# 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



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# What is a Capacity Market?

| Capacity Market | Energy Markets | | |
|---|---|---|---|
| | Day- Ahead | Real- Time | Ancillary Services |
| Resources Reserved for Future Need | Daily Planning & Optimization | | Quick Fixes |

**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



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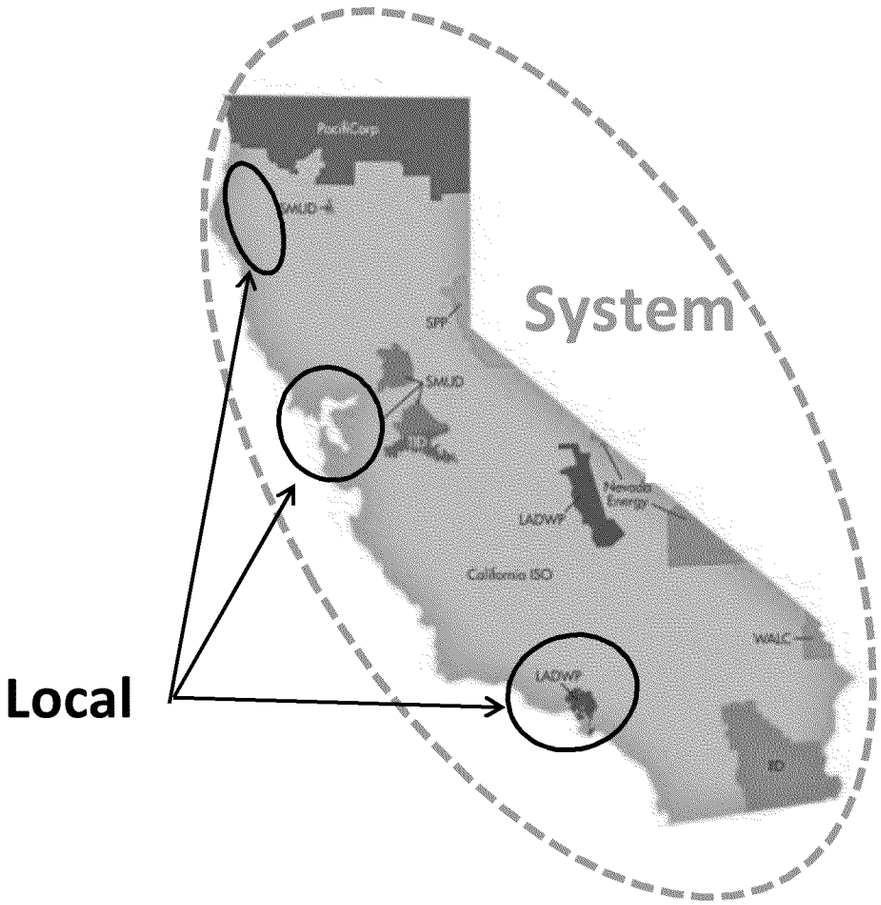
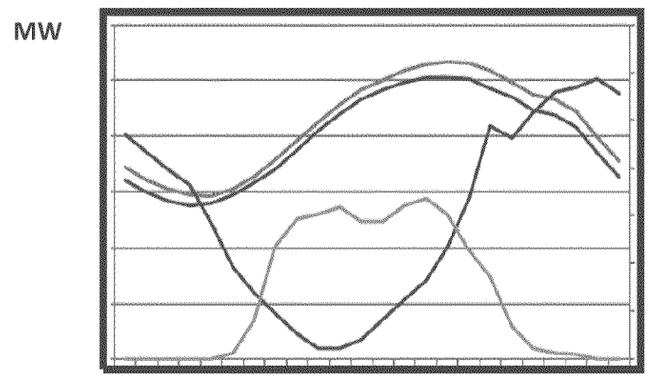
# California Has Three Types of Capacity Products:

