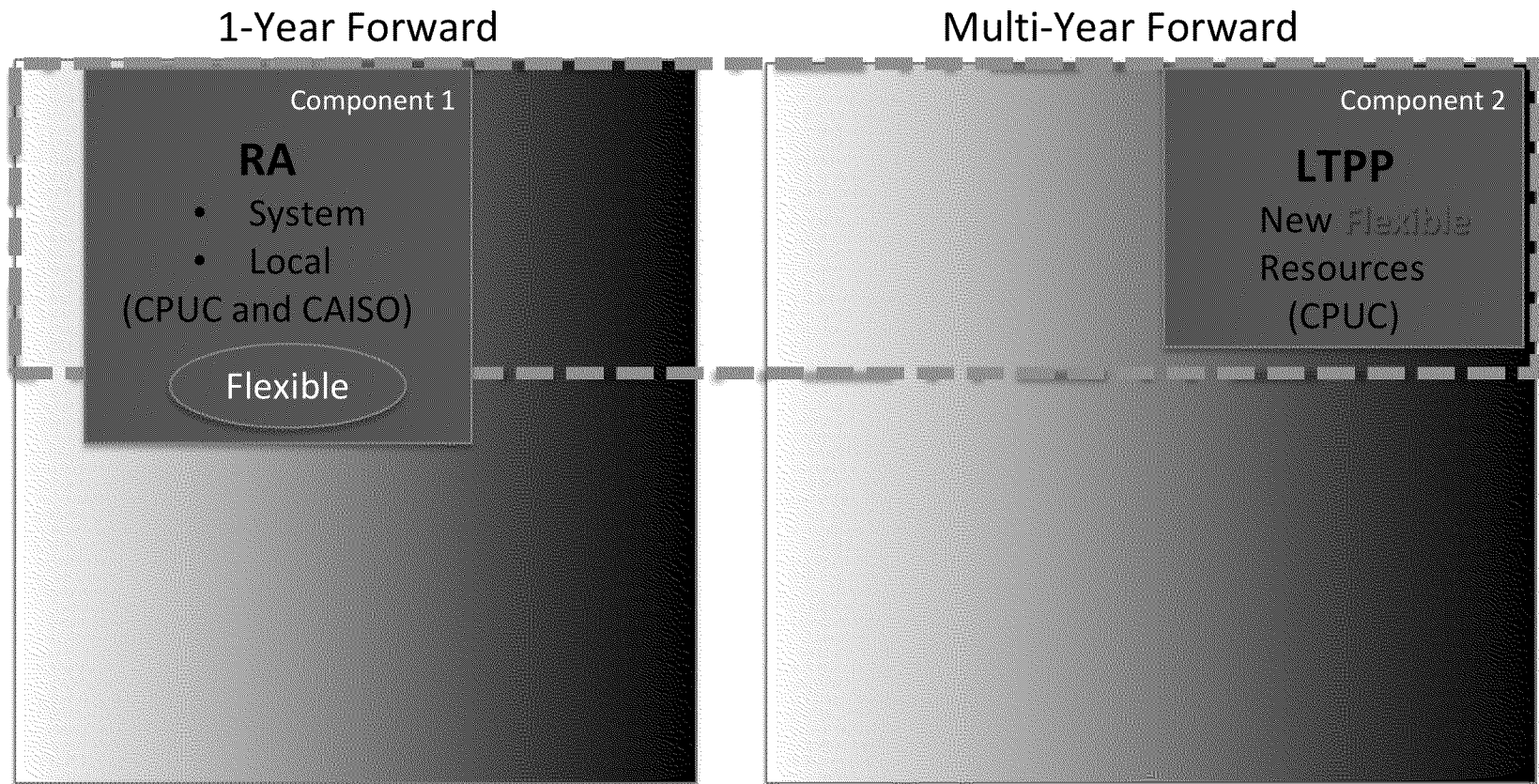
### KEY:

