



California ISO

# Storage as a Transmission Asset:

*Enabling storage assets providing regulated cost-of-service-based transmission service to access market revenues*

## Cost Recovery Mechanisms

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Scope: If storage is selected for cost-of-service based transmission service, how can that resource also provide market services to reduce costs to ratepayers?

- Initiative will consider:
  - Storage resources providing reliability-based transmission services, economic, and policy projects
  - Indifferent to transmission or distribution connection
- Issues outside the scope of this initiative:
  - The TPP evaluation methodologies
  - The framework for competitive solicitation and the applicability of the ISO's current competitive solicitation framework
  - Cost allocation of the cost-based revenue requirements for rate-based assets
  - Resource adequacy value

## Storage, to be a Transmission Asset as a subset of Advanced Transmission Technologies must:

- Provide a transmission service (e.g., voltage support, mitigate thermal overloads)
- Meet an ISO-determined need under the tariff (reliability, economic, public policy)
- Be the more efficient or cost-effective solution to meet the identified need
- “Increase the capacity, efficiency, or reliability of an existing or new transmission facility”
- Be subject to competitive solicitation if it is a regional transmission facility

The ISO seeks MSC input on three cost recovery options for regional SATA projects that are currently being explored

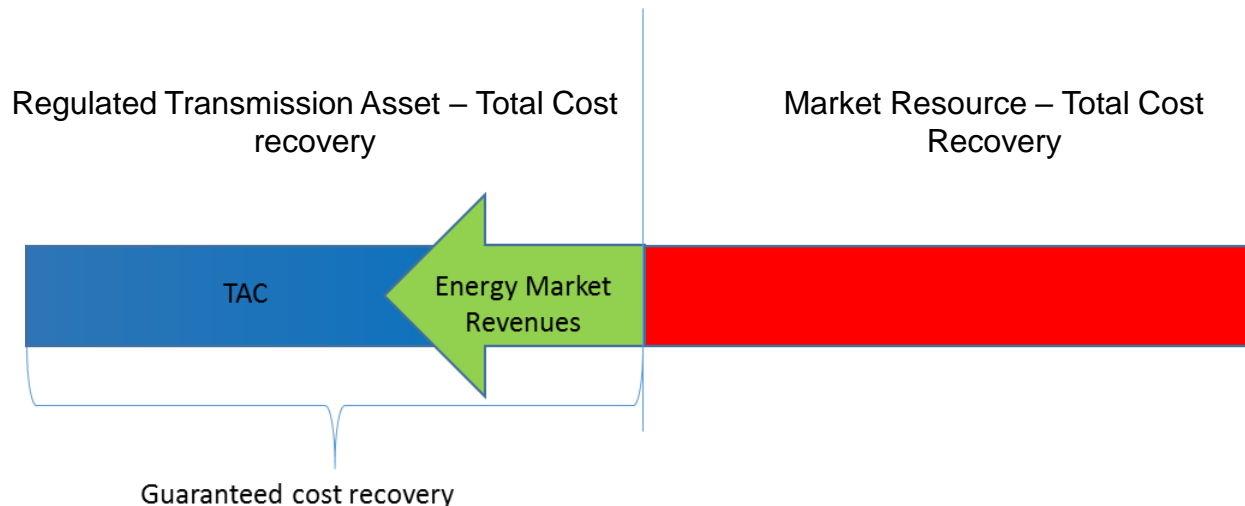
1. Full cost-of-service based cost recovery with complete energy market crediting to ratepayer
2. Partial cost-of-service based cost recovery and retain energy market revenues
3. Full cost-of-service recovery with partial market revenue sharing between owner and ratepayer

Market services must not conflict with the fundamental reliability purpose for which the resource was selected in the TPP

Local projects may only use full cost-of-service options (1 & 3) because they are not eligible for competitive solicitation process

# Full cost-of-service based cost recovery with energy market crediting ensures that a resource's TRR is covered through TAC

- Any revenue received from market services would be treated as a revenue offset
  - Reduces the revenues otherwise required through TAC