## System, Local, and Flexible



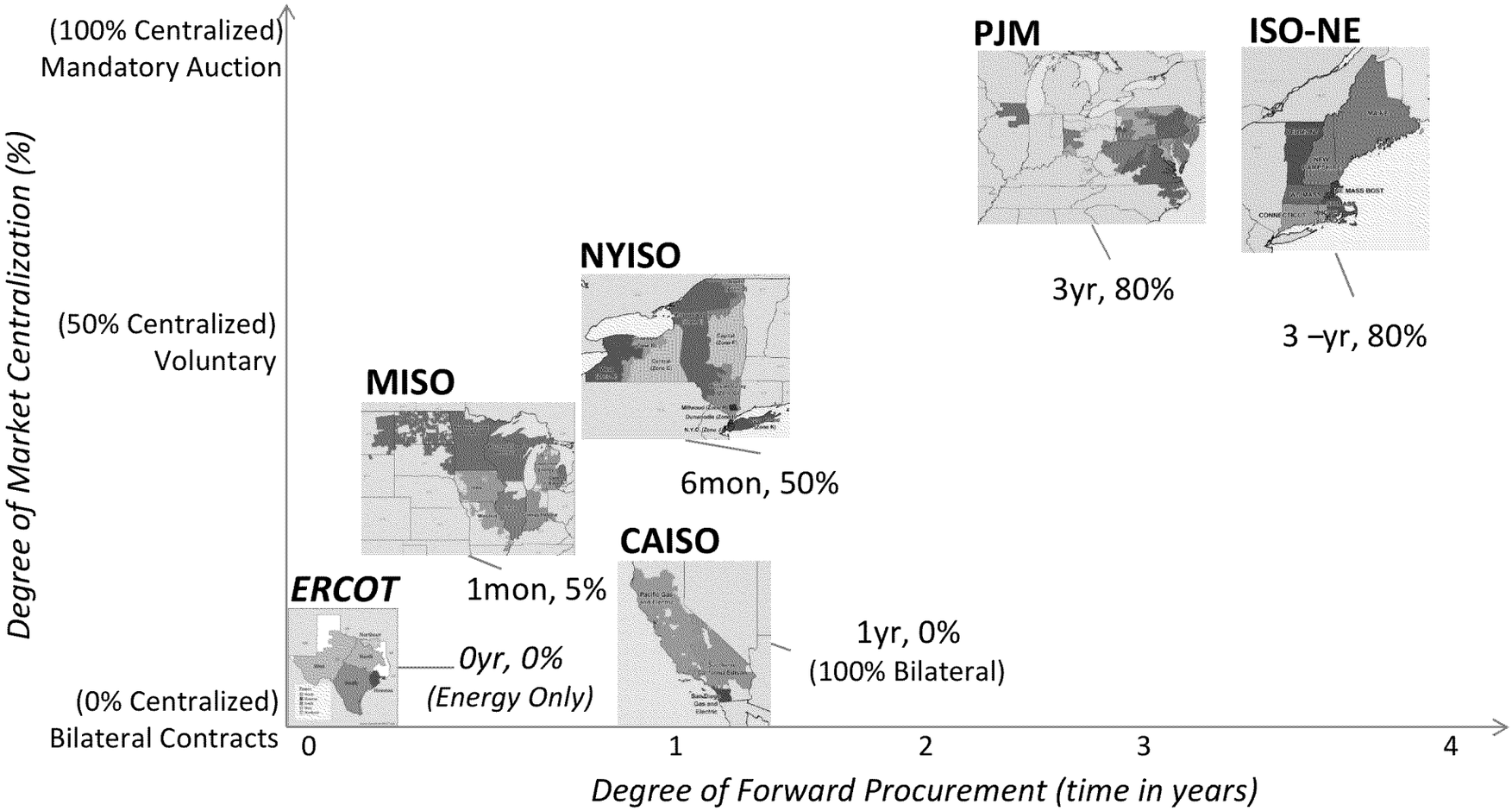

**Flexible**




*Variability of supply over time*

**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**



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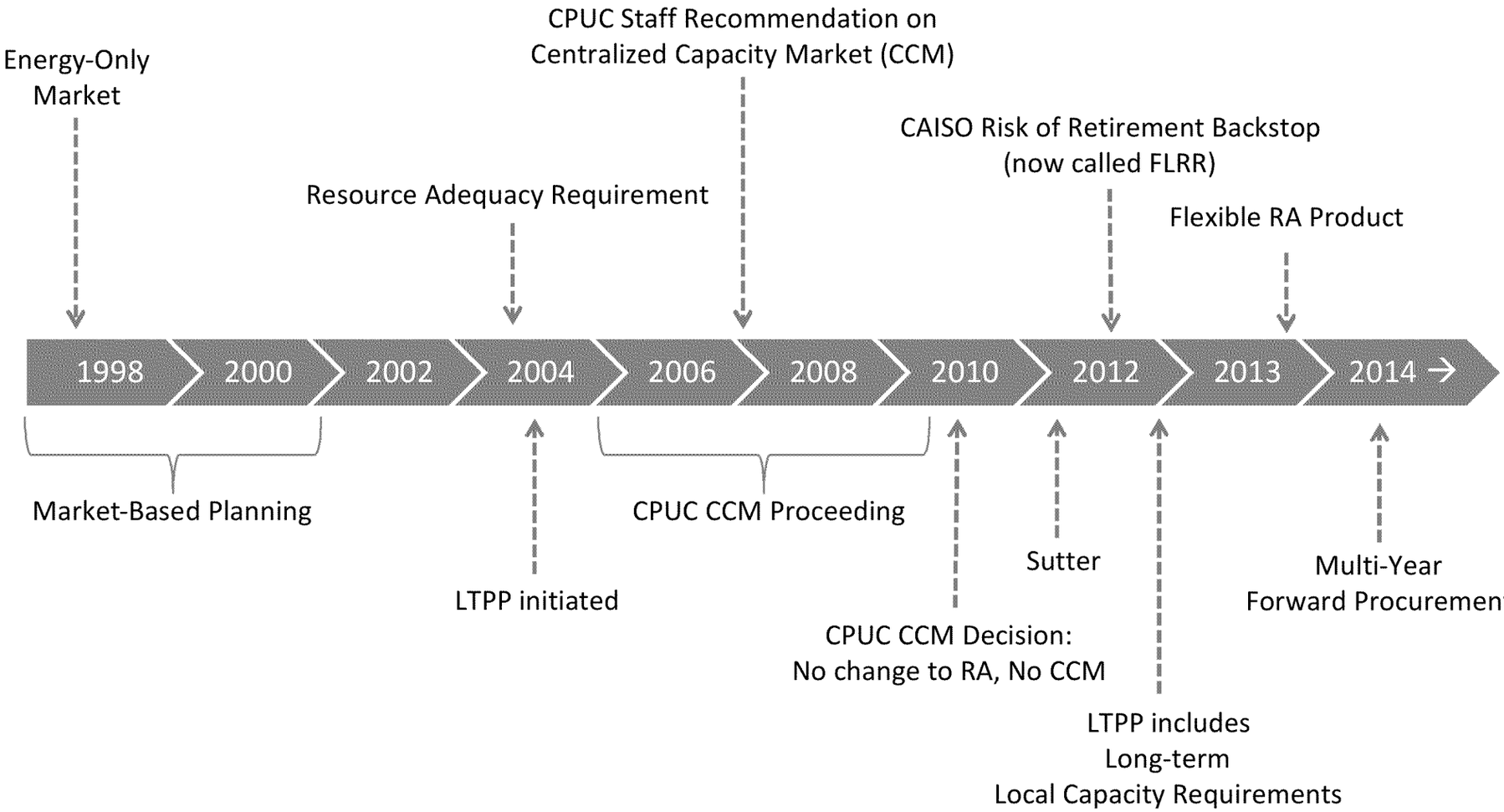
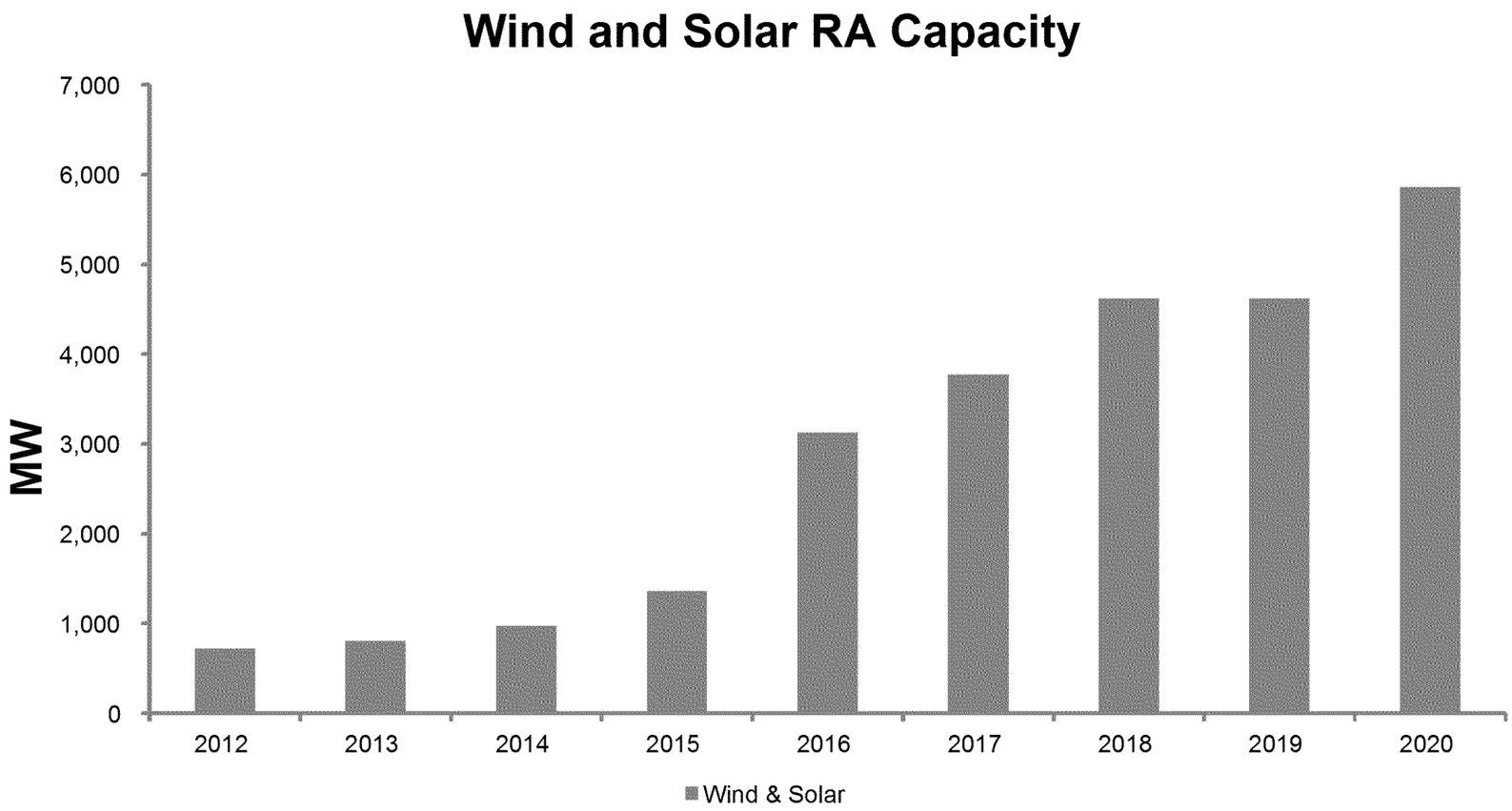
# Forward Capacity Procurement: California's History