- Existing
- CPUC jurisdiction

**The existing 2-part regime consists of RA and LTPP.**

# Comprehensive Procurement Framework

## Extending Existing 2-Part Regime to Include Flexibility



**KEY:**

- Existing
- Implementing
- CPUC jurisdiction

Underway

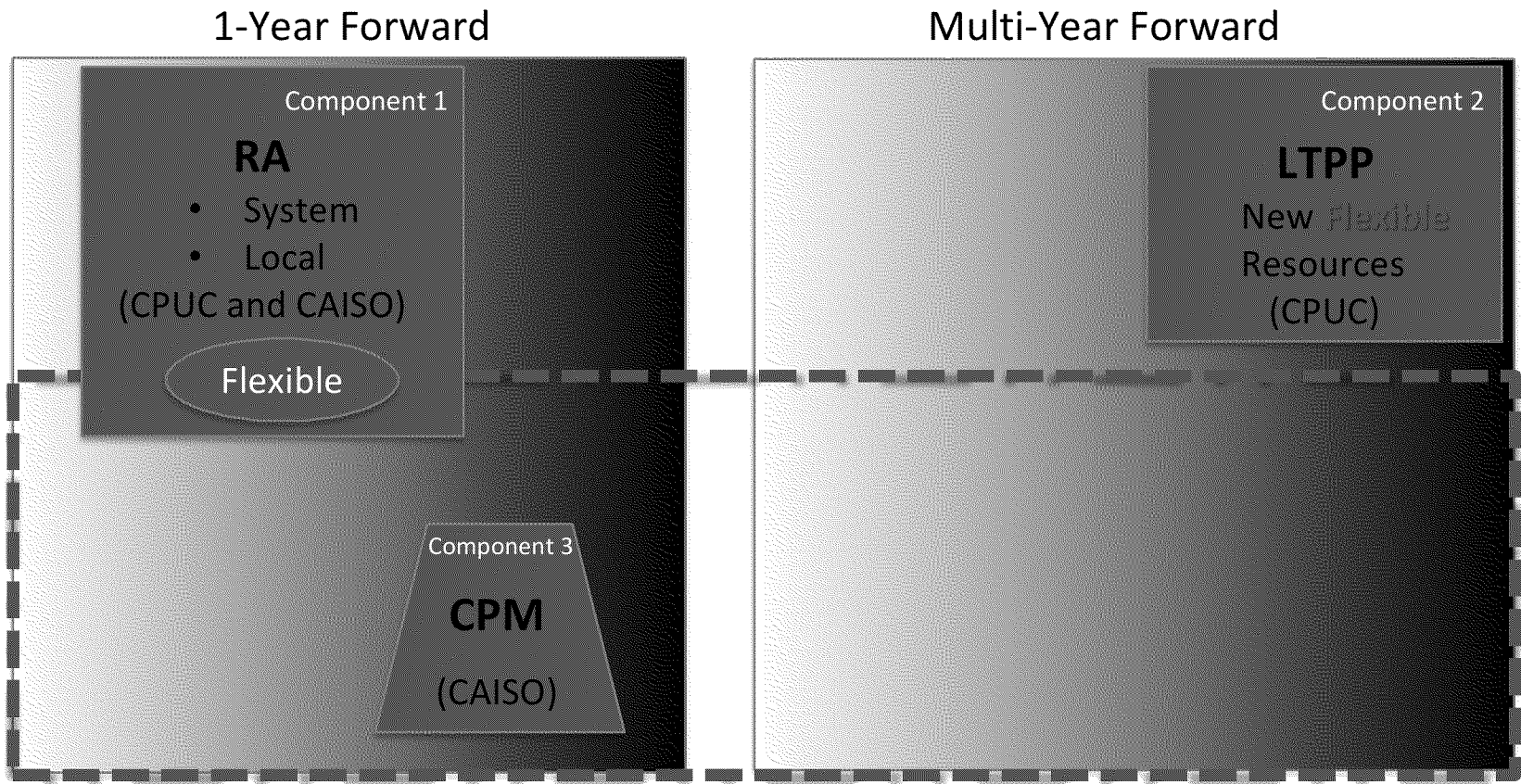
**RA: adding a requirement for procurement of flexible resources**