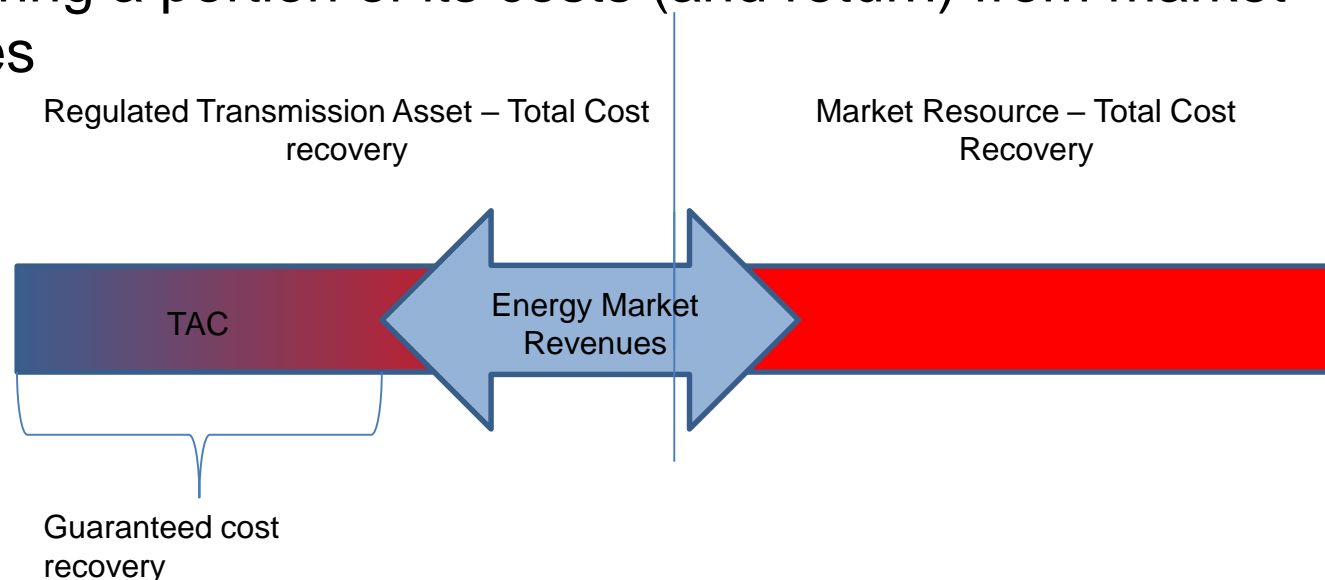


Resources must be available to meet identified need, but still participate in the market to the extent possible

- ISO does not need to provide any additional compensation to the SATA resource if conditions change opportunities for market participation
- Resources will not have any specified must-offer obligation
  - As a result, and as a starting point, the ISO will assume zero market participation in the assessment of alternative projects

Partial cost-of-service with no energy market crediting ensures that a portion resource's total costs are covered, the remainder is recovered through market

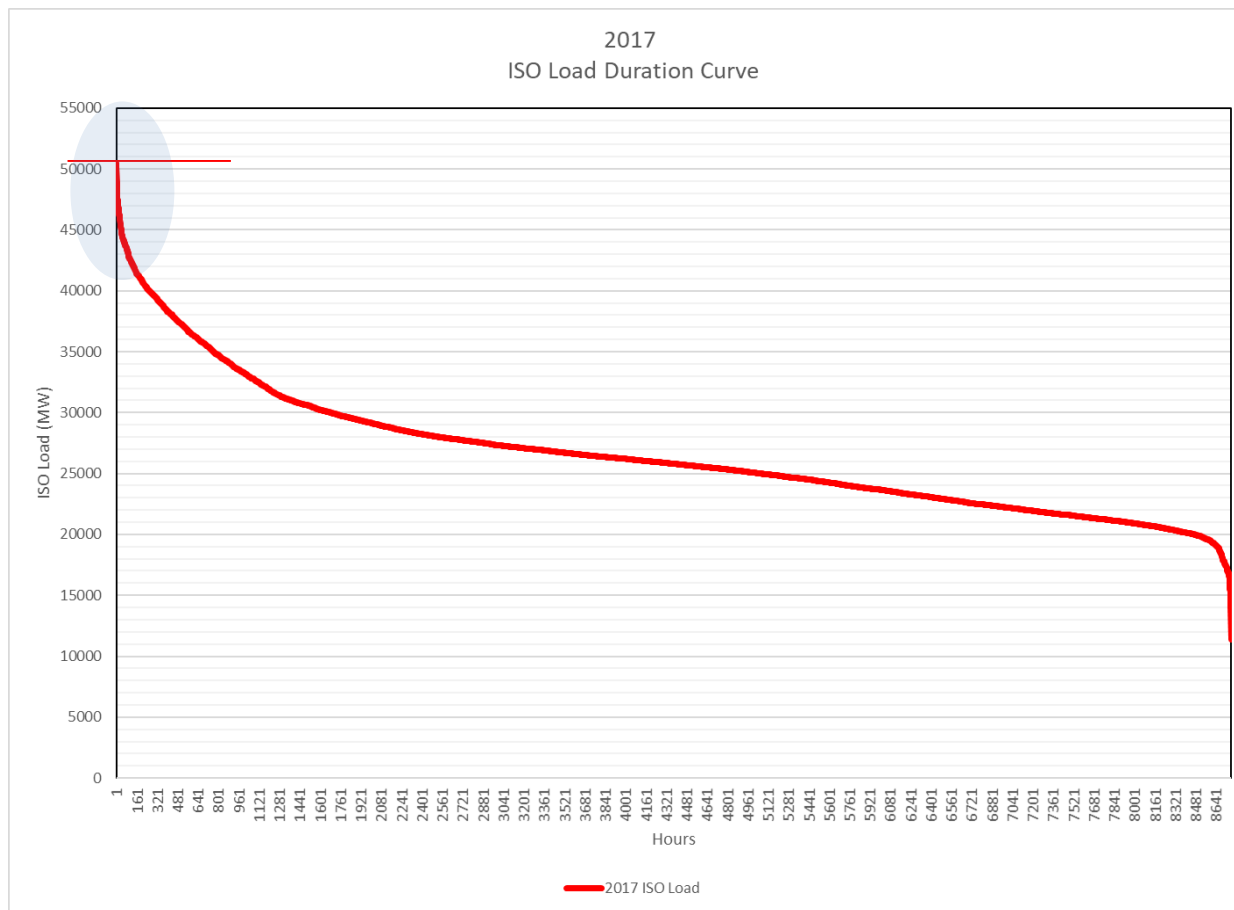
- Guarantees less of the TRR through TAC
  - ISO market revenues would not be credited against the TAC recovery
- Resource owner accepts all upside and downside risk of recovering a portion of its costs (and return) from market services