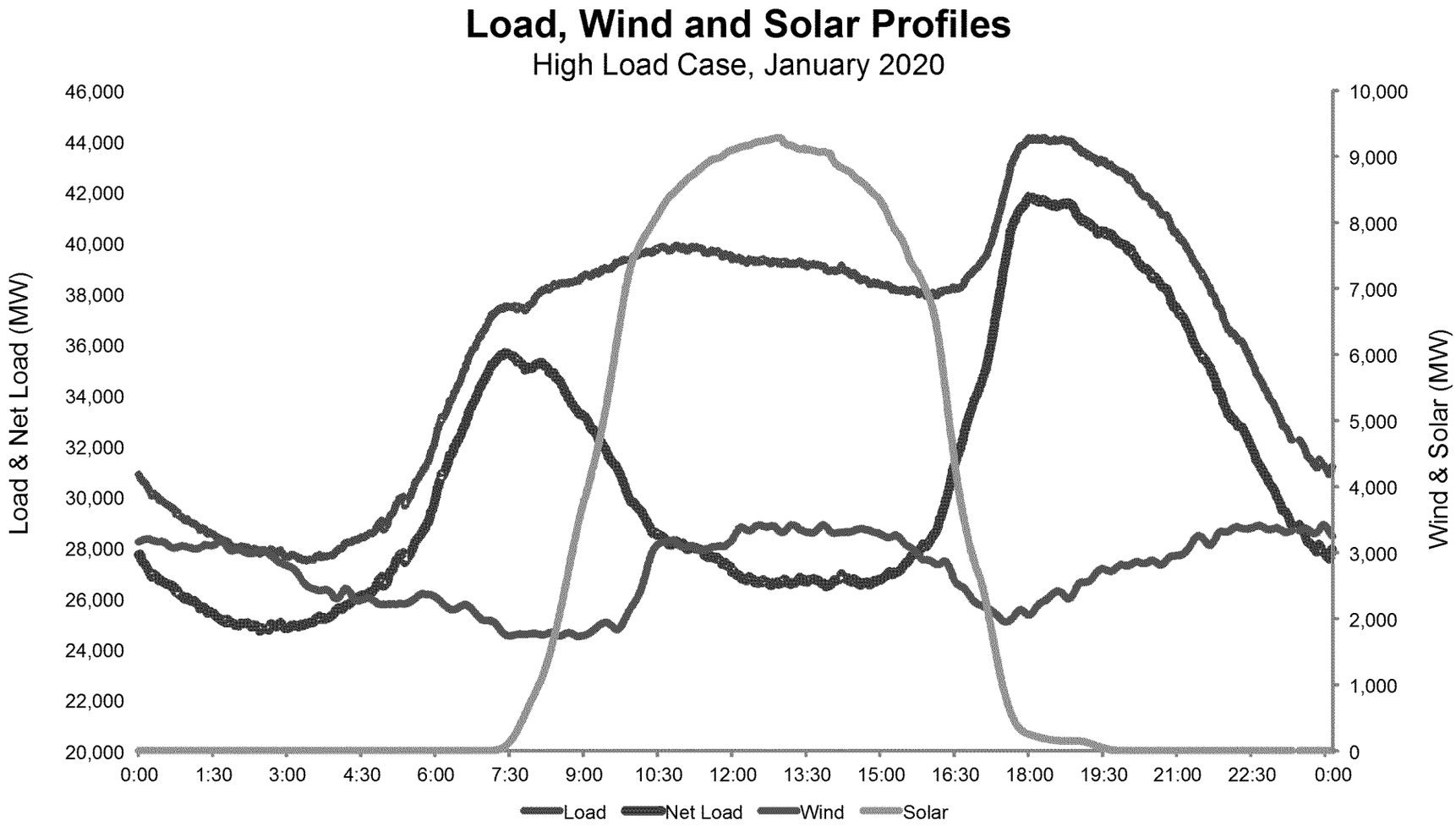

**California has been considering forward capacity procurement since 2004**

# New Issue 1:
# High Amount of Intermittent Renewables



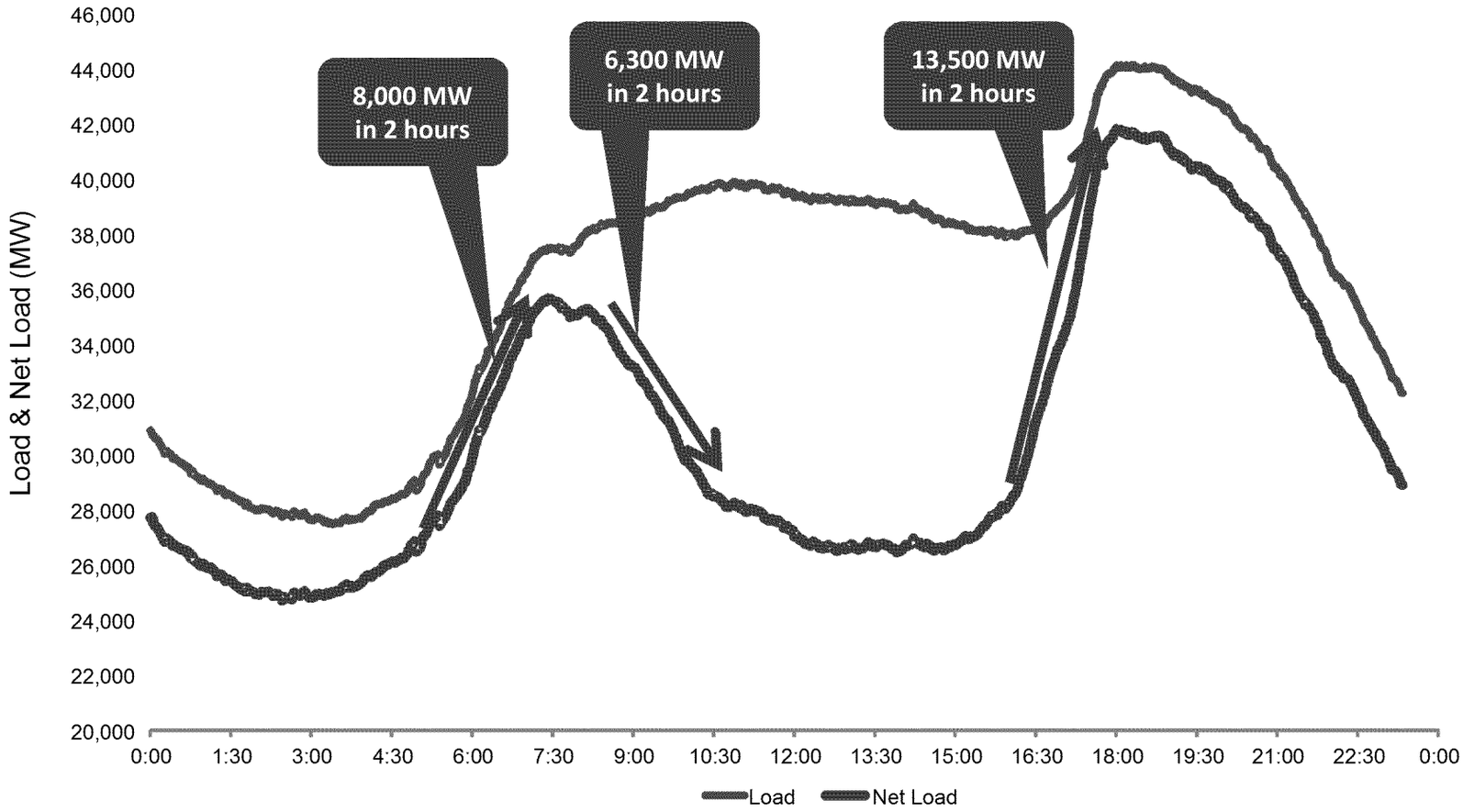

**As high amounts of intermittent renewables come on line, the need for flexible resources increases**

# Changes in Net Load Shape




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

# Changing Load Shape Drives Flexible Resource Need




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



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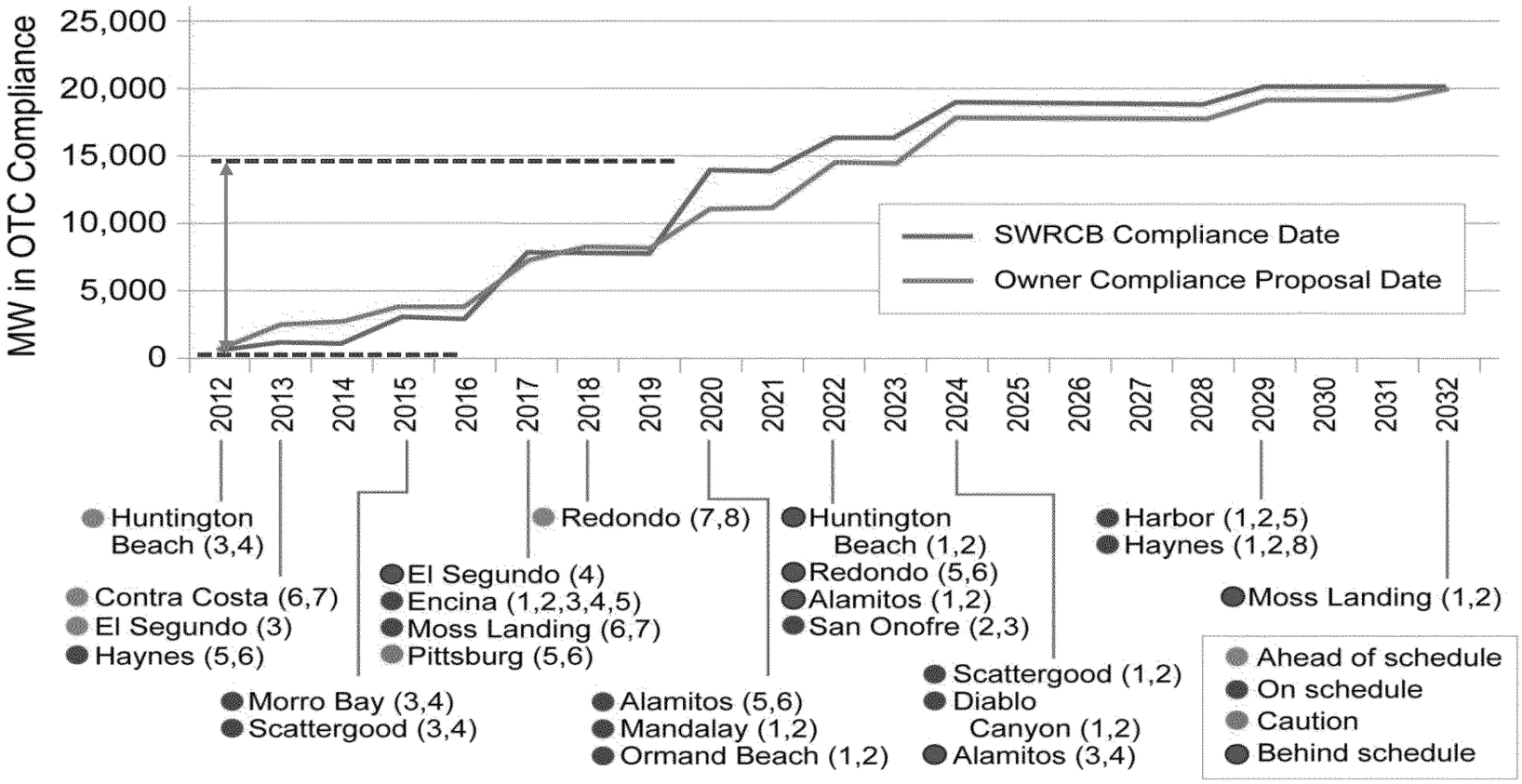
# New Issue 2: OTC Retirements




*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**



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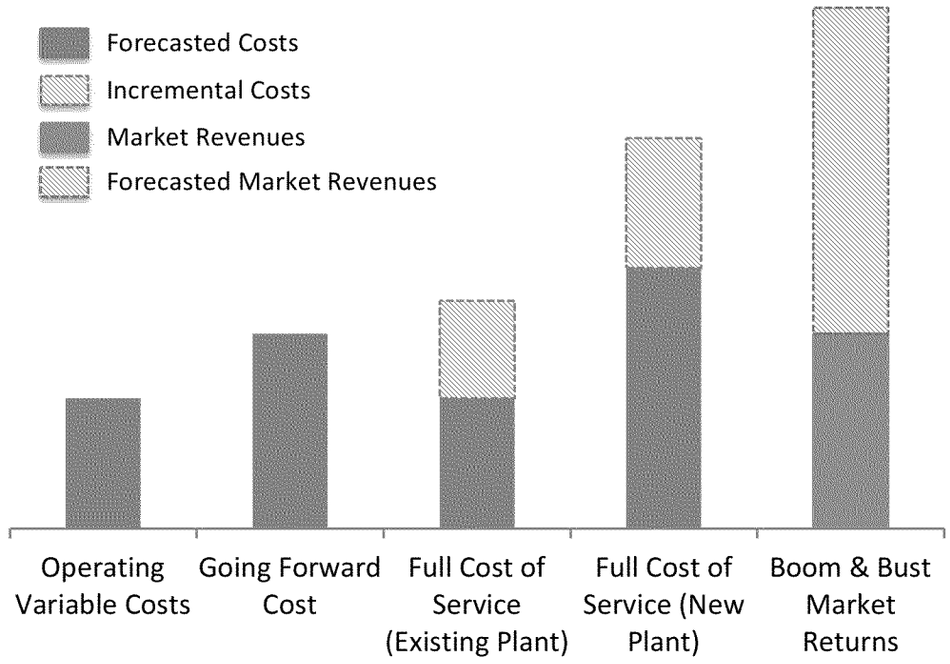
# New Issue 3:
# Insufficient Market Revenues for Flexible Resources