**LTPP: determining need for new flexible resources**



# Comprehensive Procurement Framework

## Short-term Backstop Already Exists



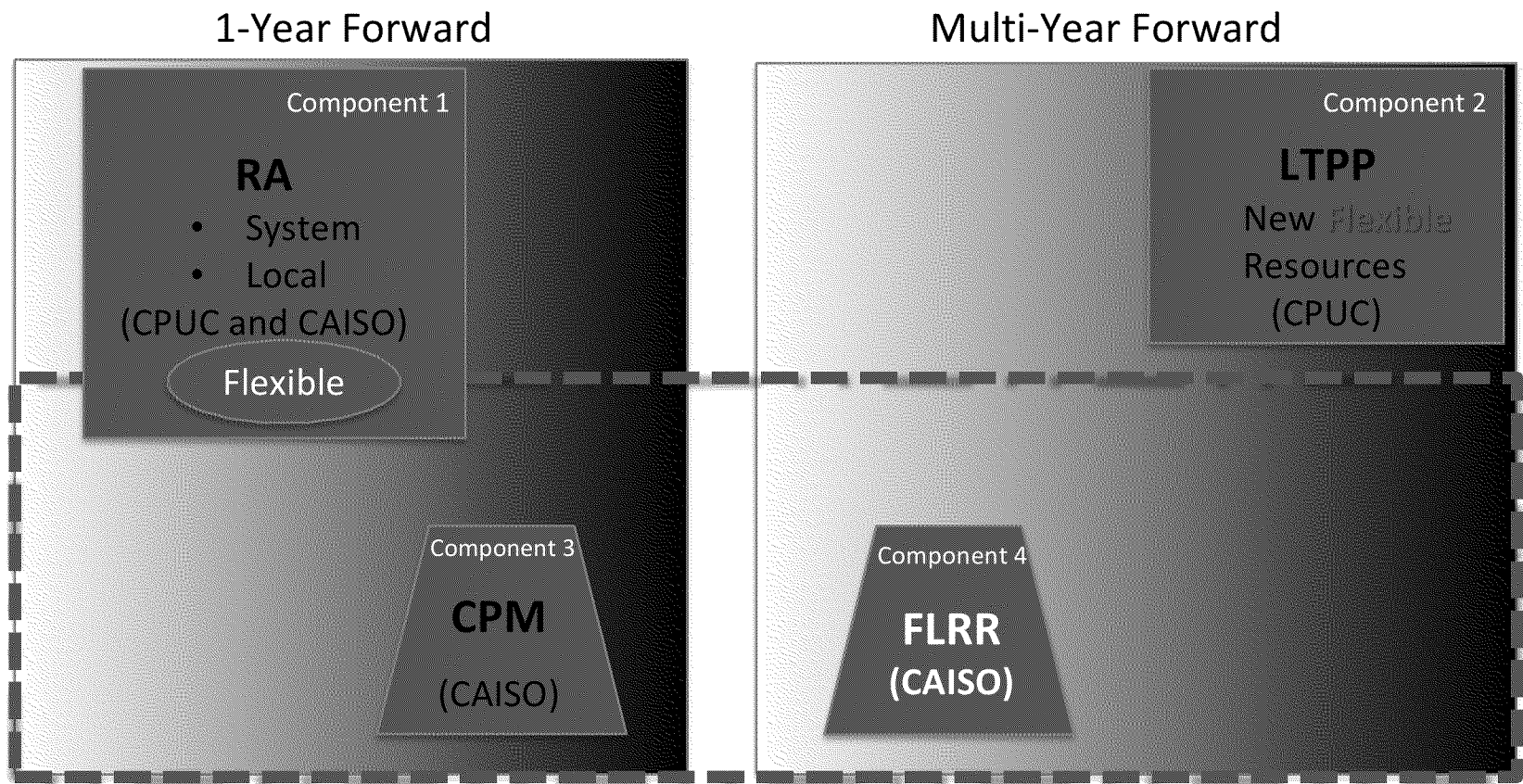
**KEY:**

- Existing
- Implementing
- FERC jurisdiction

**CAISO has an existing backstop, the Capacity Procurement Mechanism (CPM), to address capacity procurement shortages within 1-year forward.**

# Comprehensive Procurement Framework

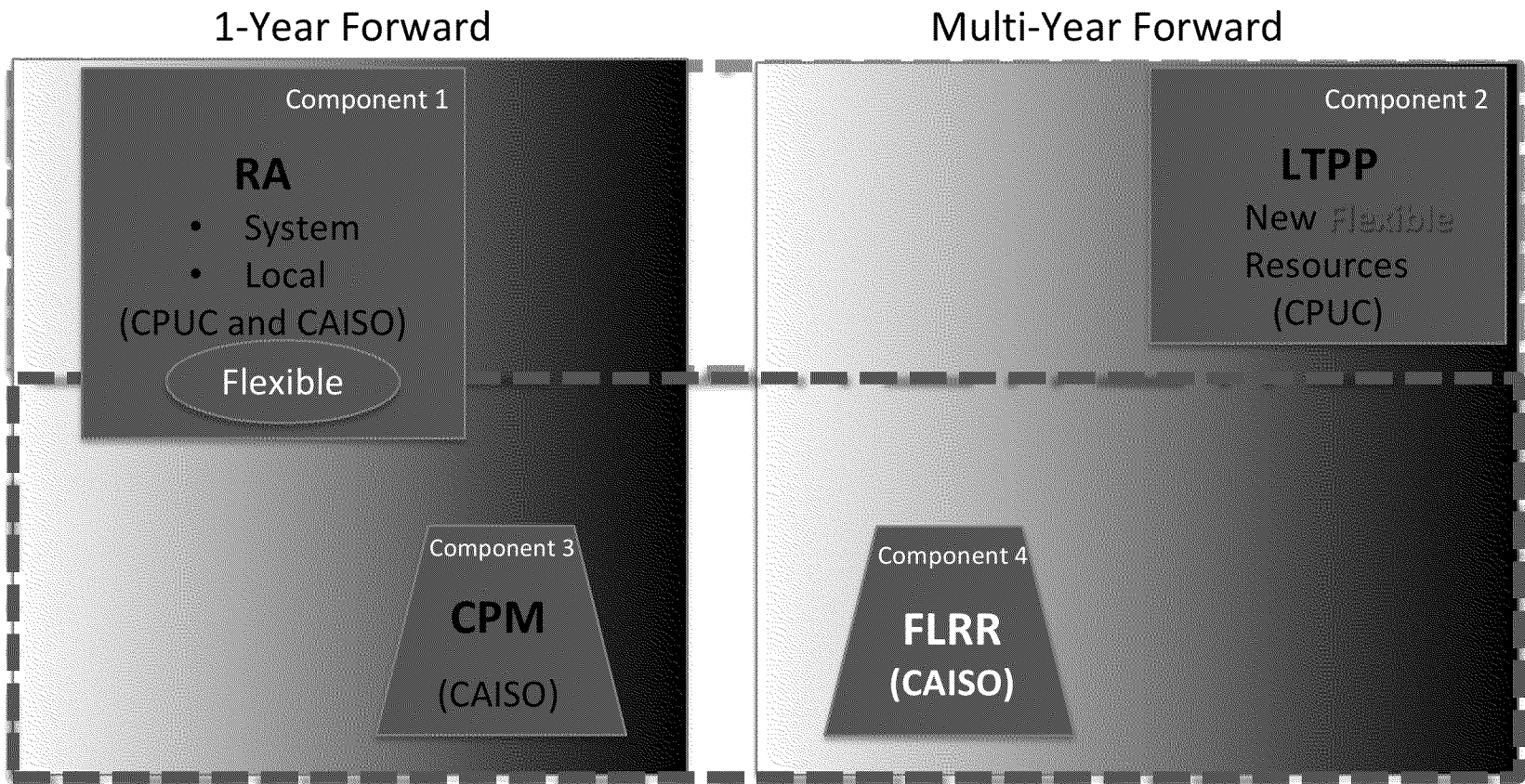
## CAISO is Seeking An Intermediate-Term Backstop