# Unpredictable changes in market participation opportunities can impact a resource's ability to cover costs

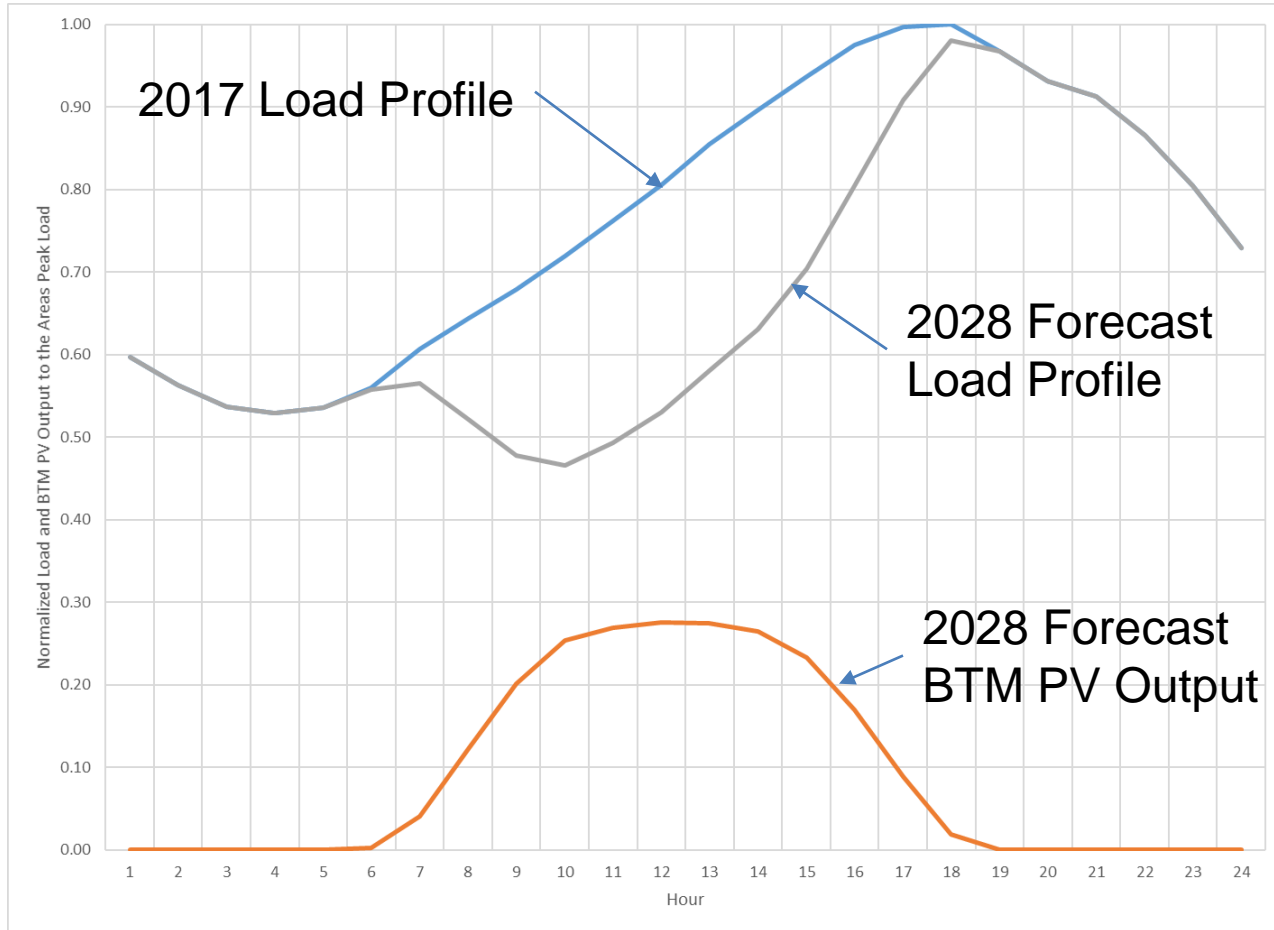
## Example: ISO 2017 Load Duration Curve