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

**Illustrative Representation of Insufficient Revenues**




**Current situation is unsustainable:**

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



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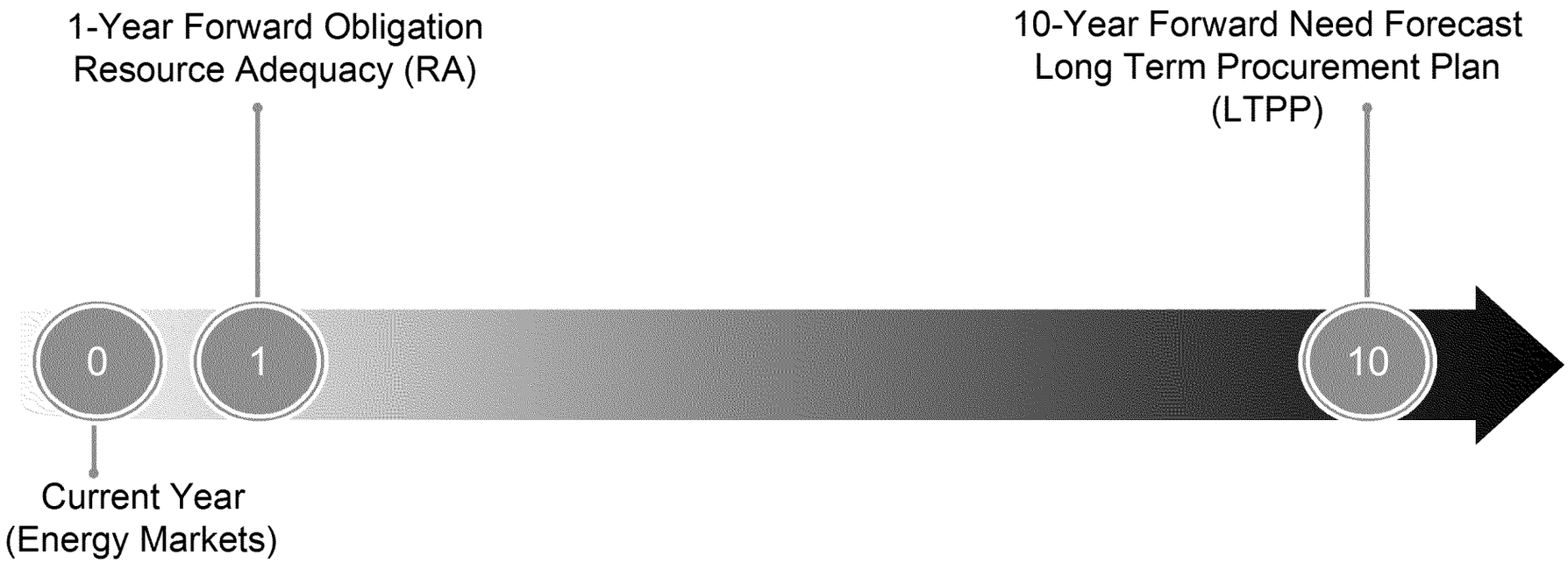
# Currently, California Has 2-Part Regime for Capacity




**Current Procurement Process works for:**

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



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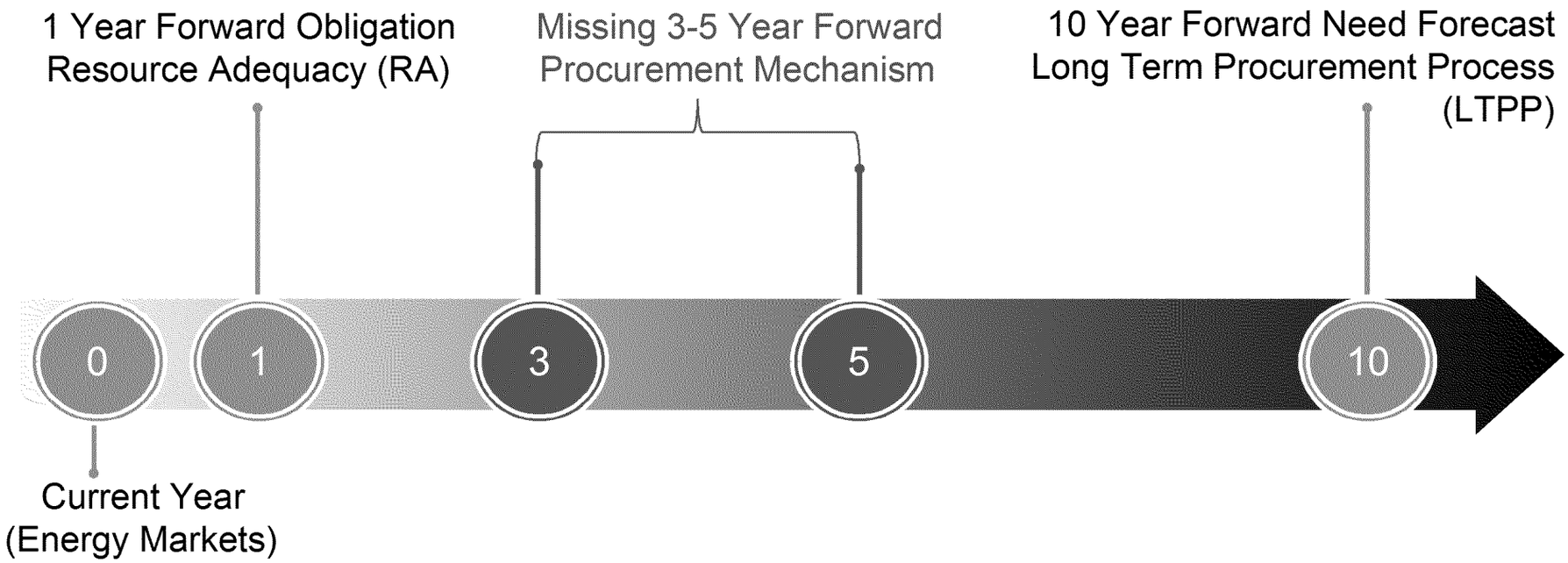
# Gap in Intermediate Term




**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



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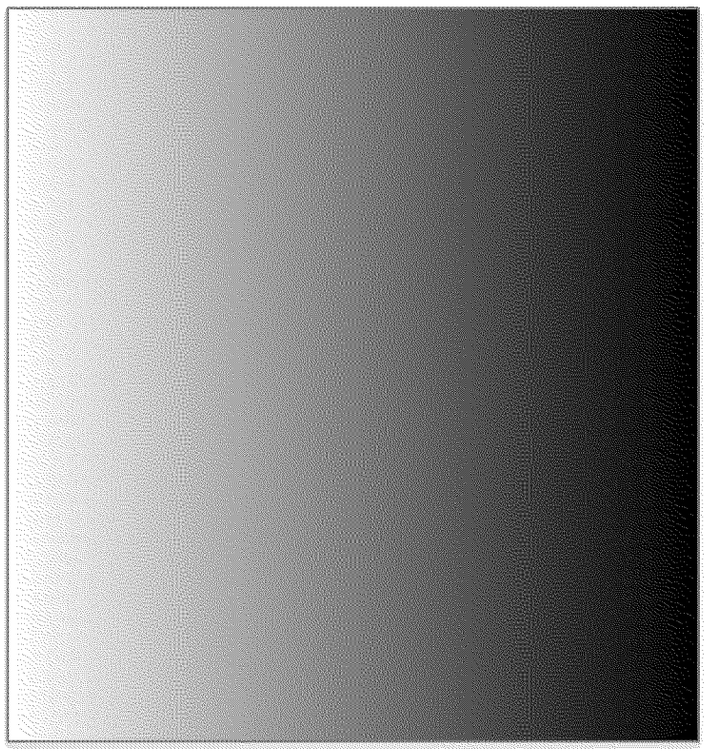
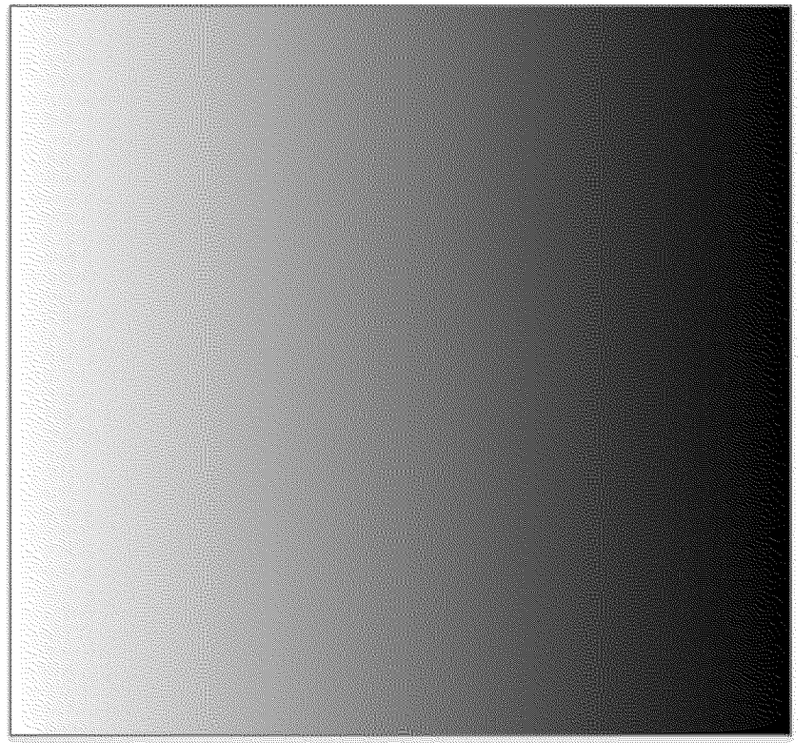
# Comprehensive Procurement Framework Consists of the Current Regime + Future Components

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)