**KEY:**  
Existing  
Implementing  
FERC jurisdiction

**CAISO is seeking FERC approval for an intermediate-term backstop-FLRR (Flexible Capacity and Local Reliability Resource Retention Mechanism), to ensure sufficient capacity 5 years forward.**

# Comprehensive Procurement Framework 4-Component Design Achieves Reliability, But Ratepayer Cost is Questionable

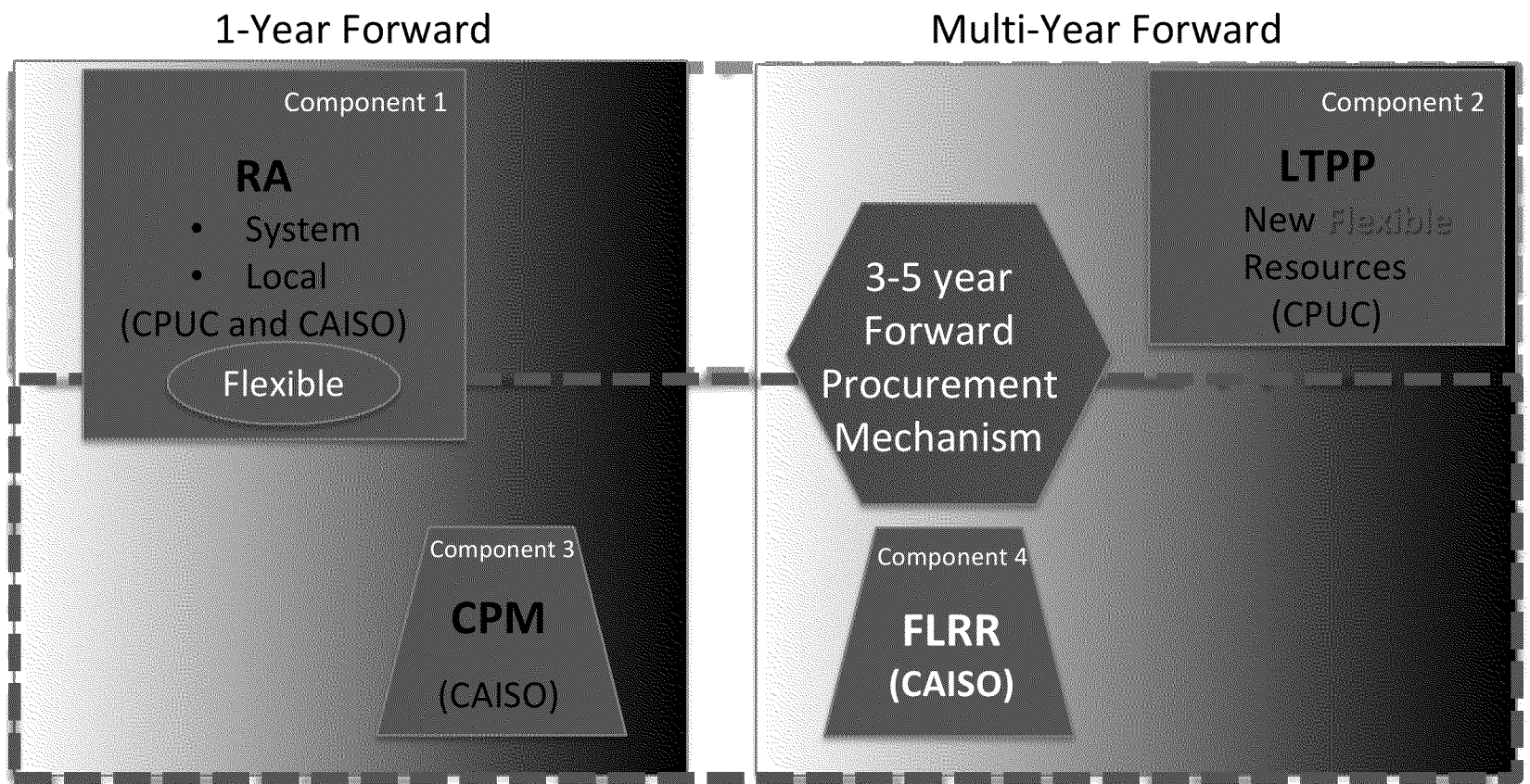


**KEY:**  
Existing  
Implementing  
CPUC  
FERC

**These four components are enough to ensure sufficient capacity (system, local, and flexible).  
What would the ratepayer cost of this design?**