The relatively low load factor also makes the amount of time at peak loads very susceptible to change





# Besides peak loads, the local area load shapes are also shifting dramatically for a number of reasons

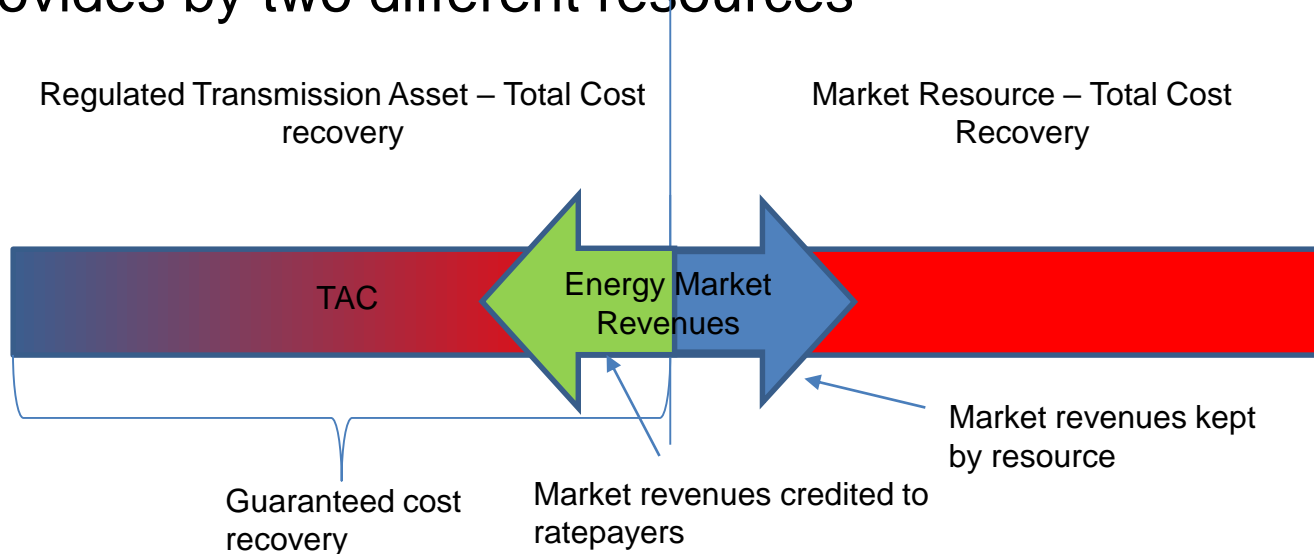


Example:  
Greater Bay Area  
Planning Area

2017 Load Profile  
and Current 2028  
Forecast Load  
and Behind-The-  
Meter Profile  
Normalized to the  
Area's Peak Load

# Full cost recovery with revenue sharing provides an incentive to bid into the market and can reduce overall cost to ratepayer

- Guarantees full submitted cost-of-service recovery through TAC
- Revenue split provides incentive to bid into market, but total transmission and energy costs for rate payers are less than if provided by two different resources



## Full cost of service with revenue sharing can help project sponsors balance risks while still providing benefits to ratepayers

- Mitigates financial risks given the level of uncertainty with respect to access to market revenues
- Clarifies decision points in Transmission Planning Process
  - No need for the ISO to assess potential market revenues in Phase 2 of the TPP
- Project sponsor would assume cost risks from excessive use
- Other options can be defined as variations of this option
  - Project sponsors compete on project cost, ROR, percent revenue splits (*i.e.* overall cost of service)