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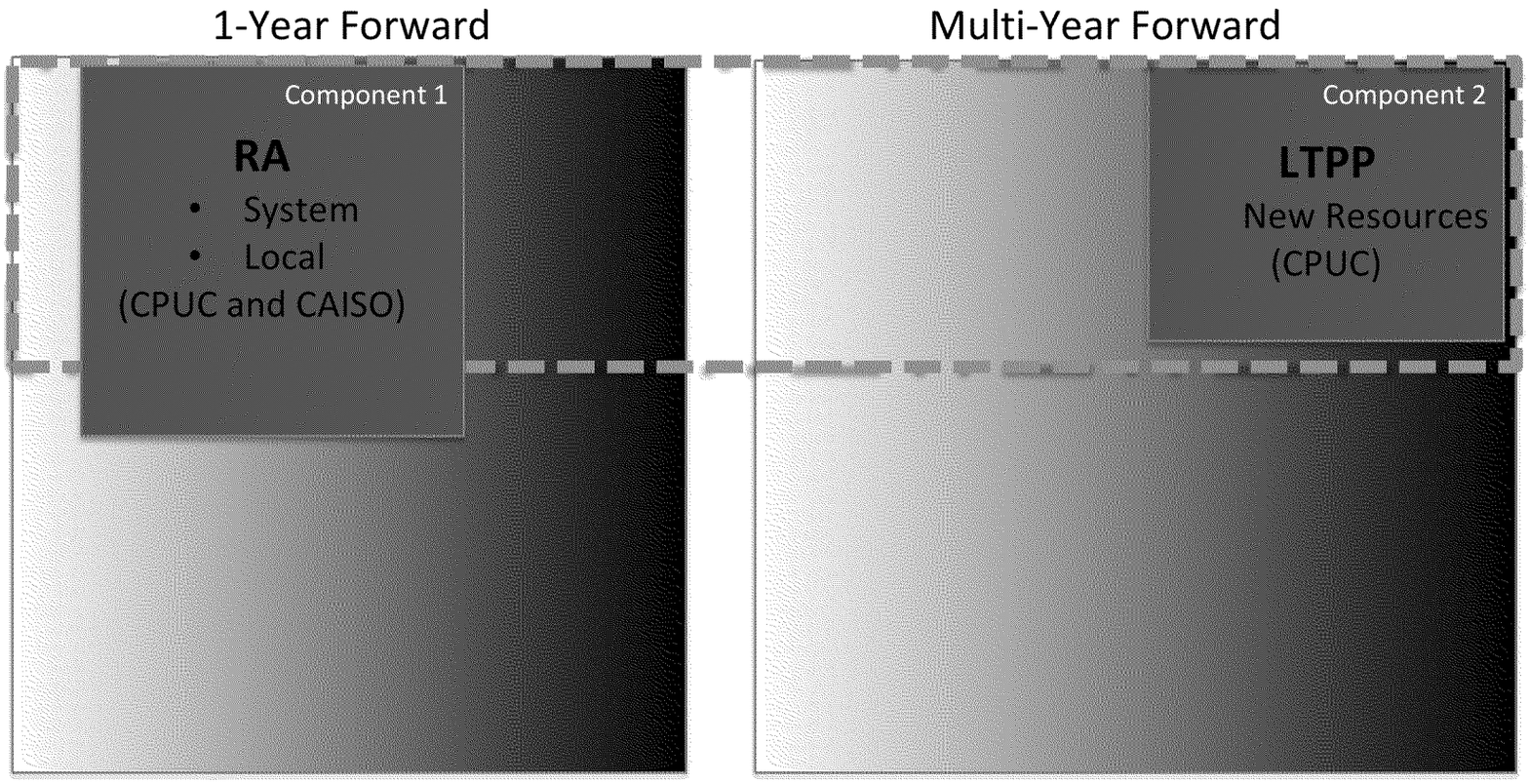
# Comprehensive Procurement Framework

## The Existing 2-Part Regime




KEY:

Existing

CPUC jurisdiction

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



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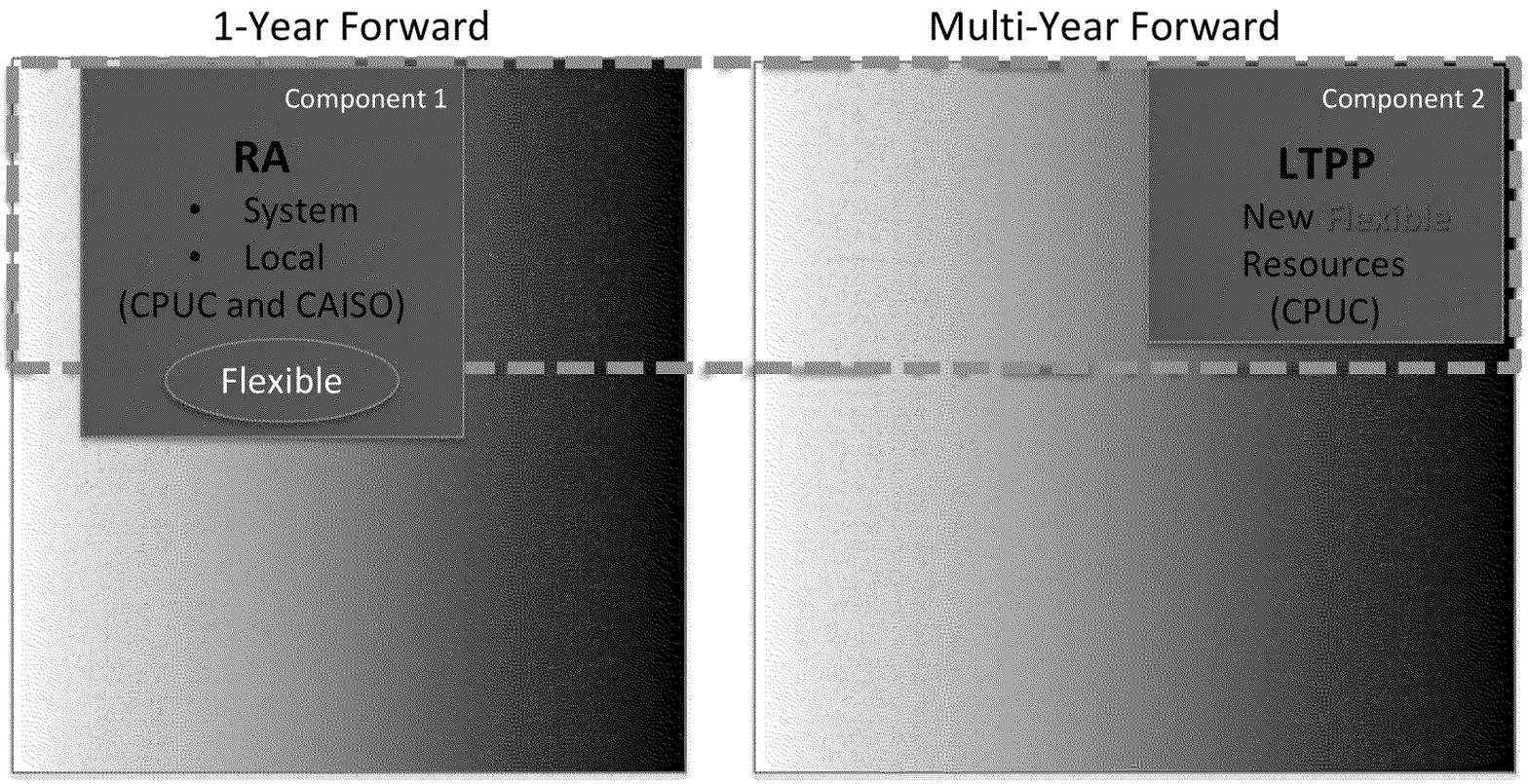
# Comprehensive Procurement Framework

## 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**



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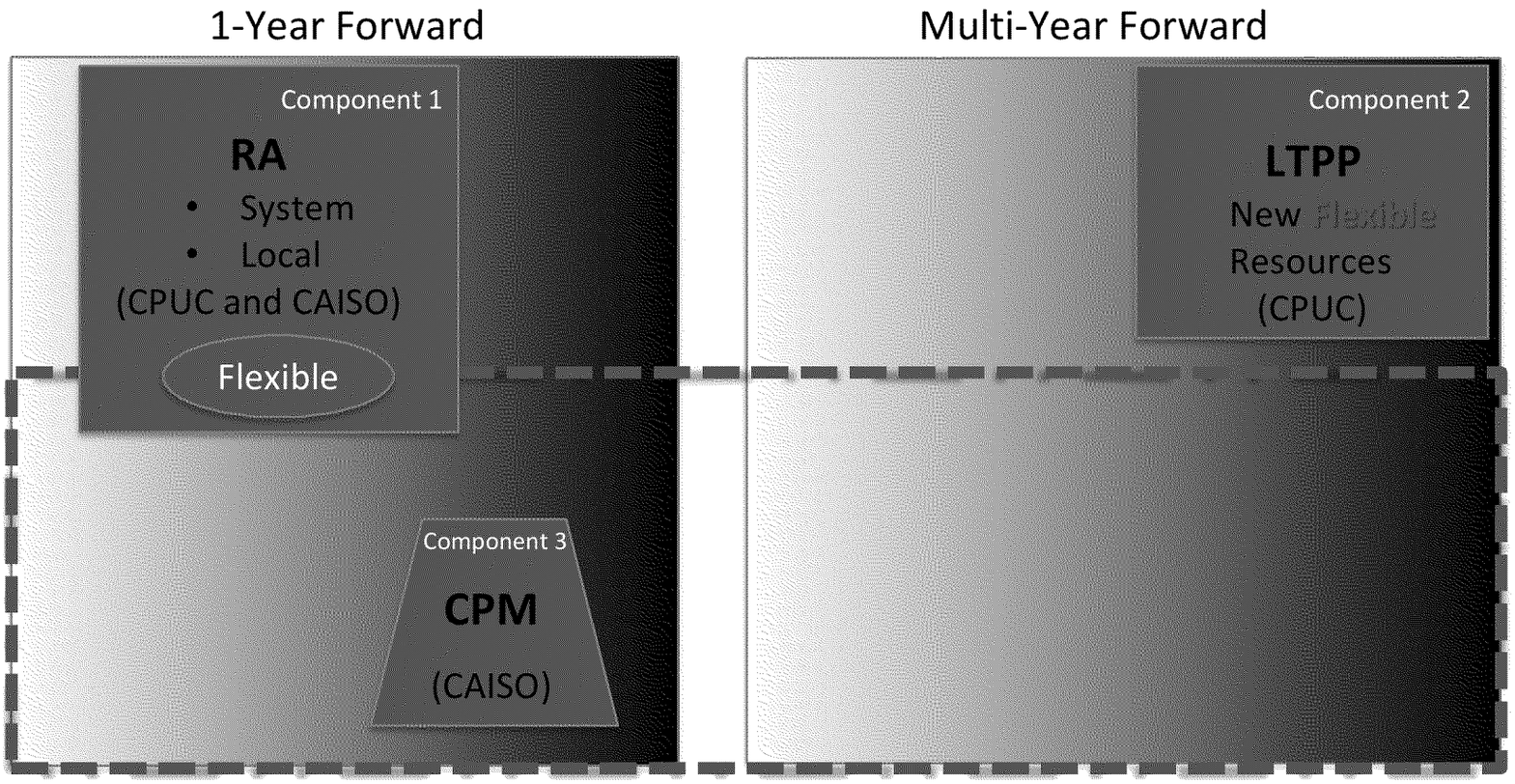
# Comprehensive Procurement Framework