# Comprehensive Procurement Framework

## Competitive Procurement Keeps Costs Reasonable



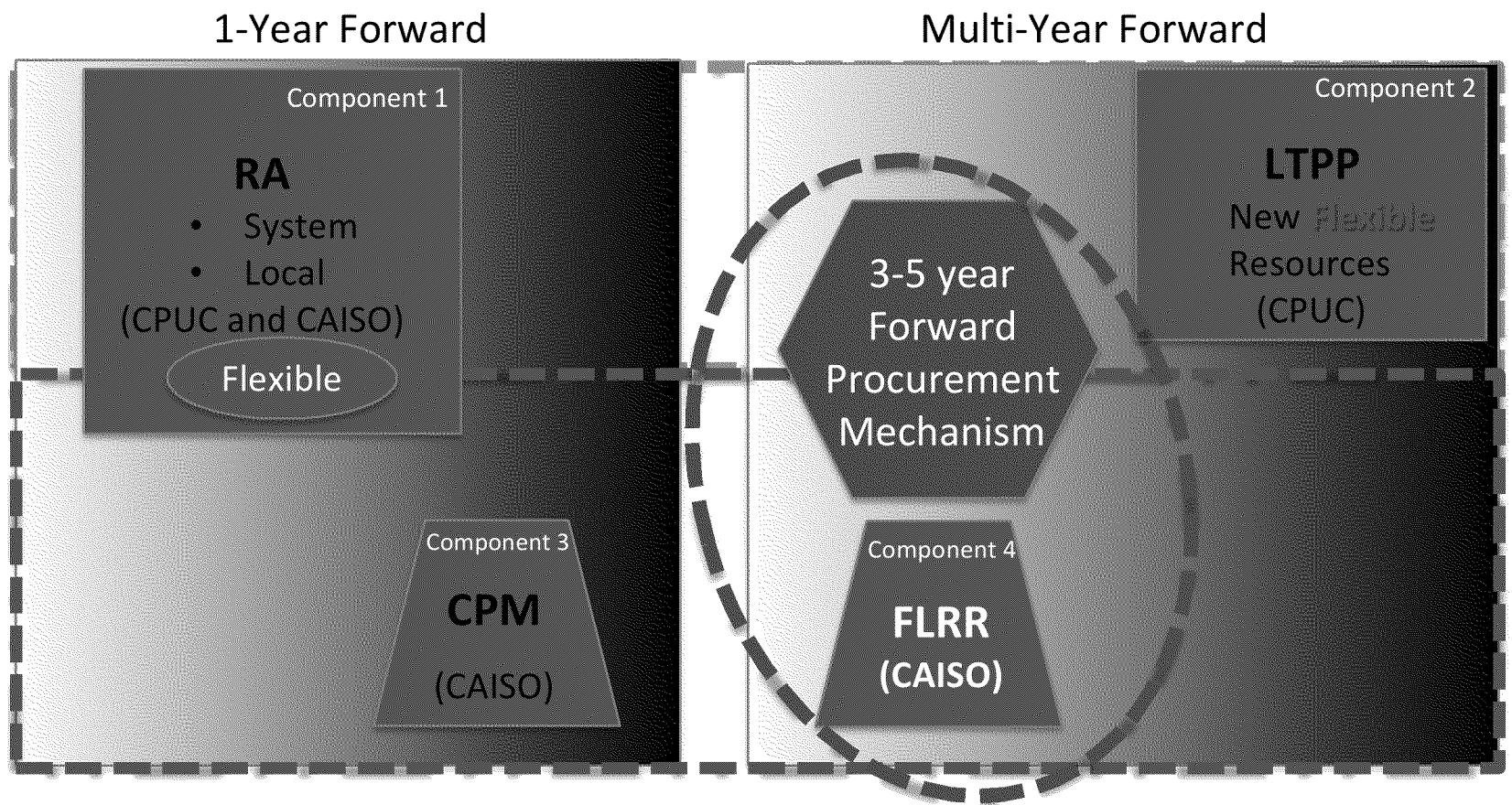
**KEY:**

- Existing
- Implementing
- In Discussions
- CPUC
- FERC

**The next step is to introduce competitive procurement for 35 years forward, to keep procurement costs reasonable.**

# Comprehensive Procurement Framework

## Coordination Challenge in Designing the Missing Mechanism



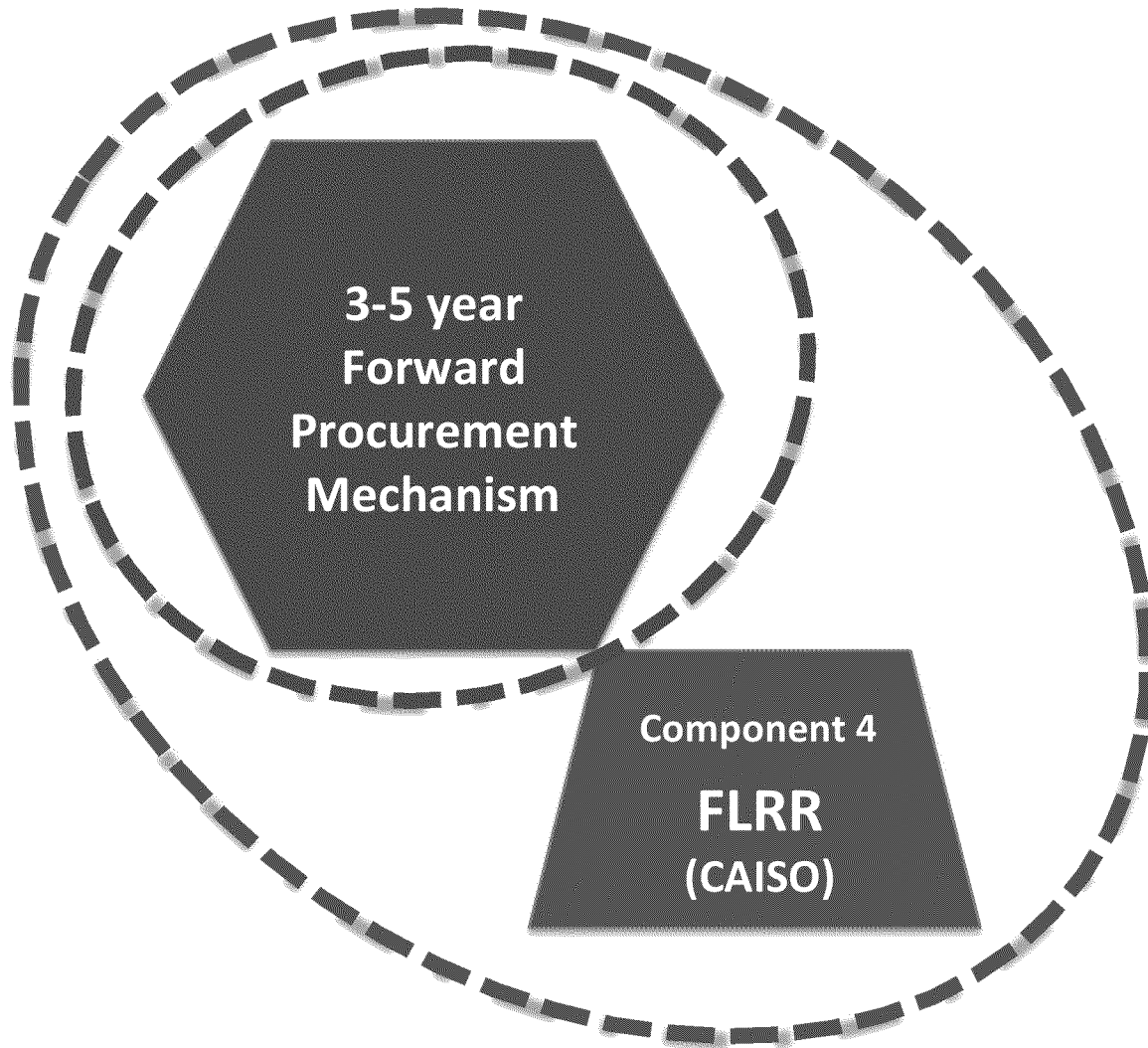
**KEY:**

- Existing
- Implementing
- In Discussions
- CPUC
- FERC

**Who has jurisdiction over the Forward Procurement Mechanism?  
How is it coordinated with CAISO's FLRR backstop?**

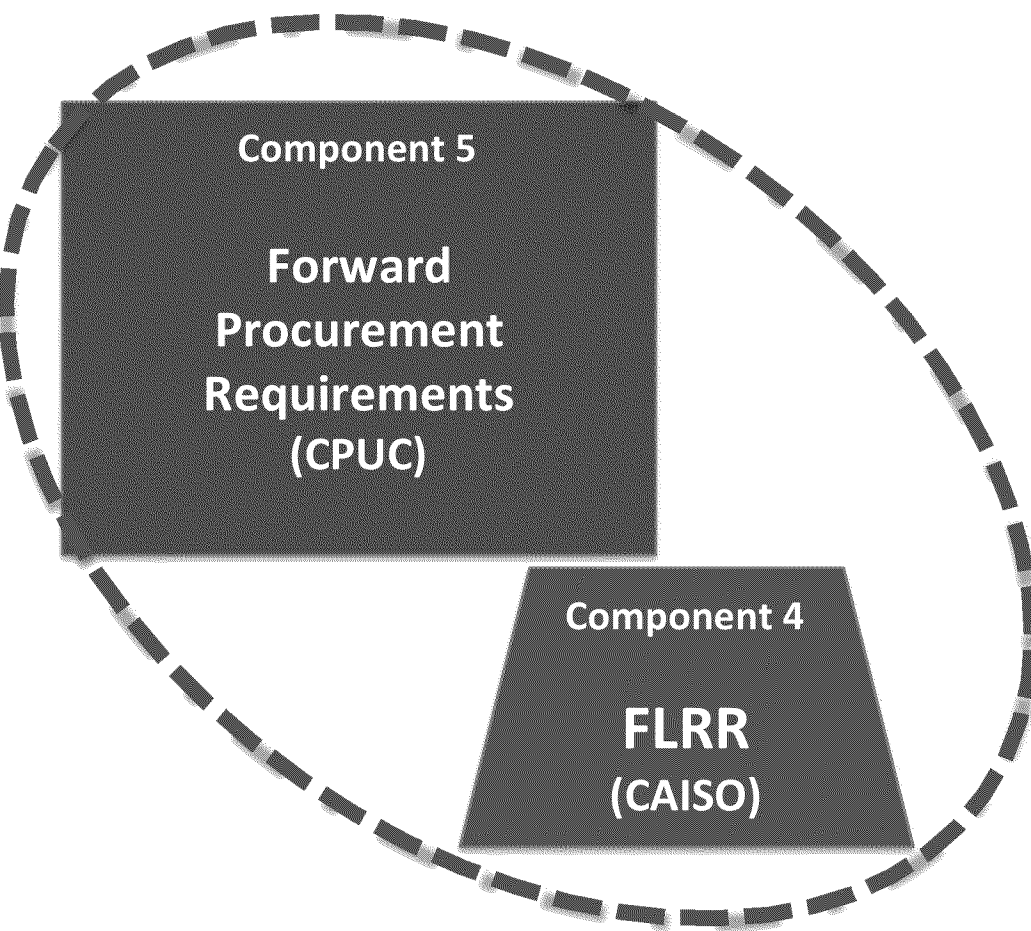
Comprehensive Procurement Framework:  
Designing the Missing Mechanism