## 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.**



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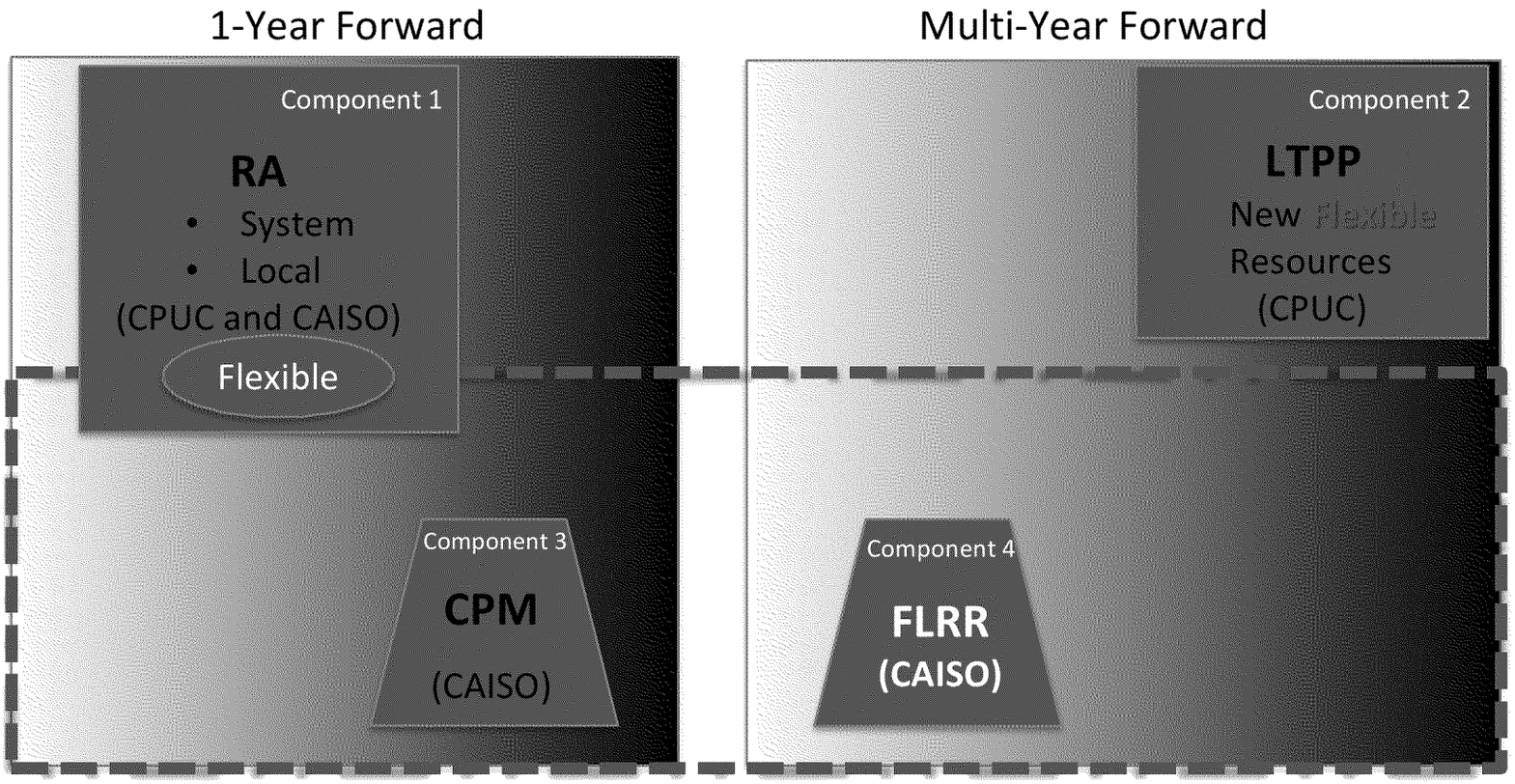
# Comprehensive Procurement Framework

## 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.**



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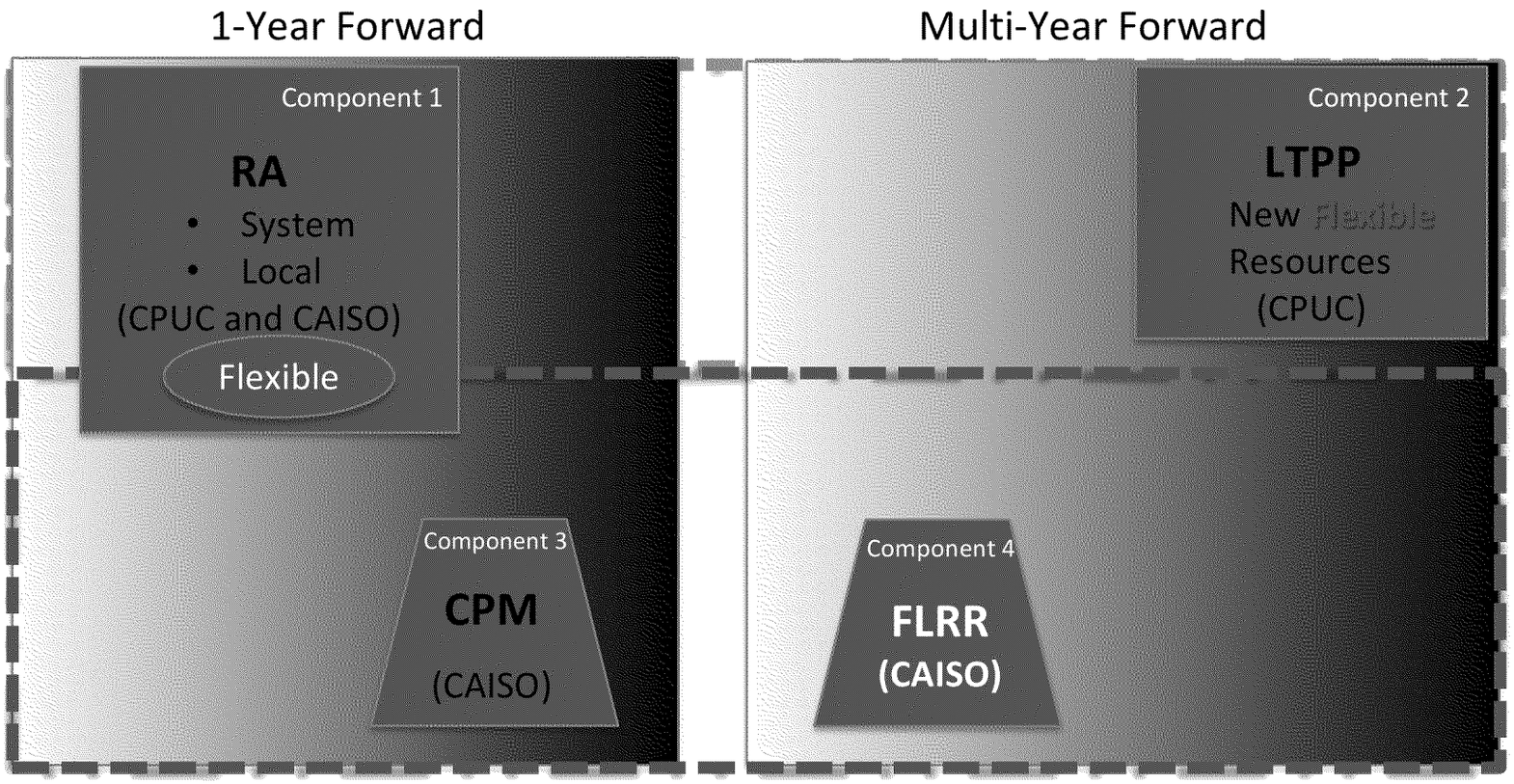
# 4-Component Design Achieves Reliability, But Ratepayer Cost is Questionable