CAISO Uses FLRR to Determine Capacity Quantities



**No matter who has jurisdiction over the Forward Procurement Mechanism, the CAISO ensures reliability by using FLRR to procure any capacity “deficit” (as seen by the CAISO).**

# Comprehensive Procurement Framework: Designing the Missing Mechanism A Precarious Balance



## **CPUC**

- Uses Forward Procurement Requirements to assure loading order for preferred resources
- Strives for reasonable ratepayer cost

**CAISO** uses FLRR to ensure reliability

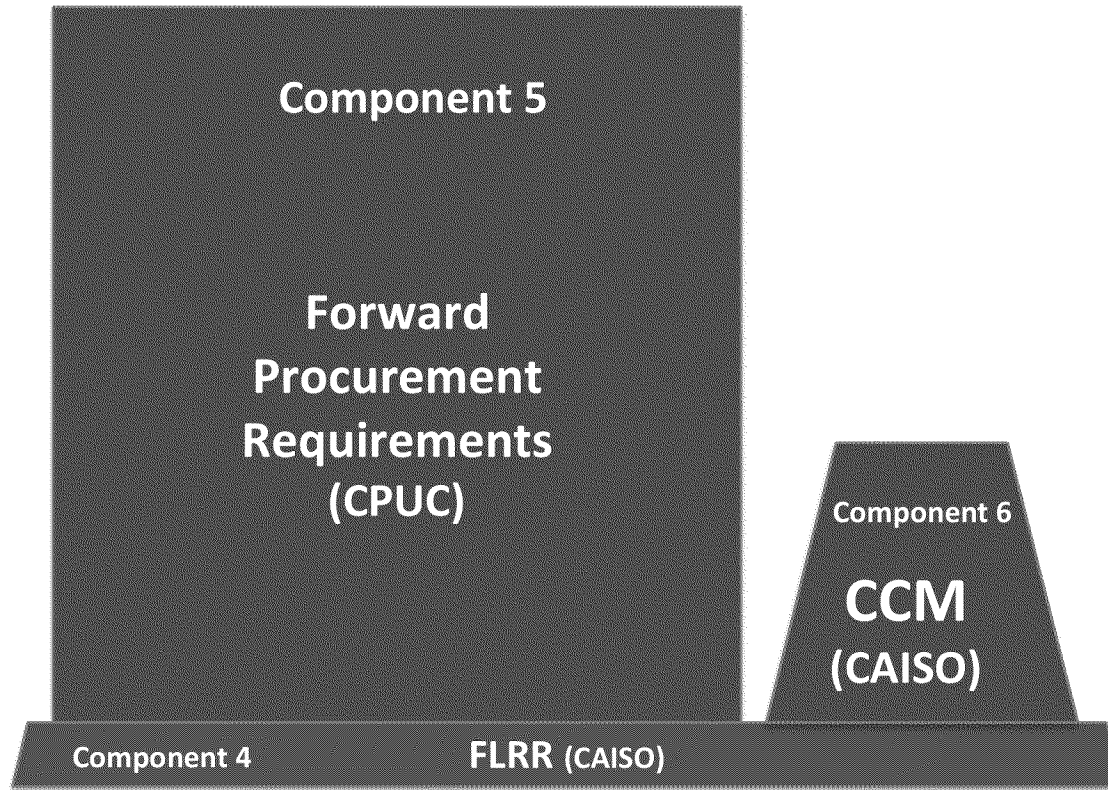
## **Additional Issues**

**Cost:** Does FLRR drive market price for Forward Procurement Requirements products?

**Cost Allocation:** Will CPUC enforce Forward Procurement Requirements on Direct Access (DA) providers and Community Choice Aggregators (CCA)?

**Efficiency:** Will products be consistent between Forward Procurement Requirements and FLRR?

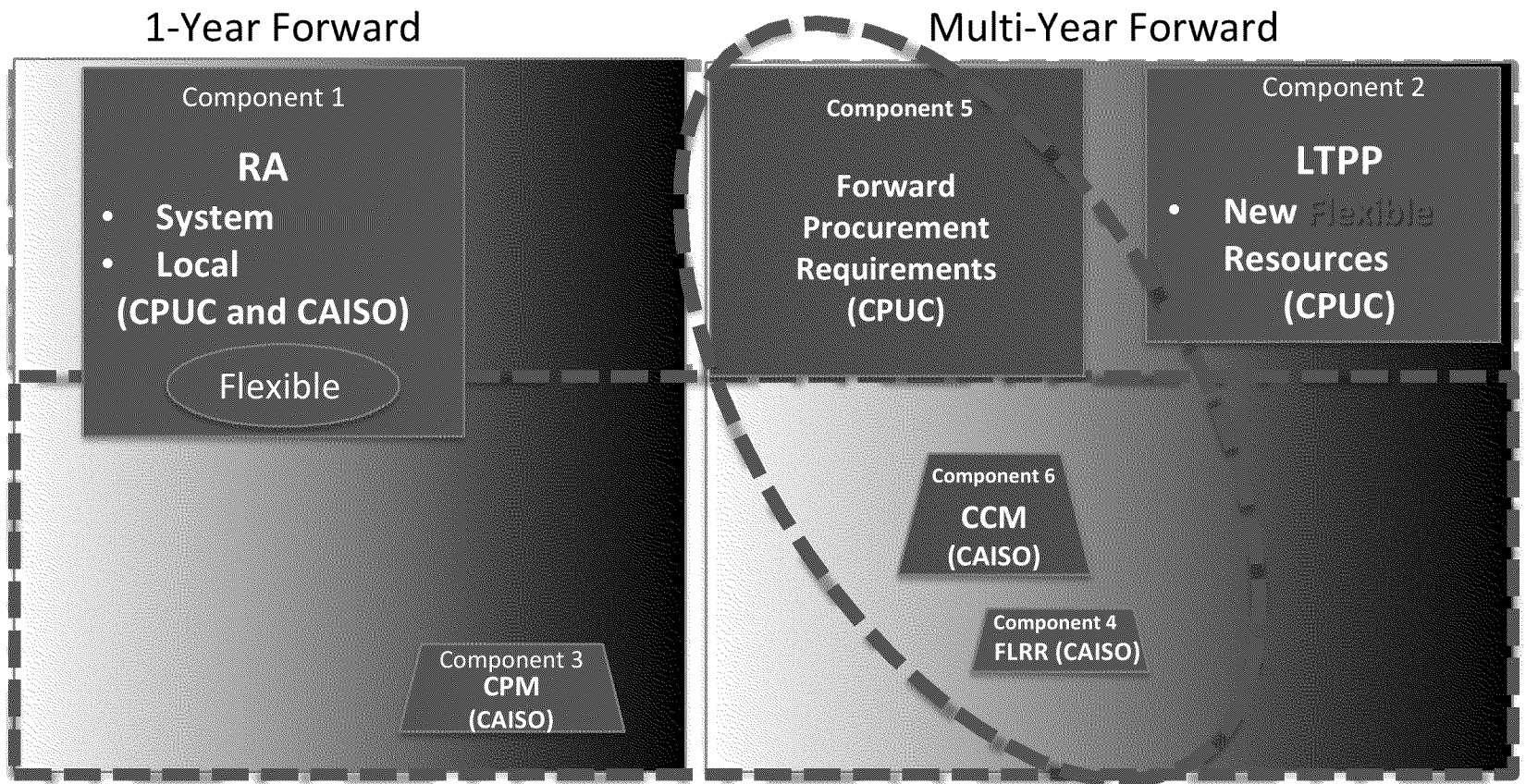
# Comprehensive Procurement Framework: Designing the Missing Mechanism Sizes of Market Vary



**CPUC Forward Procurement Requirements and CAISO-run Centralized Capacity Market are used in tandem to achieve the gamut of policy objectives**



# Comprehensive Procurement Framework: Designing the Missing Mechanism Summary: 6 Components



**KEY:**

- Existing
- Implementing
- In Discussions
- CPUC
- FERC

**CPUC uses RA, LTPP, & forward procurement to ensure reliability, preferred resources, and reasonable ratepayer cost.. While CAISO uses CPM, CCM, and FLRR to ensure reliability through residual procurement**

# Comprehensive Procurement Framework Satisfies All Policy Objectives

| Design Components |   | Jurisdiction | Reliability |       |          | Cost                     |                   | Generation |     |           |
|-------------------|---|--------------|-------------|-------|----------|--------------------------|-------------------|------------|-----|-----------|
|                   |   |              | System      | Local | Flexible | Reasonable Customer Cost | Proper Allocation | Existing   | New | Preferred |
| 1                 | 1-YR RA                                 | CPUC         | ✓           | ✓     | ✓        | ✓                        | ✓                 | ✓          |     |           |
| 2                 | 10-YR LTPP                              | CPUC         | ✓           | ✓     | ✓        | ✓                        |                   |            | ✓   | ✓         |
| 3                 | ≤1-YR CPM                               | CAISO        | ✓           | ✓     | ✓        |                          | ✓                 | ✓          |     |           |
| 4                 | 5-YR FLRR                               | CAISO        | ✓           | ✓     | ✓        |                          | ✓                 | ✓          |     |           |
| 5                 | 3-5-YR Forward Procurement Requirements | CPUC         | ✓           | ✓     | ✓        | ✓                        |                   | ✓          |     | ✓         |
| 6                 | 3-5-YR Centralized Capacity Auction     | CAISO        | ✓           | ✓     | ✓        |                          | ✓                 | ✓          |     |           |

**Driving towards high reliability, affordability for customers, and continued support for environmental policies**