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?**



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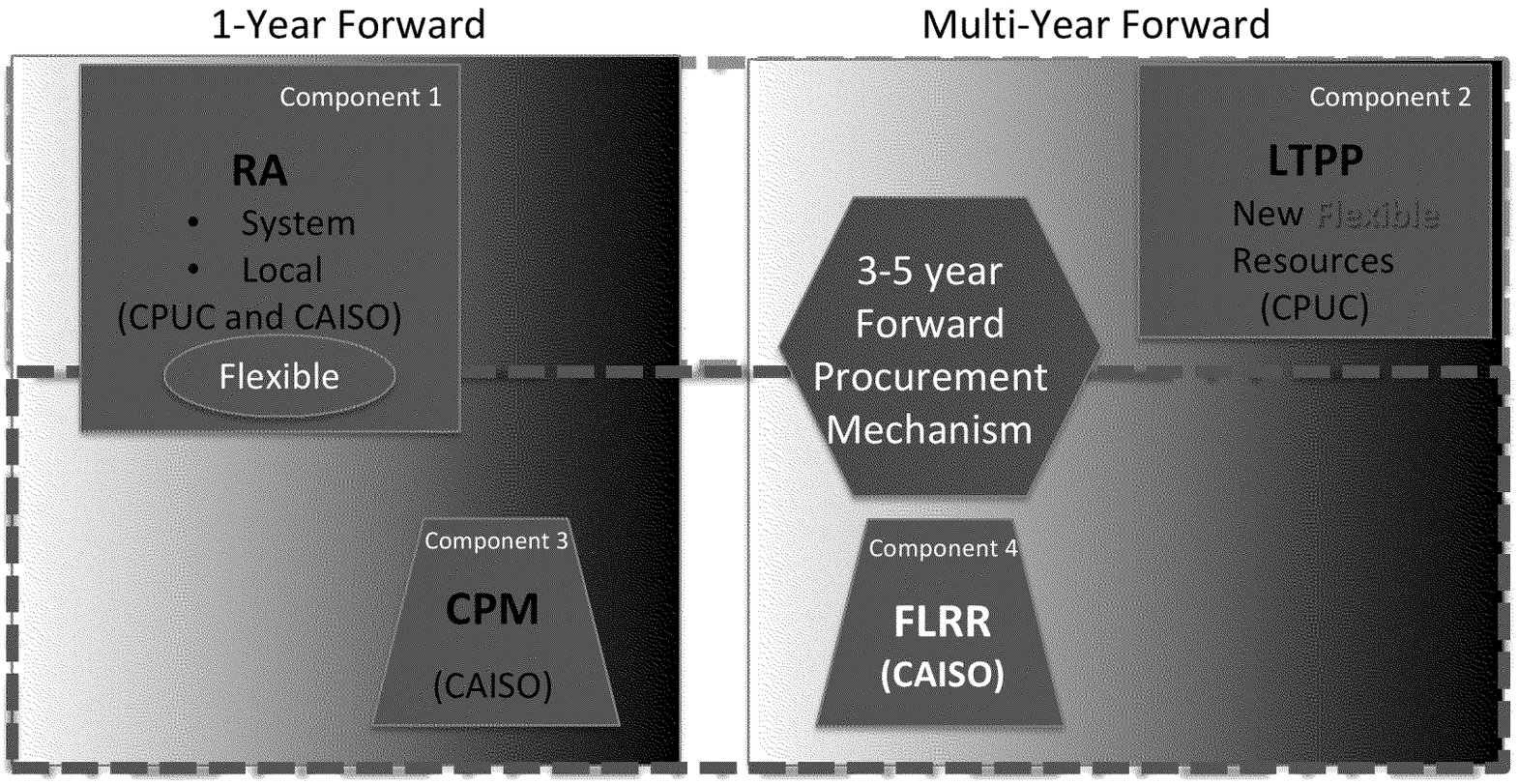
# Comprehensive Procurement Framework

## Competitive Procurement Keeps Costs Reasonable




KEY:

- Existing
- Implementing
- In Discussions
- CPUC
- FERC

**The next step is to introduce competitive procurement for 3-5 years forward, to keep procurement costs reasonable.**



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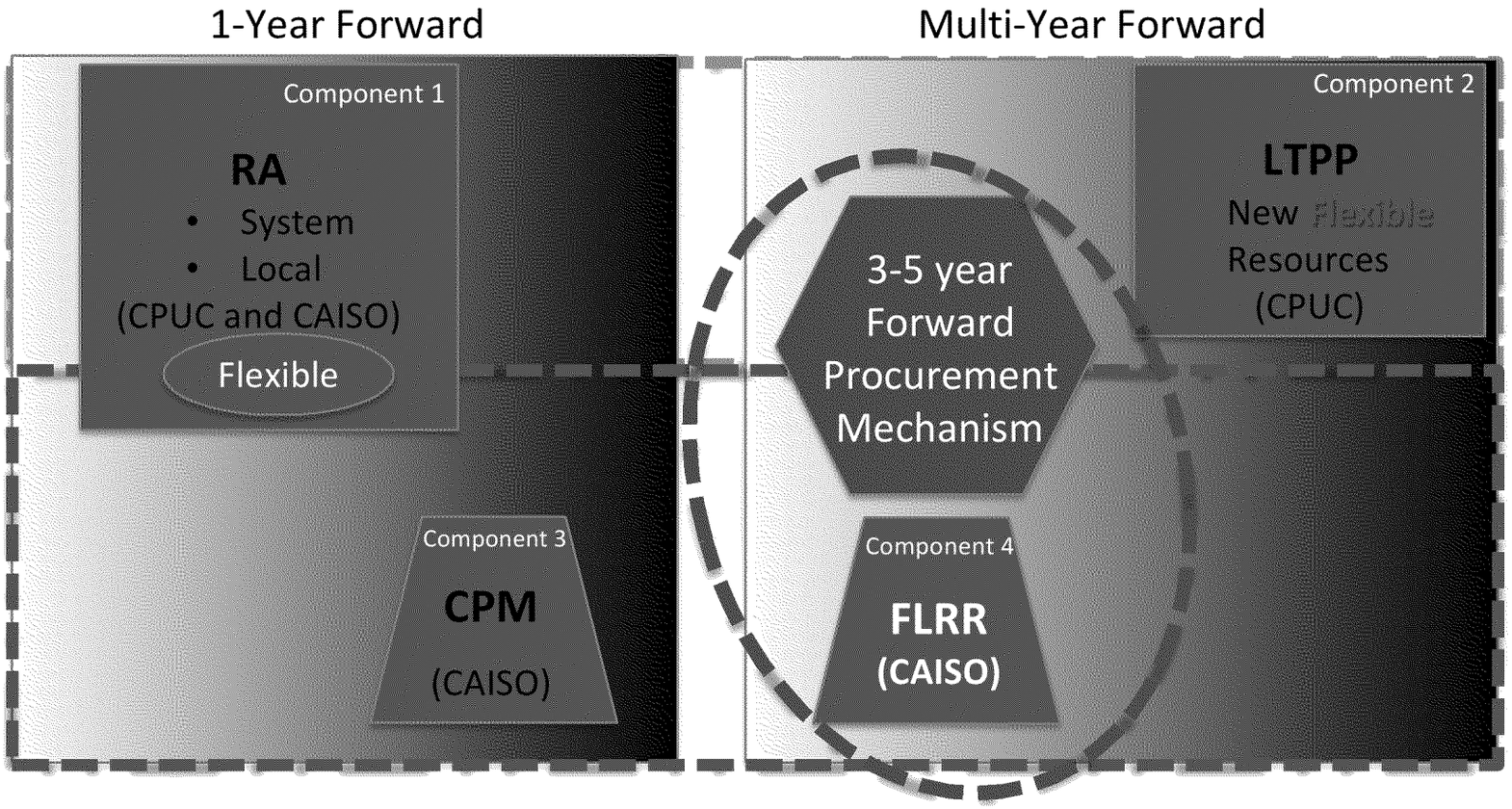
# Coordination Challenge in Designing the Missing Mechanism




KEY:

- Existing
- Implementing
- In Discussions
- CPUC
- FERC

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



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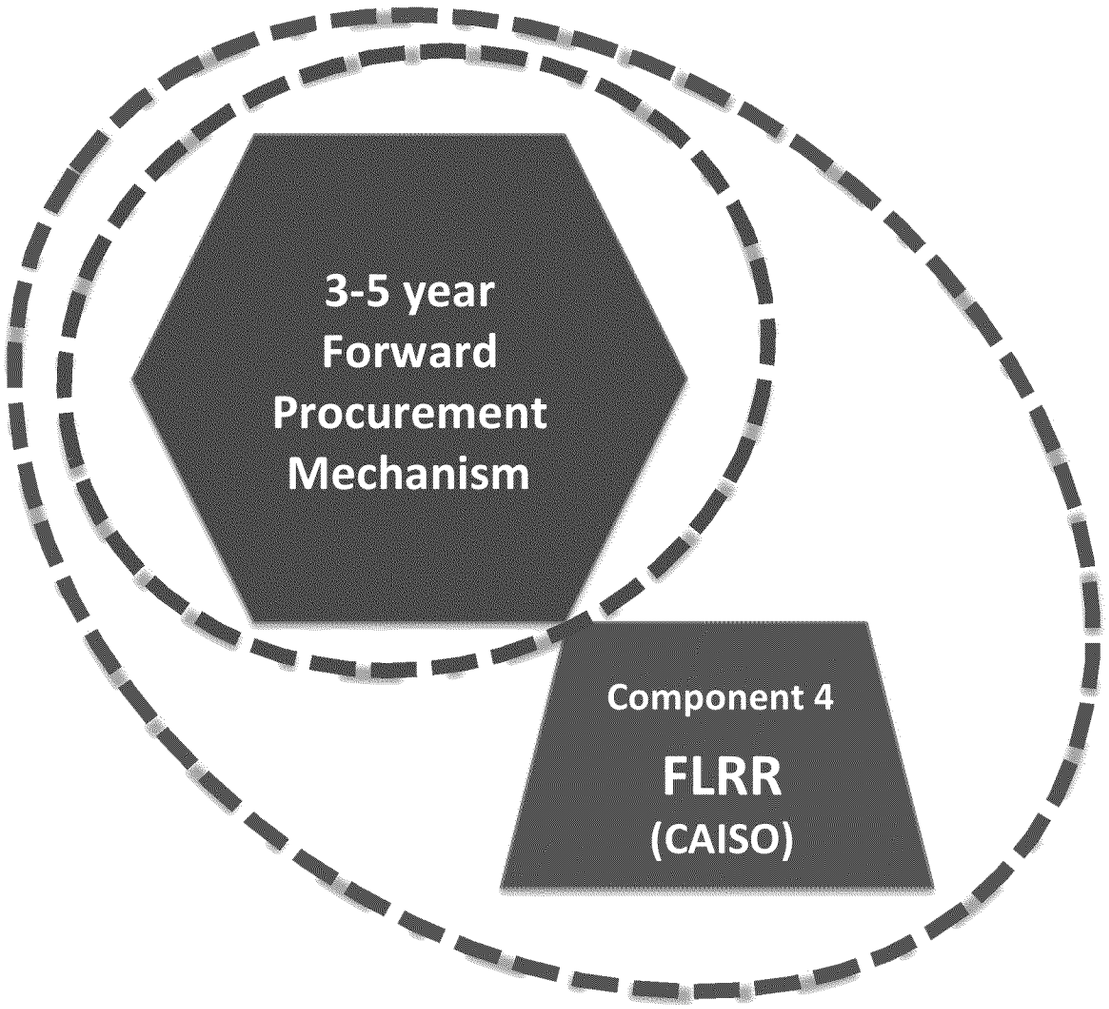
# Comprehensive Procurement Framework: Designing the Missing Mechanism

## 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).**



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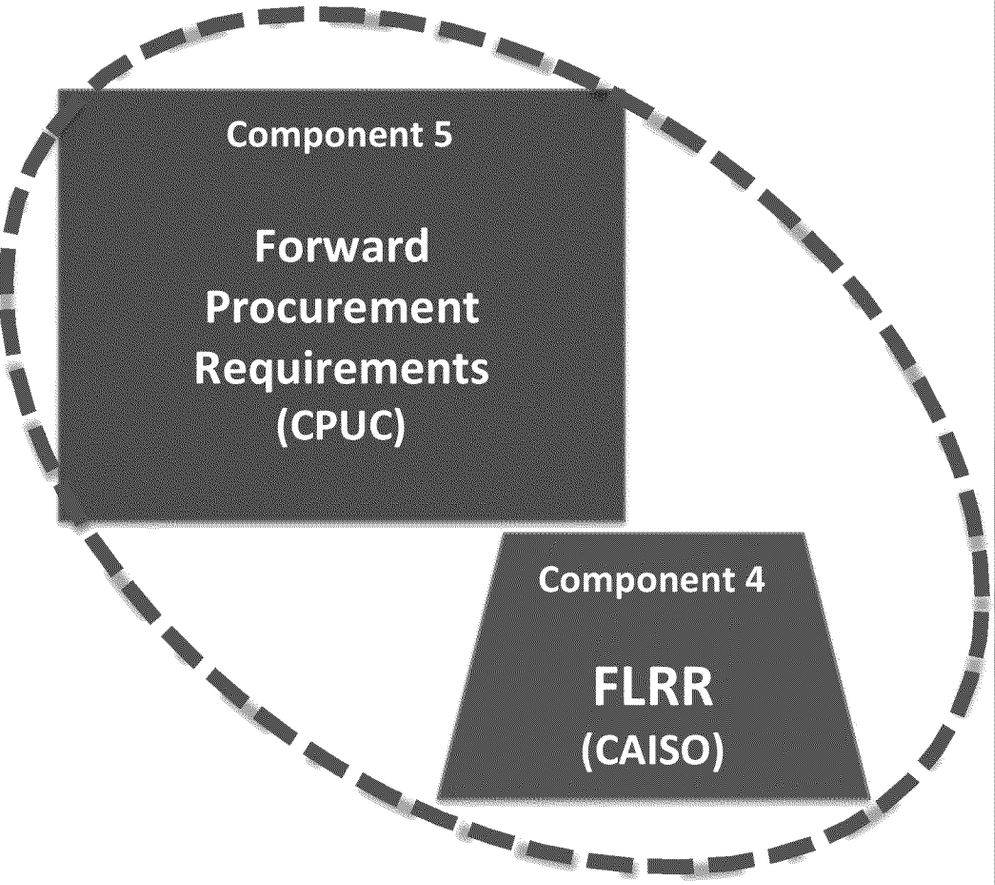
# Comprehensive Procurement Framework: Designing the Missing Mechanism

## 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?



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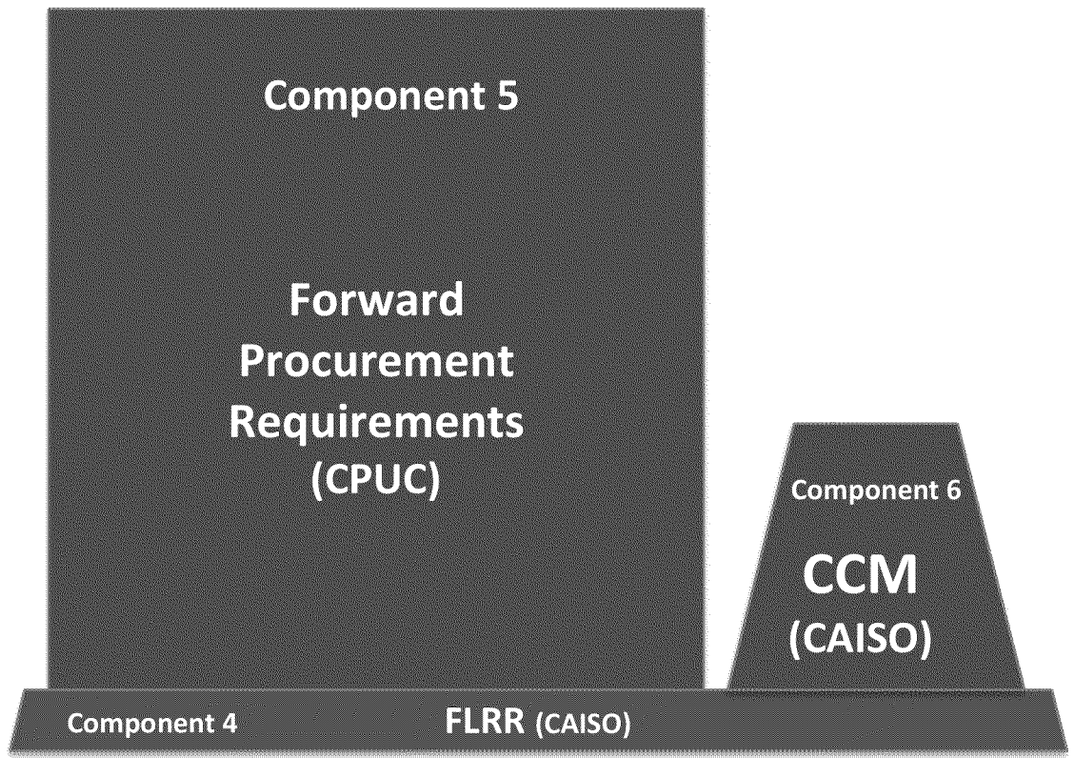
# Comprehensive Procurement Framework: Designing the Missing Mechanism

## 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**



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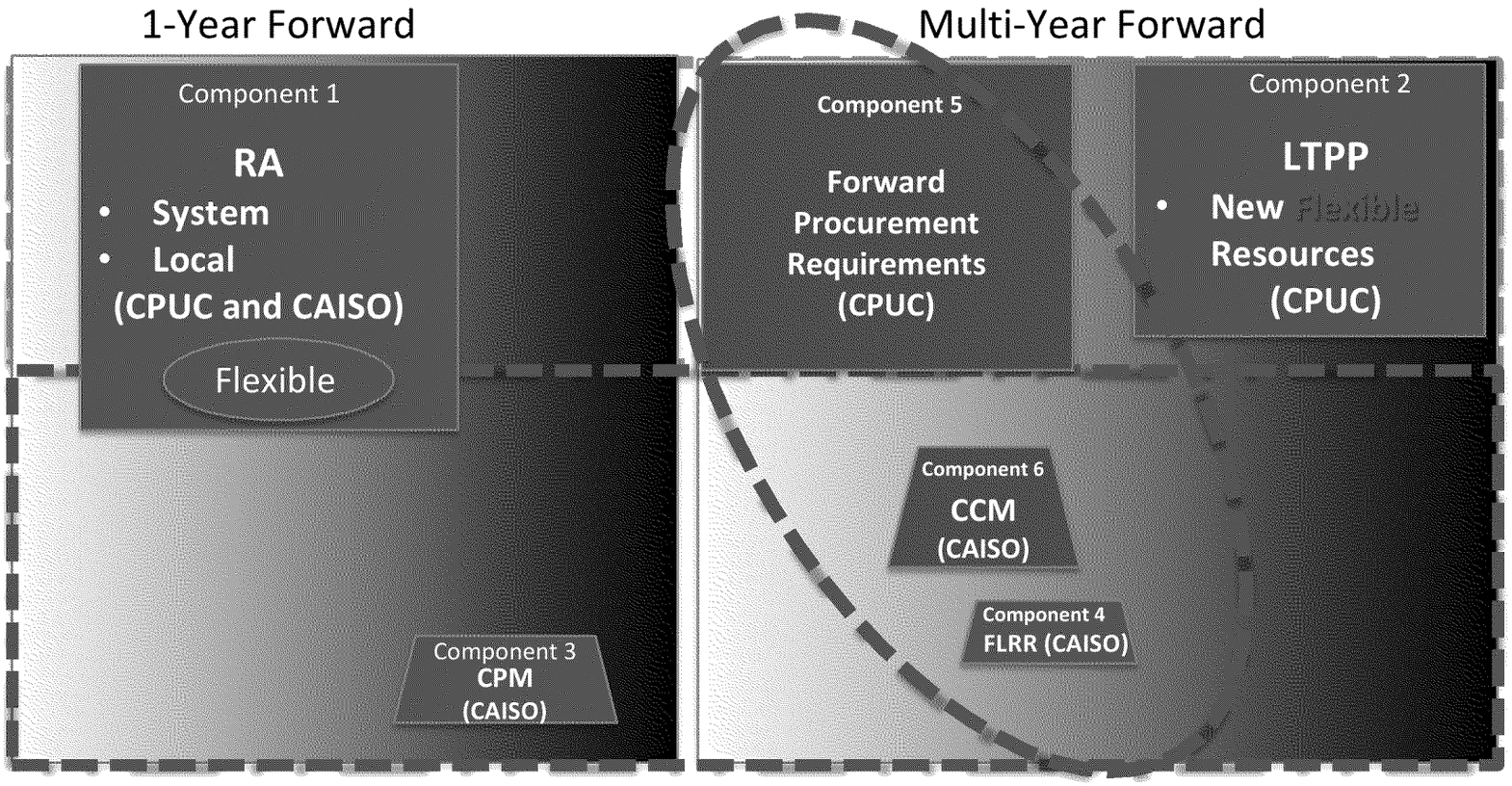
# Comprehensive Procurement Framework: Designing the Missing Mechanism

## 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**



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# Comprehensive Procurement Framework Satisfies All Policy Objectives

| | | | Reliability | | | Cost | | Generation | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Design Components | | Jurisdiction | 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**



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